

The Science of



Rome wasn't built in a day, but Atlanta comes pretty close. In the 1990s metro Atlanta redefined the boomtown, leading the nation in population growth, job openings, home building and highway construction. The city once known for being burned to the ground during Sherman's march was called the fastest-growing human settlement in history.

But now Atlanta again appears to be a city under siege. This time the enemy is said to be urban sprawl. Scattered over an area larger than the state of Delaware, the region's workers face the nation's longest average commute and some of its most congested freeways. Atlanta's smoggy skies produced 69 "ozone-alert" days in 1999 and 45 such days during the first eight months of this year. Nearly two years ago a federal judge ordered a stop to highway building until local agencies come up with a better plan to improve regional air quality. Large corporations such as Hewlett-Packard have started to look elsewhere to locate new facilities because of quality-of-life concerns. Against such odds, can Atlanta stage another spectacular comeback?

On a less superlative scale, hundreds of other regions also have been wrestling with growing pains. Over the past several years, citizens nationwide have passed hundreds of ballot initiatives supporting land preservation, park improvements, community reinvestment, public transit and other measures to curb sprawl. A recent Pew Center opinion poll found that of all local issues, such as crime, jobs and education, Americans

are most worried about sprawl and traffic. For media pundits, these concerns have provided much fodder for political analysis as they slice and dice the resonance of Vice President Al Gore's "livable communities" initiatives and the effectiveness of state and local campaigns to promote smarter growth.

By focusing on the political theater, however, many miss the real story: that widespread concerns about sprawl have unleashed a wave of innovation. It includes creative economic incentives, new construction technologies, rewritten building and zoning codes, sophisticated marketing and demographic forecasting techniques, and a push to inform the public about scientific estimates of the costs of sprawl. New research centers to study land development have been established at the University of Maryland, George Washington University and Harvard University, joining those at other leading institutions such as the University of Miami, Rutgers University and the University of California at Berkeley. Although sprawl has been studied since the 1950s, researchers now have an unprecedented opportunity to evaluate anti-sprawl measures that have never before been tested on American soil.

Not Your Father's Sprawl

Why is sprawl suddenly such a hot topic? After all, it is hardly a new issue. Though often derided as bland and boring, sprawl has become the mainstay of American middle-class housing since World War II and, for many, the physi-

COURTESY OF DUANY PLATER-ZYBERK & CO. (traffic intersection); URBAN DESIGN ASSOCIATES (park/DuVale)

Smart Growth

Are there any alternatives to urban sprawl? Pundits and pols may endlessly debate that question, but the only way to get an answer is to go out and see what works in the real world

by Donald D.T. Chen



cal embodiment of the American dream. So what has changed?

The answer may lie in the evolving definition of “sprawl.” For the social critics of the 1950s and 1960s, it was commonly equated with “the suburbs,” which they condemned as culturally and architecturally homogeneous. Predictably, these complaints tended not to resonate beyond the urban cocktail-hour crowd, as millions of Americans made their homes in the suburbs.

The substance and rhetoric of today’s arguments against sprawl are starkly different. They depict sprawl not as a place where people live but as a process that has spiraled out of their control. In other words, sprawl is no longer equated just with a type of dispersed development characterized by

CARS OR PEOPLE? The automobile-oriented style of land development (*opposite page*), popularized in the 1950s, is falling out of favor with home buyers who increasingly demand walkable neighborhoods, often built on redeveloped urban sites such as Park DuValle in Louisville, Ky. (*above*).

large, separate zones for residences, shops and businesses. It is viewed as the seemingly unstoppable spread of such development, leading to worse congestion, escalating tax rates, disinvestment in older communities and the devouring of open space. This perception is partly fueled by the sheer pace of land development, which, according to the U.S. Department of Agriculture, is roughly double what it was a decade

