

The Urban Transect: One of the Planning Profession's Most Powerful Tools

Stephen Deal

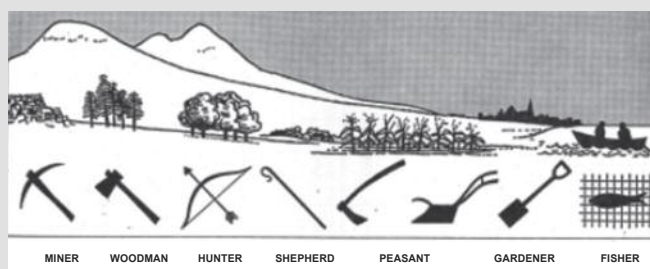
At its core, zoning is a method for allocating economic and social value. In traditional zoning this value allocation process is shaped through the use of color-coded districts, which generally denote the land use and intensity of an area. These categories, and the standards associated with them, are generally assigned to individual parcels. However, by attempting to control for multiple variables at such a discrete level it is easy to forget about how property value correlates to urban context. So, what if instead of classifying individual parcels one were to broaden the scope and allocate value according to neighborhood context instead? Such a classification method could also take into account the different types of urban connectivity and resource pooling that occur as one moves up and down the urban density gradient.

Such a system does exist. It is known as the transect. The transect has a storied history in planning as it has been used as a tool to study the intersections between nature and the built environment. Over the years the tool has been reimagined as a regulatory apparatus that can provide a systematic methodology to the evaluation of local policy decisions.

A Planning Tool with a Rich History

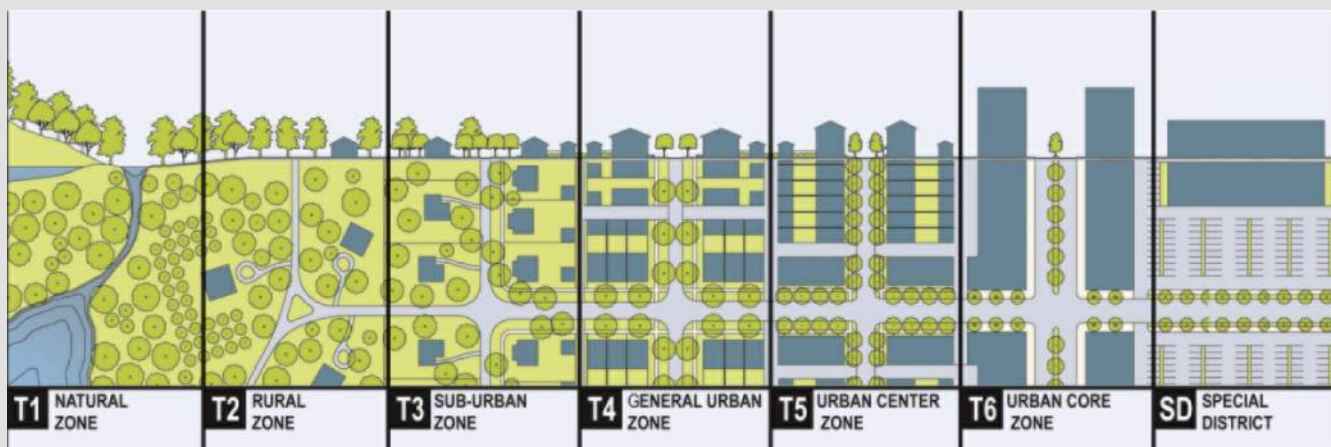
So what is a transect? A transect is a cut or path through a given environment, which essentially provides a snapshot of a range of different habitats. Although the transect has been popularized over the past 15-20 years by New Urbanist architects and developers, its history spans more than 200 years first emerging when a Prussian geographer by the name of Alexander von

Humboldt used a transect to diagram Patagonia from ocean to ocean. In the modern era this technique was further refined by Scottish planner Patrick Geddes who used a transect to show how ways of life emerged from their geographical context. The transect was also brought further into the realm of architecture and design when landscape architect Ian McHarg used the transect as an analytical tool in his seminal book *Design with Nature*.



