AN INTRODUCTION TO
FORM-BASED DEVELOPMENT REGULATIONS

By Peter Katz

The following paper was written as an introduction to the symposium Shaping the American City: New Approaches to Development Regulation (January 16-17, 2003, Chicago, Illinois), co-sponsored by the Brookings Institution and the American Planning Association. This paper will be expanded after the symposium to include a more comprehensive discussion of the problems related to existing development regulations, along with an exploration of other emerging regulatory approaches. In addition, the expanded paper will look at the pros-and-cons of new approaches and discuss the way such regulations could be adapted to work within the present use-based regulatory framework.

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Problems of Use-Based Regulatory Approaches

One major barrier to the development and revitalization of America’s cities is the body of planning regulations now in use by local governments. Central to these regulations is the practice of zoning, which, while an effective response to past problems of industrialization within cities, now acts to promote suburban sprawl. It does so because of its emphasis on the separation of land uses and its attempt to control growth by limiting density. Unfortunately these strategies spread development over ever-larger areas of land. It is now well known that such dispersed development patterns lead to a host of problems including increased automobile dependence, traffic congestion and regional jobs/housing imbalances.

1 The author recognizes Robert Sitkowski for his considerable input and comment concerning the legal aspects of existing use-based regulatory documents as well as the form-based approaches discussed in this paper. Andres Duany and Geoffrey Ferrell reviewed portions of the document and provided extensive information about the intent and implementation of form-based codes.
use-based approaches. Development regulations that may prove easier and more effective to administer than existing activities are being promoted to contribute to economic development by creating a new generation of form-based

conditions. Some of these newly legislated regulations provide for more flexibility in use and design, with some controls on height, setbacks, and landscaping. These changes are more understandable to stakeholders, thus the economic and aesthetic impacts of new developments are more predictable. Moreover, these regulations can foster more vibrant, walkable communities that are closer to nature and offer a more supportive environment for people and businesses. Some new urban design practices are updating historic (pre-1930s) regulations, reducing restrictions, and allowing more design flexibility.

These new urban design policies are reenergizing the older urban areas and providing opportunities for new development. However, many of these new approaches require significant planning and coordination to be effective.

New approaches to development regulation involve creating single-use development districts, which are designed to reduce the level of development in certain areas, and encourage mixed-use development. This approach recognizes the need for more flexibility in development regulations, allowing for a more sustainable approach to urban planning.

Throughout the United States, there is a trend towards more comprehensive planning and zoning regulations. These regulations are designed to encourage more sustainable development practices, reduce development densities, and promote mixed-use development. The effectiveness of these approaches is being evaluated through ongoing research and evaluation.

The key to success is the ability to attract new businesses and residents to the area, while maintaining the character and integrity of the existing community. This requires careful consideration of the needs and desires of the community, as well as a willingness to adapt to new developments in the area.
New Urbanism and its Relationship to New Regulatory Approaches

In the late 1980s and early 1990s, a new approach to development began to emerge in the United States, Canada and Australia. Initially dubbed "neo-traditional planning," the movement has come to be known as New Urbanism, a subset of Smart Growth, a more general term embraced by groups ranging from the U.S. Environmental Protection Agency to the National Association of Home Builders. Based on the walkable neighborhoods, villages, and small towns built prior to World War II, the New Urbanism reintegrates the components of modern life — housing, workplace, shopping, and recreation — into compact, pedestrian-friendly, mixed-use neighborhoods set in a larger metropolitan framework providing open space and transit. The New Urbanism is seen by many as an alternative to suburban sprawl, a form of low-density development that consists of large, single-use "pods" — office parks, housing subdivisions, apartment complexes, shopping centers — all of which must be reached by private automobile.

The New Urbanism is best known for projects built in new growth areas such as Seaside (Walton County, Florida, 1981; Duany Plater-Zyberk & Company, Town Planners), Kentlands (Gaithersburg, Maryland, 1989; Duany Plater-Zyberk & Company, Town Planners) and Celebration (Osceola County, Florida, 1995; Cooper, Robertson & Partners and Robert A.M. Stern & Partners, Town Planners). The principles that define New Urbanism can also be applied to infill sites within existing urbanized areas. The leading proponents of New Urbanism believe that such infill development should take priority over new development. However, many social, political, and economic realities in North America currently favor development at the metropolitan edge.