Two Designs Compared

Smart Growth Matrix Project Criteria	Points Available	Triangle Square	Missing Oaks Mall
Location of Project (choose one)			
Downtown	45		
Urban core	28	28	28
Desired development zone	12		
Mixed Use			
Includes residential above first floor	20	20	0
Street-level pedestrian uses	15	15	15
Includes two uses	15	15	0
Includes three uses	25	25	0
Streetscape Treatment			
Street trees	9	9	0
Weather protection (awnings, arcades, etc.)	3	3	0
Minimum of 10-foot-wide sidewalk along street frontage	9	9	0
Crossing treatment at street intersections	12	12	0
Accessible Open Space			
Area greater than 500 square feet	4	4	0
Seating	2	2	0
Landscaping, including trees	2	2	0
Outdoor public art	4	0	0
Building Location			
Oriented to pedestrian network	3	3	0
Buildings built up to right-of-way	12	12	0
Parking located at rear of building	6	6	0
Total points for all Smart Growth Criteria, including those not shown here		402	169

SOURCE: City of Austin PECSD



ago. As communities become dissatisfied with haphazard growth, they are rebelling against the conventional wisdom that continued sprawl is desirable, immutable and inevitable. Urban, suburban and rural residents have joined forces in coalitions that would once have seemed improbable.

In local debates, the most commonly cited concern is the environment. Although only about 5 percent of the nation's total land area has been built on, areas that are primed for development include a disproportionately large number of wildlife habitats, wetlands and watersheds. The two biologically richest parts of the U.S., Florida and southern California, are also among the fastest-growing. According to the Nature Conservancy, Florida has lost half its original stock of wetlands. The U.S. Fish and Wildlife Service has estimated that more than 90 percent of the Californian coastal sage ecosystem has succumbed to development.

Even though individual species sometimes become celebrities in development battles, environmentalists are now becoming more concerned about broad ecosystem degradation. An entire branch of ecology has arisen over the past several years to study the burden that urbanized areas place on their less developed hinterlands, and many "green" groups have started to link land development with the gamut of environmental issues. The Chesapeake Bay Foundation, for example, recently ran a radio ad featuring a talking fish that criticizes

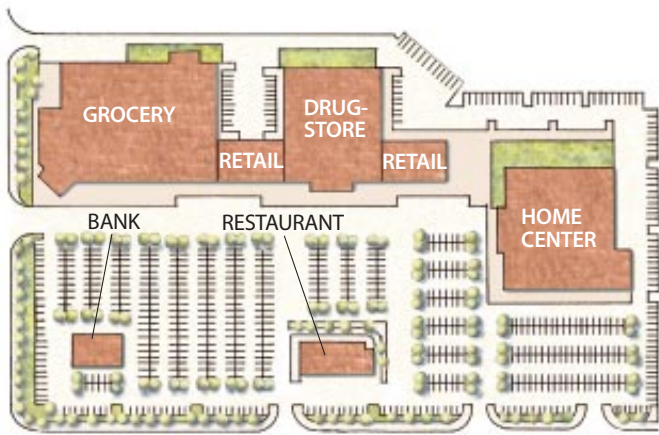
new highway construction, saying that vehicle pollutants would eventually wash into the bay.

On land, preservation groups such as Scenic America have launched campaigns to protect picturesque vistas. Some of the most active opponents of sprawl are historical societies devoted to protecting Civil War battlefields. In five states preservation groups and amateur astronomers have even secured state legislation safeguarding the starry night sky, which is being washed out by "light pollution" from an increasing array of settlements.

A second area of concern is economic. In Virginia, Loudoun County supervisor Scott K. York decided to push for new growth strategies after citizens started demanding action on overcrowded schools and increased taxes. "It wasn't because I'm a great environmentalist or because I get stuck in traffic every day," he said. "It was the budget in Loudoun County."