The Valley Section, devised by Patrick Geddes, is an early example of the transect applied to human settlement patterns.

The visual power of the transect, in which complex ecological systems are broken down to their core, component parts, seems like a natural fit in a profession which arose out of a similar concern, namely breaking down the city into basic urban forms and typologies. Prior to the transect's use in city regulations, architect Christopher Alexander in his book *A Pattern Language* cataloged the entire built environment and broke them down into a collection of 253 discrete patterns. Traditional zoning was concerned about discerning urban patterns as well, but as the number of categories ballooned and land use became more rigid and



The Urban to Rural Transect is the dominant example of the transect approach applied to urban policymaking; courtesy of Duany Plater-Zyberk & Company.

separated, many urban planning professionals started becoming interested in alternative models, which could more fully capture the basic patterns and design principles cities needed to thrive. A new model could also signify a kind of “back to the basics” approach where city zoning regulations could harken back to the earliest zoning plans, which generally centered on a few broad and easily definable categories. Emily Talen, a professor at Arizona State University, has studied many of the earliest zoning codes in the nation and found that the general framework and guiding assumptions that went behind these early plans strongly resembled the modern codes that the transect framework produces today. The calls by some for a more simple and transparent land use coding process resulted in the first transect that was meant for use by local government officials: the rural to urban transect.

The SmartCode: The Transect as Land Use

The transect that planners are probably most familiar with is the rural to urban transect developed by Andrés Duany and his design firm DPZ. The rural to urban transect is generally split into six different zones, each zone representing one part of a larger urban continuum. The natural zone, classified as T1, is basically open wilderness with minimal human intrusion. In the T2 zone nature gives way to settled pastureland. Farmhouses, agricultural operations and country crossroads communities are generally the types of human development in this section. Zones T3 through T6 generally represent the range of development

opportunities available within the average city. The T3 zone is primarily low density residential with some mixed use adjacent to higher zones, whereas T4 is predominately mixed use, but the overall character of the neighborhood is still defined by residential properties. A number of commercial businesses will occur in the T4 zone, but they will primarily be local businesses, which serve the immediate neighborhood. The commercial main street of a small city or town would generally fall under the T5 zone and the T6 zone is basically the peak urban condition, the area of the city where density is at its highest. In short, a T5 district might be considered downtown Ocean Springs, Mississippi, whereas T6 is Canal Street in New Orleans.

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The classification schemes embodied within the rural to urban transect serve as the foundation for what is known as the Smartcode, a model municipal development ordinance created by DPZ. Developed in 2003, the Smartcode has been through several iterations over the course of its lifespan. As opposed to the use-based regulation model most cities follow, the Smartcode



Stormwater drainage pipe; courtesy of the Chesapeake Bay Program.