The New Urbanism is characterized by a set of interrelated planning goals:

- All development should be in the form of walkable neighborhoods or districts, which have clearly defined centers and edges. At a minimum, the center includes a public space such as a square, a green, or an important street intersection. The center may also include public buildings such as a library, church, or community center as well as a transit stop and retail businesses.

- Neighborhoods and districts should be compact, measuring no more than one-quarter mile from center to edge and detailed to encourage pedestrian activity without excluding the automobile altogether. Streets should be laid out as an interconnected network that, in turn, creates perimeter blocks. Such blocks should be comprised of buildings with clearly defined public fronts and private backs, sides and/or interior courtyards. Building entrances should front streets rather than parking lots. The previously mentioned street network should follow a grid or modified grid pattern. While streets in such a network need not be straight, it is important that they provide alternative routes to a range of destinations within and outside the community. Cul-de-sacs, popular in suburban areas because they limit through traffic, are avoided in New Urban plans because they force a greater proportion of traffic onto a reduced number large arterials. Just as the New Urban neighborhood or district should be fully accessible to pedestrians, so too should the entire
development areas.

Anchorage planners have long recognized the need for a more compact, walkable, and transit-oriented urban form. "This was not just an..." community leaders supported the concept of a new urban form. The planners of the first New Urban Communities realized that a different kind of "center" would be needed to shape a new generation of planned communities. Anchorage planners hoped to create a "center" that would be more vibrant and dynamic than their current centers.

The key to building the neighborhoods within a predominantly suburban regulatory framework, the Anchorage plan for development areas, was seen as an exercise in understanding the needs and desires of the community. The planners recognized that the concept of a new urban form would likely be controversial, and they sought to build an understanding between New Urbanism and conventional subdivision planning.

Cities of New Urbanism often mistakenly believe it to be a realistic planning approach that is synonymous with the sustainable development of neighborhoods. Schools and community centers are often built in greenspots between neighborhoods, and the size of their playing fields and the need to serve neighboring neighborhoods, the "neighborhoods" provide the open space needed by residents. Public open space is scarce, especially "green" areas, and many neighborhoods have none. This lack of public open space and green areas is a major concern, leading to a lack of urban vitality.

Some neighborhoods are characterized by a high level of urban vitality. Neighborhoods often have a high density of commercial, cultural, and entertainment centers, and they are often surrounded by a high density of college campuses. The areas that surround these centers also function as centers, and the diversity of neighborhood character is a major plus. A high density of neighborhood character, diverse mix of uses, and a diversity of people, may lend a neighborhood a distinctive character, and lack the surrounding region.

Developing a neighborhood plan for a single use or serving one market segment should be avoided. Developing affordable housing in a community, even at the need for large-scale apartment blocks, and individualized residential units and multi-use shops can contribute to the supply of unique and vibrant urban spaces, and rail services should be connected to the entire region to foster a diverse mix of activities and land uses (residences, shops, schools, workplaces, etc.). Public transit should occur in proximity. Also, a wide selection of housing options should be available to allow people to choose the best place for their needs and incomes.
Since the early years of the New Urbanism movement, Duany and a number of like-minded colleagues have developed and revived\(^2\) a range of regulatory strategies that both supplement and replace existing development regulation at the neighborhood scale. While the refinement and adoption of these approaches is still in an embryonic stage relative to the large “installed base” of conventional development regulations, early results show such approaches offering great promise.

**Principles of Form-Based Development Regulations**

Several guiding principles differentiate the regulatory approaches introduced in this paper from conventional development regulation:

**Private Buildings Shape the Public Realm**

As was stated earlier, New Urban planning gives priority to the public realm — including public buildings, streets and open spaces. Private buildings, despite their secondary ranking in the hierarchy, assume a significant role: They enhance and give definition to those same public buildings, streets and open spaces.