Numerous fiscal-impact studies have found that low-density, noncontiguous growth is more likely to generate higher costs for municipal services and infrastructure than more compact forms of development. Robert W. Burchell and David Listokin of Rutgers have determined that modest increases in density could reduce total capital costs by 25 to 60 percent for roads and 15 to 40 percent for water and sewer lines. School construction also becomes a huge issue as communities scramble to accommodate shifts in population. Between 1970 and 1995, public school enrollment in Maine fell by 27,000, yet over a similar period the state government alone spent \$338 million to build new schools and classrooms. In most areas, property-tax revenues fail to make up for these extra costs, creating pressure to raise tax rates.

The other topic that has come to dominate the politics of



Missing Oaks Mall

- 23-acre site
- 180,000-square-foot retail
- 8,500-square-foot bank
- 7,500-square-foot restaurant
- No open space
- One-story buildings

EVEN SHOPPING MALLS are getting a makeover. Like many other cities, Austin, Tex., has provided infrastructure improvements to encourage development. But now it devotes a portion of those funds to projects that include "New Urbanist" characteristics such as pedestrian access, mixture of uses and other amenities (table on opposite page). The Triangle Square development got \$7.6 million in incentives. Typical mall site plans like "Missing Oaks," a dummy project used to calibrate the grading system, would receive no public investment.

sprawl is traffic. According to the Texas Transportation Institute, traffic delays per capita in the nation's largest urban areas increased by 20 percent from 1993 to 1997. The additional wasted time and fuel adds up to \$74 billion a year. For a typical family, these costs are manifested in an unwavering reliance on driving: chauffeuring kids to and from school, baseball games and play dates; pushing through herds of sport-utility vehicles just to buy a gallon of milk; leaving earlier and earlier in the morning to beat the traffic.

The lack of alternatives to driving also has direct health consequences. In the *Journal of the American Medical Association* last year, Jeffrey P. Koplan and William H. Dietz of the Centers for Disease Control and Prevention argued that the absence of safe walking and bicycling opportunities in sprawling areas is contributing to sedentary lifestyles and an "epidemic" of obesity among both adults and children. "Automobile trips that can be safely replaced by walking or bicycling offer the first target for increased physical activity in communities," they wrote.

What Choice?

Public outcry against sprawl has led to a search for alternatives, often referred to as smart growth. This term is sometimes equated with urban growth boundaries, such as the one around Portland, Ore. But in fact it encompasses a range of measures intended to encourage development that offers transportation options, preserves open space and revitalizes older communities. Although many of these efforts—such as urban reinvestment and "New Urbanist" projects [see box on page 90]—have proved popular, they have had to overcome the entrenched practices that facilitate sprawl.

The theories explaining why sprawl occurs are as numerous as they are politically controversial, but most fall into one of six categories [see table on next page]. None of these explanations suffices on its own. But their combination has made sprawl the path of least resistance for property developers. Over the past half-century, the design, construction, financing, regulation and marketing of development have become standardized. Planning agencies nationwide impose myriad requirements on new subdivisions: streets wide enough to accommodate vehicles traveling at 65 miles per hour, setbacks that place buildings far from streets, parking lots of a particular size, and so on. One may observe the result everywhere in America: buildings on wide streets surrounded by a sea of asphalt accessible only by car.

Some of the nation's most appealing older communities, such as Annapolis, Md., Pioneer Square in Seattle and North Beach in San Francisco, could never have been built under these rules. Developers who try to break out of the paradigm must navigate a costly obstacle course of permits, variances and other procedural hurdles. Bankers balk at the shortage of "comparables"—a track record of successful projects—so developers often have to put up their personal assets as collateral in what is known in the industry as recourse financing.

The result has been a very limited range of choices in the style and location of new housing—typically, single-family homes in automobile-oriented neighborhoods built on what was once forest or farmland. The prevalence of this pattern is often mistaken as a reflection of consumer preferences, as many commentators wonder why sprawl is so bad if home buyers seem to fuel its expansion. Had these skeptics been around for the sale of Model Ts, they may have also believed that Henry Ford's customers actively preferred that their cars be painted black. The fact is that people have simply not been given much of a choice.