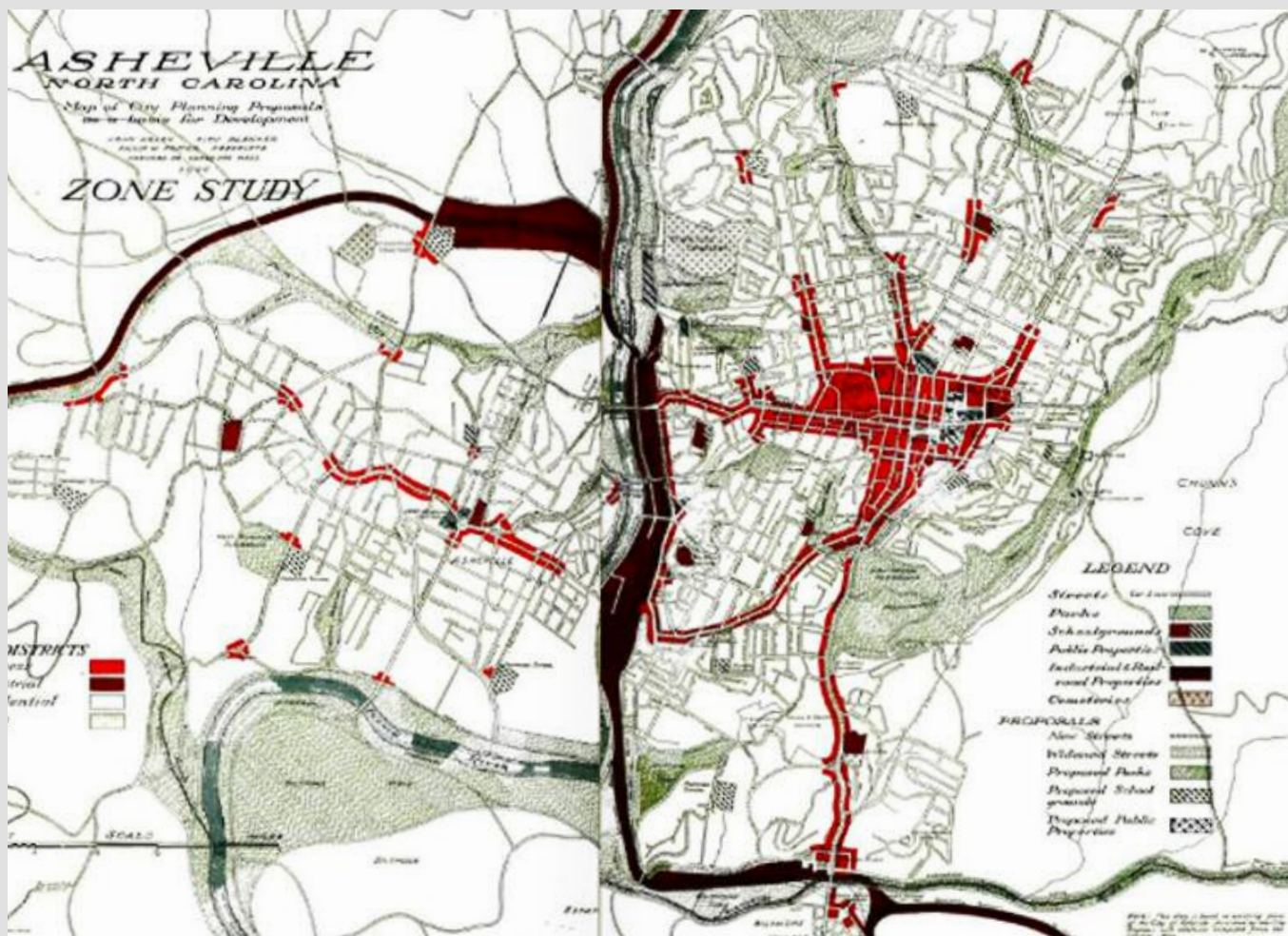
is centered on physical relationships and densities. Although city SmartCodes must be calibrated to reflect the unique architectural vernacular and historic character of an individual city, the basic T1 through T6 zone arrangement can be found throughout all SmartCodes. In some instances, the transect has been applied to smaller, neighborhood plans where cities can opt to apply smaller portions of the transect appropriate to that neighborhood's general composition.

The Applications of the Transect Beyond Planning

The transect is much more than another land use classification system. It is a mechanism that can be used to efficiently allocate resources according to basic urban thresholds and performance measures. An apt description of what the transect can achieve was given by Andrés Duany in the book *Landscape Urbanism and its Discontents*: “By integrating an environmental methodology for habitat assessment with a zoning methodology for urban,

the Transect breaks down the customary specialization, enabling environmentalists to consider the designs of the cultural habitats and urbanists to protect the natural ones.” In other words, it's a mechanism by which environmental policies in urban areas can recognize the cultural context in which they occur. There are many additional policy areas where a careful consideration of cultural resources must be given weight in order to give rise to the most optimal regulatory decisions. Take stormwater management, for example. In a dense urban area there may be no choice but to channelize a river, yet in a more rural area it becomes much more politically and economically feasible to preserve the natural riverway in its entirety.