Because they are meant to stand out, public buildings are subject to fewer code requirements than private buildings, and are sited at locations of special significance. Washington DC’s Capitol building, which terminates the view down Pennsylvania Avenue, is a well-known example of this approach. Private buildings behave differently. They combine with each other to form the “background fabric” of the community. Development regulations for private buildings attempt to balance the expression of the individual building with the overall composition of the larger block and streetscape. Again, the overriding goal is the enhancement and definition of the public realm.

All too often, the public realm that exists in new suburbs or older inner-city areas is badly degraded. It consists of “left-over” parcels not suitable for development, due to problems of size, slope or access. Such residual land rarely occupies a central location within the community. More often it is at the edges of a development, screening the community’s highest value homesites from the noise, congestion and visual clutter of nearby roads. Developers in many

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\(^2\) Although the approaches presented in this paper are “new” relative to today’s use-based regulatory regimes, they are actually quite similar to some regulations used in the United States, England and Europe in the early part of the Twentieth Century. The widely admired “streetcar” and early “automobile” suburbs of many American cities were largely implemented with such regulations. The continuing appeal of communities such as Roland Park in Baltimore, Coral Gables in Miami/Dade County, Oak Park in the Chicago metro area, Mariemont near Cincinnati, Forest Hills Gardens in Queens, (New York) and Shaker Heights outside Cleveland lend support to the thesis that good planning, and effective development regulations, contribute to the creation of long-term real-estate value. Indeed, properties in several of these communities rank near the top of their respective metropolitan regions in terms of housing prices. But despite their status as “better neighborhoods,” each offers a diverse range of housing options, some quite affordable. Three of the communities, Forest Hills Gardens, Oak Park and Shaker Heights, feature exemplary regional transit access.
quality civic spaces are one of the defining features of the New Urbanism. The unique planning features of new communities, the "strip town," pedestrian-oriented design, and the green space common to community centers and parks are characteristic features of the New Urbanism found in many communities.

A 1999 study sponsored by the Urban Land Institute and the Congress for the New Urbanism found that

Gardner and his colleagues found a strong relationship between the physical design of a community and its development pattern. They suggested that new development should be planned to create a sense of place, where people feel connected to their surroundings.

The idea that one can "grow up" a development is key to understanding the benefits of a well-planned community. Without a sense of place, communities are not sustainable.

Developing Communities: A Physical Plan: They Do Not Exist in the Abstract

New approaches to development regulation have emerged in recent years as a response to this challenge. These new regulations focus on creating communities that are sustainable and where people feel a sense of belonging.

In their effort to achieve a high-quality public realm, New Urbanism planners seek an appropriate development model for New Urbanism communities. This model is based on the idea that communities are not just collections of buildings, but are living, breathing entities that interact with their environment.

Conclusion

The quality of life in a community yields a public realm of only monumental quality. The development of a public realm is not a mere addition to a developed site; it is an integral part of the site's design.

Exhibit 5: Square Feet of Open Space per Housing Unit. It is not surprising that an approach to planning that focuses on qualitative space (for example, "square feet of open space") can yield a public realm that is qualitatively superior to others.
therefore useful in the conceptual stages of plan development, conventional wisdom supports the view that the latter is a necessary “filter” for converting a community’s will into law. This belief is driven by the notion that the legal filter achieves a level of precision not possible with visual media such as drawings or diagrams.

New Urbanists challenge this approach, asserting that the opposite is true. Indeed, they worry that a physical plan seen through the legal “filter” simply becomes too intangible for most citizens to comprehend. Without first establishing a clear vision of a physical place, they fear that such processes may lead to outcomes that are inconsistent with the stated planning goals of a community.

The adage of “a picture being worth a thousand words” lies at the heart of the New Urbanist’s preference for more physically based, visually expressed regulatory approaches. While they don’t diminish the need for solid, clearly structured written materials, they believe that effective visuals are key to galvanizing consensus around a development plan or proposal. Such visuals are understandable to a wider cross section of stakeholders and community members, thus fostering a more democratic form of development.