The Vision Thing

The emerging alternatives to sprawl get around these obstacles in different ways. On a broad scale, state and local governments have begun implementing smart-growth plans that preserve open space and redevelop urban areas. Over the past two years, New Jersey has set aside 81,000 acres of farmland and open space; the ultimate goal is one million acres. The effort exemplifies a national trend of purchasing development rights—often referred to as conservation easements—to pay farmers not to convert their land. Property owners remain free to continue working their lands or even to sell their parcels, so long as the land is never developed.

Meanwhile New Jersey has encouraged the renovation of older buildings through a new urban code adopted in 1997. Within a year rehabilitation investment had jumped 83 percent in Jersey City, 60 percent in Newark and 40 percent in Trenton. Maryland passed a similar measure in April of this year. Other regions are also scuttling old urban and architectural codes to spur the construction of new pedestrian-friendly and mixed-use neighborhoods. Examples include the Transit-Oriented Development ordinance in

Public concern about sprawl is fueled by the sheer pace of land development, which, according to the U.S. Department of Agriculture, is roughly double what it was a decade ago.

Why Do Cities Sprawl?

Affluence

Periods of rapid land development coincide with prosperity. Sprawl is an inevitable sign of good times.

Objection: Developers and home buyers do not shoulder the entire cost of sprawl; other taxpayers foot the bill for infrastructure and services.

Government Subsidy

Sprawl is encouraged by government spending, such as federally discounted mortgages, highway construction and subsidies for water, sewer, electricity and other utilities.

Objection: Over the years, public subsidies have been scaled back. Yet sprawl has not diminished.

White Flight

By the 1940s, cities had growing numbers of African-Americans and immigrants. Masses of white Americans left cities to live in the suburbs. The resulting physical segregation by race and class has been reinforced through mortgage-lending discrimination and exclusionary zoning.

Objection: Postwar white flight is well documented, but nowadays race is less of a factor than quality-of-life issues such as traffic and schools.

Population Growth

Birth and immigration rates drive sprawl.

Objection: Sprawl has occurred in every metropolitan area whose population has stagnated or shrunk. Also, a Federal Highway Administration report calculated that population growth accounted for only 13 percent of the increase in driving in recent years.

Technological Change

Sprawl is a consequence of the popularization of the car, the construction of better-quality roads and innovations in assembly-line-style construction.

Objection: Other countries, even with abundant land, underwent the same changes without producing as much sprawl.

Government Shortsightedness

Sprawl is the result of governments' inability to plan for future growth or stick to existing plans.

Objection: Poor execution is less a cause than an effect. Had there been a will, governments would have found a way.

Sacramento County, California; the Rural Village ordinance in Loudoun County, Virginia; and the Traditional Neighborhood Development ordinance in Huntersville, N.C. [see "Between Burb and Burg," by George Musser; SCIENTIFIC AMERICAN, March].

For many municipalities, dismantling the maze of zoning, planning and financing conventions is too gargantuan a task. Their approach is to redirect subsidies for sprawl into more desirable forms of growth. Austin, Tex., for instance, wanted to counteract the decentralization and traffic problems that had started to plague the region but found that the city government's planning and zoning powers were relatively weak. So instead the city established a system of incentives, the "Smart Growth Criteria Matrix." It assesses new projects using a checklist that gives points for proximity to transit, ac-

cess for pedestrians, availability of existing infrastructure, mix of uses, redevelopment of abandoned industrial sites (so-called brownfields) and other attributes.

Projects that accumulate enough points receive benefits, including expedited granting of permits, the waiving of development fees, provision of new infrastructure by the city, and purchase of parkland and streets within projects. To ensure that the subsidies are worth it, the city has set a ceiling for the incentives based on expected property-tax revenues over a five- to 10-year period. Although these incentives may amount to as little as 1 percent of the total cost of a project, they have been large enough to get developers to upgrade their plans significantly [see illustration on pages 86 and 87].