Recognizing this, Tom Low, an architect with DPZ, created a Light Imprint Storm Drainage Matrix, which provides cities with a range of stormwater mitigation options that are grouped according to how appropriate they are for each portion of the Smartcode transect.



This image taken from John Nolan's City Plan for Asheville shows how early zoning plans generally opted for simple classification schemes of three or four different categories, which could come together to form large, contiguous districts; courtesy of the Cornell University Library Collections.

Within this stormwater management approach, there exists a sizable range of options available for mitigation in each urban district and many of the mitigation options are applicable in more than one district. This Matrix is just one example of the different supplementary modules available with the SmartCode. There are additional modules, which are calibrated to different areas of local policy expertise such as engineering, design, and environmental policy. There is even a module providing general guidance on local food systems and the types of food production that could be sustained in each transect zone. The value of such supplements is that they cut across the various departmental groupings and disciplines within city government in order to provide one guiding principle to all city decision making: that urban context is the fulcrum on which all city policy should rest.

A Transect for Green Infrastructure

The Smartcode does not represent the entirety of the transect approach. There are other examples of how this regulatory framework can be tweaked and modified to hone in on different policy concerns. An interesting example of the transect's potential for further modification is a model developed by two university professors known simply as the Green Infrastructure Transect. Building on previous models such as the rural to urban transect, the Green Infrastructure Transect is weighted more towards considering how urban context influences the optimal range of environmental solutions that cities can employ. The benefits of such an arrangement are summarized well from the following two points within Yaser Abunassr and Elizabeth Hamlin's paper on the topic: "(2) the designation of urban zones as unique spatial contexts that may impact the adaptive capacity of communities within, and (3) the

explicit consideration that [green infrastructure] is an interconnected system that transcends administrative and political boundaries.”

Like the rural to urban transect, the model proposed here is divided into six distinct zones, which when taken together form a complete picture of the surrounding landscape. Unlike the rural to urban transect, density is not the primary sorting factor in the model. Rather, the model's categories are determined more by the region's natural surroundings. Since natural surroundings take higher precedence in the Green Infrastructure Transect, one of the zones that have been added to the equation is a coastal zone. For cities and counties where coastal concerns are an overriding factor in decision making, it makes sense to acknowledge this special relationship to the water by tweaking the transect to reflect the regulatory concerns that relate to development along an open shoreline. The other zones generally mirror those found in other transect-based documents such as the Smartcode. But again, the focus is on visual cues indicating the type of natural communities that are present, such as the existing configurations of pervious and impervious surfaces in the area and how they affect the shape and form natural open space takes. By understanding the natural connectivity that exists within and across different transect zones; policy officials are better able to prescribe variable green infrastructure policies and combinations that take advantage of environmental and cultural resources that exist within a particular neighborhood grouping.

While this model does have certain advantages over the Smartcode, its discussion here is intended more to show the transect's potential for further refinement and adaptation. If a transect zone can be logically connected to the larger urban geographies at play, it should be deemed worthy of inclusion in a transect-based policy document. Although it is important to build off of existing transect tools such as the Smartcode and Green Infrastructure Transect, planners who are considering utilizing this model should be mindful that the transect is not a deterministic model, but rather a kind of visual shorthand for understanding the complicated social and economic arrangements that make up a city.

Conclusion

By focusing on neighborhood context rather than specific parcel characteristics, a transect provides the

planning community with a broader framework for understanding how a city operates. This framework can also apply to other city agencies and departments who can use urban density and context as a way of properly allotting city services and infrastructure needs. As a regulatory apparatus, it also has the added benefit of adaptability, since it can be broken down into smaller components for inclusion into a small area master plan or it can incorporate new elements reflective of a unique geographic asset or feature, which has a direct impact on the urban form of the area.

While the SmartCode and its subsequent updates exert heavy influence on transect-based policy models it is clear that there are also thinkers who are continuing to refine the transect for other policy purposes, such as green infrastructure. With this in mind, the transect should not be viewed as a single, unitary tool but rather as a kind of programming language for planners, which can be calibrated to unique local circumstances and situations in the same way that zoning is applied today. 🦋

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Endnotes

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