The proponents of the regulatory approaches described in this paper also believe that, when regulatory changes are considered, the physical consequences of such changes should be clearly communicated in visual form for the benefit of the public. In the current use-based regulatory system, this is often poorly done, if done at all. The problem stems from these reasons that are intrinsic to the system:

- Since conventional regulations exist primarily in text form, professional planners or designers would need to research existing and proposed ordinances, and then create visual materials from scratch to communicate the impact of proposed changes. This can entail considerable expense, which would ultimately be borne by the municipality.

- In addition, because the regulations are use-based, rather than form-based, the physical consequences of a given ordinance change cannot always be discerned, much less communicated. With density bonuses granted for architectural merit and/or for preferred uses (such as affordable housing or targeted business uses), and building sizes and parking requirements calculated differently for different uses, the variety of possible physical permutations related to a given ordinance change becomes nearly limitless. No planning department – even those with considerable resources – could afford to take on such a task in a truly comprehensive manner.

- Finally, the problems are compounded over time when the community’s development ordinance and the plan it implements are “separated at birth,” as they are under the current system. Absent an attempt to rejoin them with the admittedly challenging steps outlined above, there is little hope for future improvement. With each revision, the community’s development ordinance grows increasingly complex, abstract, and detached from the place it regulates.
Form-based regulations are proposed in this paper as an alternative to the use-based regulations. Form-based regulations, like those used in the UK, have the advantage of being more specific and easier to enforce. They also allow for more flexibility in design and construction, which can be beneficial in dense urban areas.

Form-based codes: an overview

Possibilities that could lead to a negative outcome:

Approaches that do not comply with the prescriptive approach: Another reason for the prescriptive approach is that form-based regulations are typically shorter and more concise than the conventional regulations. This is one reason why form-based regulations are preferred over conventional regulations. The elements controlled by form-based regulations are physical in nature — overall, form-based approaches are more flexible than prescriptive approaches.

Cases when form-based regulations are not effective:

A new form of "form-based" regulations uses the prescriptive approach to reduce, and in some development regulations, on the other hand, are written prescriptively — indicating what is not allowed by those who have a stake in the future of the community.

Development regulations should be assessed by those who have a stake in the future of the community. They are effectively "invisible", and those who are "too late" to change regulations do so after they have been enacted. The new regulatory approaches described in this paper, on the other hand, are structured in a way that closely links regulations to the plan that they control. They are effectively "sensitive", and those who have a stake in the future of the community can influence regulations before they are enacted.
• The regulatory documents themselves are better able to define the physical form of a proposed plan; in so doing, matters of design move from a superficial role to a central one.

• The regulations are written with the aim of avoiding unintended negative consequences, and providing incentives for the creation of quality places that achieve optimum real-estate value.

• The documents are easier to understand and use by non-professionals because they are typically shorter than conventional zoning ordinances, written in plain language and graphically formatted.

The practice of form-based coding is currently employed by a small group of town planning firms\(^4\) nearly all of which have some connection to the Miami-based firm of Duany Plater-Zyberk & Company (DPZ). DPZ first applied the technique in 1982 for its code for Seaside, the highly publicized coastal resort town on Florida’s panhandle. Since that time, DPZ has formulated similar documents to guide the build-out of over 200 new and revitalized communities around the United States and throughout the world. While many of the practitioners of form-based coding work in Florida and the Southeastern US, others have spread the technique to more distant locales including the west coast of the United States, Europe and Australia.

Form-based Codes: The Components

Form-based codes typically\(^5\) employ some or all of these documents: Regulating Plan, Building Envelope Standards, Definitions and Architectural Standards (optional). Some of these items resemble documents used in conventional zoning. For example, a regulating plan (figure 1) is analogous to a zoning map. Both documents show the places where certain rules apply. But there are critical differences between them.

\(^4\) Firms recognized for their mastery of form-based codes include Correa Valle Valle (Miami, FL); Dover Kohl & Partners (South Miami, FL); Duany Plater-Zyberk & Company (Miami, FL); Environmentally Sustainable Design (Melbourne, Australia); Geoffrey Ferrell Associates (Washington, DC); Lennertz & Coyle (Portland, OR); Moule & Polyzoides (Pasadena, CA); Opticos Design (Berkeley, CA).