This leveraging of existing subsidies is also beginning to catch on at the state level. In 1997 Maryland approved its Smart Growth and Neighborhood Conservation initiative, which, among other things, establishes "priority funding areas"—older neighborhoods, economically depressed districts, and small towns—that are entitled to receive state assistance for infrastructure and other community improvements. "We told communities that they're still free to build sprawl," Governor Parris N. Glendening said. "We're just not going to subsidize them anymore." In Utah a grassroots effort called Envision Utah has developed a "quality growth" plan, which promotes major investment in public transit.

Many such projects have adopted ideas from Europe. The German Marshall Fund of the United States runs an exchange program to bring American officials to places in Europe that have a longer track record of experimentation in smart growth. Delegations have seen the modern tram system in Strasbourg, France; projects in Munich based on the city's "compact, urban, green" policy; and Copenhagen's Finger Plan for development along transit corridors.

The Quest for New Markets

How can a developer be sure that unconventional projects will make money? Typically, future sales are appraised using crude methods that focus on the aggregate supply and demand for housing—treating homes as generic commodities such as pork bellies, which are all essentially the same, rather than as consumer products such as cars or clothing, which vary according to people's preferences. The standard approach determines how many houses people want, but not what kind of houses. It tends to be ineffective in evaluating the market for new homes in older urban areas, townhouses in walkable neighborhoods, and single-family houses with porches and adjacent alleys.

But some firms are now blending ordinary forecasting measures with demographic analysis and marketing techniques from the retail industry. One pioneer is Zimmerman/Volk Associates (ZVA), a residential market analysis firm whose projects include urban infill and New Urbanist developments. Using data from the Census Bureau, the Internal Revenue Service and household surveys—all geographically indexed down to the neighborhood level—ZVA deduces the housing preferences of different demographic clusters.

The company applied its methodology to an ambitious affordable-housing project in Louisville, Ky., known as Park DuValle [see photograph on page 85]. For decades, Park DuValle represented the worst kind of subsidized housing: barracks-style buildings in a neglected and isolated part of town.

Within a year of the adoption of a new urban code in Jersey City, investment in building renovation had jumped 83 percent.

Improving the Design of Suburbia

Assisted by federal funding, the city set out to redevelop the area. But rather than laying out conventional ranch-style houses, the architects, Urban Design Associates, designed the new site to look like old Louisville, with its rich vernacular of Victorian architecture and Fredrick Law Olmsted parks. An analysis by ZVA projected at least 39 sales—a figure regarded as highly optimistic by the housing authority and local realtors. Park DuValle reached this target within three months.

Park DuValle is part of a broader federal effort, the HOPE VI program, to end the practice of warehousing families in massive housing projects in favor of blending affordable units with market-rate homes in attractive neighborhoods. The Ellen Wilson Homes in southeast Washington, D.C., is another example. Facing the multiple pressures of cost constraints, modern codes, federal guidelines and historic-preservation requirements, the architect, Amy Weinstein, came up with several innovations to streamline construction and mass-produce Victorian details: bricks that could be rotated to show a variety of textured patterns, simple paint-by-numbers diagrams that builders could easily follow, a panelized construction method in which wood was pre-cut, and the use of only five floor plans. The numerous permutations of these features produced a kaleidoscope of building facades at low cost.

The challenges that Park DuValle and the Ellen Wilson Homes initially encountered are not unique to the inner city. In the heart of Silicon Valley, the city of Mountain View faced the problem of what to do with a dead shopping mall. Standard practice would have been to entice a new developer to come in and renovate it. Instead the city took a chance and decided to raze the mall and replace it with a neighborhood. Peter Calthorpe, one of the nation's leading New Urbanist architects, redesigned the site, which is now called "The Crossings." The mix of shops, offices and homes has a fairly high density—12 to 15 single-family homes per acre, compared with three to seven units per acre for a typical development in the area. To make the compact design more appealing, Calthorpe's team applied a number of technologies to maximize natural light and a feeling of spaciousness within each home. One of these is the generous use of light tubes—flexible Mylar-lined tubes that connect skylights with lower-level rooms. Despite their inability to secure conventional financing from banks, the developers managed to sell all the units two to three years ahead of schedule.

Urban Homearama

These projects are examples of successful "infill"—the re-development of decaying properties or construction on vacant lots in mature neighborhoods. As cities rebound, such projects are increasingly common, drawing the real-estate industry into areas they once avoided. Detroit, for instance, went three decades without issuing a single new housing permit. In 1987 a dozen local developers took the unusual step of building two houses each in one of the city's distressed neighborhoods, as part of a Homearama, a common technique for selling homes in new suburban subdivisions. Unit sales in the development (renamed "Victoria Park") were brisk, outpacing their suburban counterparts—the first of several indicators of robust demand for urban housing. Since then, some of the city's most crime-ridden neighborhoods have become some of the region's most desirable properties.

There are ways, however, in which cities are becoming victims of their own success. The decades-old call to reinvest in



Walkable intersection



Car-oriented intersection

WIDE STREETS AND CURVED CORNERS encourage suburban drivers to step on the gas. In traditional and New Urbanist neighborhoods, narrower streets and sharper corners slow the pace—making it easier and safer to walk around.

GARAGES dominate the front of a house in conventional suburbia. In traditional and New Urbanist neighborhoods, garages are off to the side or rear—making the house and sidewalk more inviting.



Snout-house garage

Hidden garage



A New Theory of Urbanism

New Urbanists are best known for redesigning conventional suburban developments as small towns. But their principles are equally important for urban, rural and regional planning

by Andrés Duany

The word “growth” once had positive connotations for Americans: better jobs, better shops, better education, a better quality of life. But mention the word these days, and you are likely to hear fulminations about congested traffic, higher taxes, crowded schools and the paving-over of the landscape. How did it come to pass that a nation proud of three centuries of growth, one whose people built the constellations of beautiful villages, towns and cities across a continent, should have so radically changed its outlook?

The reason is that the urban pattern has shifted. Before World War II, when a green field was lost, a hamlet, village or town was gained. It was an even trade. But today when an open space is built on, a housing subdivision, a shopping center or a business park replaces it. For most Americans, it seems like a losing transaction. Whereas prewar developers were generalists—they set out to build entire villages or urban neighborhoods—today’s developers are specialists. One builds only shopping centers, another office parks, another houses. Traffic engineers design only the roads; environmental analysts worry only

about the open space. An armature of zoning codes minutely describes the details of this process, but no one looks out for the big picture. The result is a collection of monocultures: a disaggregation of the elements of community into specialized areas.

Individually, the decisions that these specialists make are quite plausible, but collectively they lead to a pattern that is dysfunctional. Wide residential streets, for example, seem like a reasonable way to speed emergency vehicles on their way. Yet wide streets are more dangerous for pedestrians, particularly children, and often allow for fewer road interconnections, which may actually make it more difficult for fire trucks to get where they need to go. Whether it is street width, housing density, building placement or landscape layout, no design decision should come in isolation. This is the fundamental insight of the New Urbanists: paying careful attention to how the urban design coheres, drawing on the lessons of prewar developers.

Some have criticized New Urbanism as too suburban; they do not want to live in a modern version of the traditional American small



town. They may also prefer the bustle of city or the quiet of the countryside. But New Urbanism is now general enough to take in a diverse range of human habitats. It has a comprehensive design strategy that works for the full continuum of development, from remote wilderness to dense downtown. The system, known as the transect, now guides many new towns and is in the process of being adopted as code by several counties in the U.S.