\(^5\) As mentioned in the text, form-based coding is a newly revived method of development regulation. The firms that have led its revival and ongoing development continue to experiment with a range of techniques. Because of the fluid nature of the current practice of form-based coding, the description presented here does not include some variations that are now in use. The description in this paper highlights the coding approach used by Geoffrey Ferrell Associates for the Pleasant Hill BART Station Property Code (a partial copy of which is included in the briefing binder that accompanies this paper). The code has been adopted by Contra Costa County to regulate the build-out of a 200 million dollar transit-oriented development designed by Lennertz & Coyle of Portland, Oregon. Several other code variants will be discussed in future chapters of this paper.
highways and interstates (especially those roads will be constructed by government). The
new growth areas, where roads may be proposed but not yet built, often show just a few major
urbanized areas specifically do, since those physical features already exist. But zoning maps for
detail. A zoning map may or may not show streets and blocks. Those that facilitate exercise
Important distinction between a regulating plan and a zoning map relates to the issue of
include "building type" for housing property. Key to shading patterns is missing from this view.
Figure 1: Regulating Plan (Present Hill BART Station Property). Shading pattern within street
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smaller roads would not appear on the zoning map because most such roads would normally be part of a future development plan for the site (and presumably constructed by a developer). Under this current system, drawing in the smaller roads would be seen as limiting the flexibility of the private developer.

A regulating plan, on the other hand, includes all proposed streets — large and small — and the blocks they define. True to its name, a regulating plan also includes other information used to regulate the build-out of the community. Such information includes include property lines that define each building lot, a “required building line”6, a “street tree alignment line” and other building envelope and setback lines that the underlying plan may require. Regulating plans also indicate the location of public parks, squares and greenbelts and the rough footprints of planned public buildings. Consistent with the New Urbanism’s emphasis on the public realm, such buildings are shown even though their planned construction may be years in the future.

The higher level of detail provided in a regulating plan, relative to a conventional zoning map, is important because it allows one to see and evaluate all the critical elements of a proposed plan in whole cloth. But beyond the matter of information, the increased level of detail relates to a second key distinction between the two documents: The regulating plan defines a plan that has been designed, while a zoning map serves only to indicate a range of potential land-use designations. In the former, decisions have been made about the size of a neighborhood, the character of streets, the heights of buildings, and the size and shape of public parks, among other things. The latter more often acts as a “place-holder” document for communities that do not yet possess a clear physical vision for their future.

A third critical distinction between regulating plans and zoning maps relates to what is being specified. Zoning maps sometimes use an alphanumeric designation to denote a specific zoning category — R-40, for example — for every parcel on the map. That designation sometimes refers to a specific use, or range of uses, and maximum density. In the previously mentioned R-40 example, R stands for residential, and 40 signifies an upper limit of 40 units per acre.7 To learn more about the detailed characteristics of a given zoning category, a user of the zoning map would refer to a zoning text that describes the category in terms of by-right and special uses, minimum lot size, setbacks, lot coverage, maximum buildable floor area per acre of land, parking requirements, landscaping requirements, and so on. Such descriptions can range from just a few pages to several hundred.

A regulating plan, on the other hand, specifies the type(s) of building that can be constructed on a given site within the community. A regulating plan for a typical New Urban community assigns

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6 It is important to note the distinction between the required building line (RBL) and a setback line. The RBL typically controls the relationship between building fronts and the street, helping to maintain a street wall that is consistent with intentions of the urban plan. A setback line, often used to control the back and/or sides of a building, specifies only that a building be located within a certain boundary line.

7 Often numbers in such designations may relate to arbitrary factors other than density. For example, an R-6 designation may simply be the sixth residential category to be defined in that community.
For each building type, certain information – typically height, width, elements, and uses – is spelled out in building codes and selection criteria. The physical characteristics of each building type are summarized in a document known as a building type standard. The main purpose of these standards is to provide a clear and concise description of each building type and its characteristics, so potential users can make informed decisions about their design and construction.