The transect is a concept drawn from ecology. It is a geographical cross section through a sequence of environments—for example, from wetland to upland, or tundra to foothill.

urban areas assumed that such investment would benefit lower-income households. But now that urban living is back in fashion, poor families are being pushed out by gentrification. According to the Department of Housing and Urban Development, over the past three years, urban house prices have increased twice as fast as inflation and rents 50 percent faster. Despite the appeal of Park DuValle and the Ellen Wilson Homes, such projects offer fewer subsidized units than the housing blocks they replaced.

To counterbalance this trend, various programs have sought to bring home ownership to a greater number of lower- and moderate-income families. One of the most promising is the Location-Efficient Mortgage (LEM), which rewards home buyers for choosing compact neighborhoods served by public transit. Families living in these areas can often do without a second car, or any car at all. Because the average car costs \$6,200 a year in maintenance, depreciation, insurance and fuel, the savings can be substantial. The LEM lets prospective home buyers apply those savings to finance mortgages that are \$15,000 to \$50,000 more than they would normally qualify for. Already, banks in Seattle, Chicago and California are offering this service, and Fannie Mae (a government-chartered organization that repackages mortgages as investment securities) has

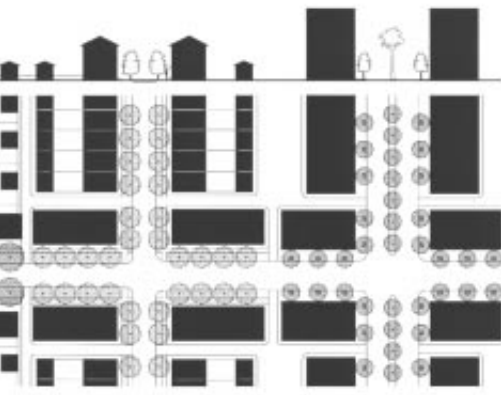
committed to purchasing \$100 million in such mortgages during a test period.

A Trend, or Trendy?

At this point, it is too early to tell whether smart growth is a trend—or simply trendy. But the label is so popular that a confusing array of projects and policies is adopting it. Some, such as more highway construction and large-lot zoning, which is one form of exclusionary zoning, would in fact accelerate sprawl or perpetuate social inequities. And even well-designed projects may worsen sprawl. A recent report by the Sierra Club criticized a new walkable, mixed-use, energy-efficient subdivision, Hidden Springs in Boise, Idaho, for its “good intentions in the middle of nowhere.” Despite the project’s desirable elements, its remote location requires new infrastructure and promotes strip development along the connecting roads.

Despite the learning curve, a remarkable transformation in urban planning has taken place. Even in Atlanta, the nation’s poster child for sprawl, developers, businesses and politicians that once opposed smart growth have come to see it as a matter of survival. The old Atlantic Steel works site in midtown Atlanta is being redeveloped into a transit-

Some of the nation’s most appealing older communities, such as downtown Annapolis, Md., could never have been built under existing planning and zoning rules.



TRANSECT is an idealized geographical slice from the countryside to the city, shown in cross section (top row) and plan view (bottom row). A set of design principles applies to each increment in density.



DUANY PLATER-ZYBERK & CO. (top); MICHAEL MORRISSEY (bottom row)

served by a spare network of roads and on to urbanized sectors of ever greater complexity and continuity. Villages and towns are composed, in varying measures, of these environments. Cities extend the range to an urban core made of buildings, with little if any nature. All sections fulfill the set of human needs and desires. Based on our observations of vibrant communities, we find a commonality among the design principles for each section of the transect. At the boundaries between sections, including that from the natural to the man-made, an overlap of the envisioned characteristics allows them to fit together smoothly.

The transect does not eliminate the standards embodied in present zoning codes. It merely assigns them to the sections of the transect where they belong. Thus, the existing requirements for street width are not deemed to be right or wrong but rather correctly or incorrectly allocated. Wide streets may be appropriate where speed of movement is justified, even at the expense of the pedestrian environment. Similarly, current standards for closed drainage systems are not wrong; it is just that they are appropriate only for urban areas with curbs and sidewalks. In rural areas,

rainwater can infiltrate through deep, green setbacks and swales. In fact, the transect widens the range of design options. Under conventional codes, for example, front setbacks must either be a 25-foot grass yard or a paved parking lot. The transect offers at least six more options.

Not all possible environments fit into the transect. Civic buildings such as religious, educational, governmental and cultural institutions often demand special treatment. Airports, truck depots, mines and factories are also better off in their own zones. But the transect does away with other, unjustified forms of single-use zoning whereby any attempt to unite the places of daily life—the dwellings, shops and workplaces—is considered an aberration that requires variances. In this regard, a transect-based code reverses the current coding system, forcing the specialists to integrate their work. It is a new system that, as Modernist architect Le Corbusier said in a different context, makes the good easy and the bad difficult. And in so doing, it may reconcile the American public to the growth that has become inevitable.

ANDRÉS DUANY is one of the most influential town planners in the U.S. With his wife, Elizabeth Plater-Zyberk, he is a founder of the Congress for the New Urbanism. He says he was introduced to the concept of the transect in 1983 by his brother, Douglas, who showed him a natural transect on the beach at Grayton, Fla.

Less Density	More Density
Primarily Residential	Primarily Commercial
Smaller Buildings	Larger Buildings
Most Buildings Detached	Most Buildings Attached
Deep Setbacks	Shallow Setbacks
Road & Lane Sections	Street & Alley Sections
Paths & Trails	Sidewalks & Passages
Open Swales	Raised Curbs
Mixed Tree Clusters	Single Tree Species

The transect extends the natural environments to the human habitat by increasing density and immersive urban character. The gradient spans from the villa in the woods to the large suburban lots in a common lawn

oriented mixed-use community. One of the region's biggest employers, Bell South, has announced that it would close 75 suburban offices and consolidate them in three new offices located at rail stations. And Georgia governor Roy E. Barnes has created the nation's most powerful regional governing agency, the Georgia Regional Transportation Authority, to manage infrastructure and land use.

In an act of half-full optimism, some local leaders are starting to regard the federal court's moratorium on highway con-

struction as a blessing in disguise, because it has enabled the region to spend federal transportation funds on badly needed improvements in transit, walking, bicycling and traffic-management projects. When the moratorium is finally lifted—a new growth plan is still being developed—the region will have had a long period of reflection and planning to think about its future. When that time comes, Atlanta will once again be in the spotlight. Surely, if smart growth can make it there, it can make it anywhere.

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The Author

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Further Information

TRANSPORTATION AND LAND USE INNOVATIONS: WHEN YOU CAN'T PAVE YOUR WAY OUT OF CONGESTION. Reid Ewing. APA Planners Press, 1997.
 CHANGING PLACES: REBUILDING COMMUNITY IN THE AGE OF SPRAWL. Richard Moe and Carter Wilkie. Henry Holt and Company, 1999.
 ONCE THERE WERE GREENFIELDS: HOW URBAN SPRAWL IS UNDERMINING AMERICA'S ENVIRONMENT, ECONOMY AND SOCIAL FABRIC. F. Kaid Benfield, Donald D. T. Chen and Matthew D. Raimi. Natural Resources Defense Council, 1999.
 PICTURE WINDOWS: HOW THE SUBURBS HAPPENED. Rosalyn Fraad Baxandall and Elizabeth Ewen. Basic Books, 2000.
 SUBURBAN NATION: THE RISE OF SPRAWL AND THE DECLINE OF THE AMERICAN DREAM. Andrés Duany, Elizabeth Plater-Zyberk and Jeff Speck. North Point Press, 2000.
 Further information is also available from www.brookings.edu/es/urban/urban.htm, www.smartgrowthamerica.com and www.sprawlwatch.org on the World Wide Web.