For example, in a medium-density residential area, a typical building type standard might specify the maximum height and width of buildings, the minimum number of units per floor, and the required setbacks from property lines. This information is often presented in a table, with columns for building type, use, height, and width. These standards also help ensure that new buildings fit within the overall character of the neighborhood and do not create excessive density or visual overload.

In some areas, building type standards are used to guide the design of new buildings, while in others they are used to evaluate existing buildings. In either case, these standards are an important tool for creating cohesive and vibrant communities.
Figure 2: Building Envelope Standards, Workplace Building Sites (Pleasant Hill BART Station Property).
Residential above adequates the individual floors or a building (for example, retail and office on the ground floor).

Building the advantage of the development's approach is that different uses can be clearly
uses are spelled out in a brief list and summarized on a simple cross-section diagram of the
Finally, uses, e.g., retail being included in form-based codes, are clearly articulated, permissible.

Uses

Total square area for steel beam and upper floors.

Elements

Specified localizations and configurations of building elements, parking locations, yards, and courtyards

Shelving

Reasons of privacy and as way to maintain a proper urban street wall.

Building envelopes standards also include a minimum dimension for height (above grade) of the

Certain hours (usually the first)

means of addressing this issue: some cords specifically minimum floor-to-ceiling distance for

In contrast to the traditional document helps to

Discuss and modification by numerous parties before it was written into law.

The building's overall height is frequently specified as a maximum-height-to-eave dimension

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Beyond its superiority as a graphic representation, this technique encourages the fine-grained mixing of uses within a single building. With use-based regulatory systems, by contrast, planners often resort to a range of graphic gymnastics—multi-color stripes, or patterns, for example—to satisfy the two-dimensional limitations of most zoning maps. Sometimes municipalities create entirely new land-use designations for the same purpose. While such techniques have certainly worked in the past, one can see how the very tools-of-the-trade militate against the broader implementation of mixed-use development within the planning profession.

A third component of form-based codes is its glossary of definitions. While the purpose of this component is obvious, the special need for such a glossary deserves mention.

By carefully referencing and then defining key physical elements of a plan and/or the buildings within that plan, the practitioners of New Urbanism hope to bring greater precision and clarity to the process of defining a community’s built form. In some cases commonly understood words such as “alley” or “balcony” are defined in ways that may be specific to a given plan. For example, the balcony definition in the Pleasant Hill BART Station Property Code states, “balconies...must be roofed and enclosed by balustrades (railings) and posts that extend up to the roof...” That requirement for what some call a “post-up” balcony contributes to a building design that is consistent with the vernacular traditions of California, without actually mandating a particular architectural style. By avoiding any direct reference to building style, form-based codes enable planners to achieve a desired physical result without becoming entangled in subjective issues of aesthetics or personal taste.

Figure 3: Residential Buildings with “Post-Up” Balconies (Pleasant Hill BART Station Property).
to achieve a particular outcome.

standards optional, a community can determine the level of control it wishes to assert in the quest
willling to accept group control over matters of private property. By making the adoption of such
Indeed, the practical limit of most regulatory mechanisms is the degree to which people are

a document could dictate.

the color of one's skin and the pattern of the print. Obviously, there is no limit to the detail such
whether one is wearing a bow tie, a convolutional neck tie, or no tie at all. It might also specify
women, and must do more. To do that, the community should go beyond those bases to determine
detail, and so on. The architectural standards would go beyond those bases to determine
and other major parts. The head would include two eyes, two ears, one nose, one mouth, one

New Urbanists sometimes refer to architectural standards metaphorically as a "dress code" for
planned communities or subdivisions.

meritorious the same home plan is accepted when putting into a convolutional master.

provide homeowners organization. Indeed, these architectural standards function in the same
standards are mainly administered by governmental bodies. More often they are enforced by a
Because they have little direct impact on matters of public health, safety or welfare, architectural

Architectural Standards, a component of form-based codes. In some cases, touch upon

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