The environmental, economic, and social limits to growth in our metropolitan regions are reaching crisis proportions. *The Next American Metropolis: Ecology, Community, and the American Dream* advocates a fundamental change in our patterns of building. In addition to defining a new direction in planning, this is a how-to book – providing the means as well as the principles for change. The guidelines presented by Peter Calthorpe are not an architectural manifesto or utopian proposal; they describe alternatives currently shaping the debate over growth in communities across the United States. They are comprehensive in scope, simultaneously addressing the housing, traffic, environmental, and social problems inherent in sprawl. *The Next American Metropolis* is a book for architects, engaged citizens, urban planners, environmentalists, and housing activists. It is for people seeking to understand their present conditions and develop a vision of a sustainable future.

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The Next American Metropolis

Ecology, Community, and the American Dream



PETER CALTHORPE

Princeton Architectural Press

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Acknowledgements

A decade ago, I wrote a book with Sim Van der Ryn called *Sustainable Communities*. It was the result of years of research and experimentation into the relationship between design and the environment. The underlying precept for me then, and now, is that environmentally benign places and technologies are fundamentally more humane and richer than those which are demanding and destructive of natural ecosystems. We had worked through the seventies to demonstrate that architecture could prove this point – that naturally ventilated, daylit, and solar heated buildings were both efficient and delightful. We also realized that the structure of our physical community could be seen in the same light. That book was the beginning of an effort to define the form and technologies of communities which could be environmentally benign, economically efficient, and socially robust. It was a first attempt to integrate many disciplines in order to define alternatives for urban, suburban, and new growth conditions.

Although that work defined the environmental and technical basis of sustainable communities, it failed to incorporate the "urbanism" which makes communities socially vibrant and alive. By urbanism I do not mean city-like densities and highrise buildings, I mean the qualities of community design which establish diversity, pedestrian scale, and public identity regardless of location or density. It failed to articulate the form of such an urbanism—the detail of building, street, park, and community center which could become the building block of a more environmental city. My work since that time has been an effort to complete that picture and find the forms which could integrate urbanism and environmentalism.

There have been many who have participated in this search at the theoretical level. First, Mark Mack joined me in an NEA grant to develop the concepts of "Pedestrian Pockets." The concepts evolved over the last six years in design studios at UC Berkeley and through many design "charrettes" sponsored by Doug Kelbaugh, chairman of the Architecture Department at the University of Washington. Doug's efforts have been central to the evolution of the ideas in academia and in practice. One of the design charrettes he organized was summarized in the booklet *The Pedestrian Pocket Book* published in 1990. At the University of California at Berkeley, design studios studying these concepts were run by Lars Lerup, Mark Mack, Sim Van der Ryn, and, most aggressively, Dan Solomon. Dan's work both in studio and in practice has been a great inspiration to me. He, along with Andres Duany, Elizabeth Plater-Zyberk, Anne Tate, Dave Sellers, Jonathon Rose, and Stefanos Polyzoides, have formed a community of common cause which, through sharing ideas and problems, has become an invaluable source of support and camaraderie. Andres' and Lizz' work continues to challenge and inform me while their friendship reinforces a sense of shared goals.

The first translation of these ideas from the theoretical to the real is largely due to Phil Angelides' vision and risk taking. As a major developer in the Sacramento area he decided to redesign one of his largest projects, forgoing the easy path of replication, investing in new ideas, and testing the market for a new type of suburban community. Not only did he and his partners take the risk, but his insight about design, the development process, and the nature of community greatly expanded the then-germinating concepts. The experiment he started is still ongoing at Laguna West.

There have been many others who have chosen to strike out in this new direction, but several are worth noting because they represent models of how change can come about. The Environmental Council of Sacramento, rather than taking the typical environmentalist's tactic of merely reacting to development proposals, took the time to seek out and communicate an alternative. They led by publishing a "white paper" on alternatives to sprawl for the Sacramento region which ultimately resulted in the county incorporating the concepts into their General Plan. Similarly, the planning staff of Sacramento County did not take the easy path when they built that General Plan on the TOD concept, but

they certainly advanced thinking in the profession. San Diego, under the progressive leadership of Mike Stepner, has also advanced the state of the art by developing an unmatched community participation process to bring about new development guidelines in that growing city. Finally, another environmental group, 1000 Friends of Oregon, has recently helped break new ground by sponsoring a major study which not only demonstrates an alternate to sprawl, but quantified the differences and updated the analysis tools needed to adequately judge those differences. Henry Richmond, their founder and director, has been a pioneer in the environmental community with the board and inclusionary thinking he brings to environmental causes.

Along with these pioneering clients there have been many professionals who have participated in each project, advanced the work, and educated all of us. Ken Kay is both a landscape architect and planner who has worked side by side with me on some of our most important efforts. Growing out of extensive private practice and vision, his design skill and empathy for progressive ideas has complemented and enhanced everything we have collaborated on. His work on Laguna West has made the reality of the project better than the concept. Jack Peers is a traffic engineer who over time has come to understand, document, and advocate a new direction in thinking about travel behavior and the design of circulation systems. His insights and conformation have helped overcome the relentless obstructions of many single-minded engineers. Economics are the bottom line for every development, and Jim Musbach has worked time and time again to show how these new patterns can work fiscally and ultimately as better investments than standard sprawl. Finally I must acknowledge David Beers who, through a rare act of advocacy journalism, first published these ideas and thereby catalyzed much of what has come to pass. These individuals, and many others who have collaborated with us over the years, have all helped demonstrate the value and strength of a multi-disciplinary approach to community design.

Foremost I must thank my staff and associates, Shelley Poticha, Phil Erickson, Matt Taecker, Rick Williams, Cleve Brakefield, Joe Scanga, Catherine Chang, Emily Keenan, and Maya Foty. They have in all ways aided and advanced the work with their creativity, diligence, and insight. Shelley Poticha has not only worked to edit and clarify this book but also has written large segments of the Guidelines. Rick Williams was my associate and co-designer for many of the projects shown here. His design expertise spans architecture to planning in a rare and energetic fashion. Phil Erickson shares his role and design talents with an added capacity to manage large and complex projects. Matt Taecker, a recent associate, is another of a new breed of practitioners who understands planning and can also design. They all have been both a source and the realization of the ideals and principles laid forth here.

In addition there are many who have helped directly with this book. Marianne Wyss provided a remarkable combination of graphic design skill and patience in producing a book of constantly changing content. Shelley Poticha, Matt Taecker, and Phil Erickson have been my in-house editors, both critiquing ideas as they emerge through the work and providing first-pass edits of the manuscript. Catherine Chang has had primary responsibility for pulling together all the graphic material throughout the book, a monumental task handled with grace and skill. And I have been fortunate to have had two extraordinary editors, Chris Dresser and Doug Foster, who have helped a designer through the painful process of partially learning to write. Finally, I must thank Jean Driscoll for her sometimes painful but always insightful readings and thoughts.

To Phil Angelides whose combination of idealism and pragmatism helped translate theory into practice. And to my son, Asa, who always reminds me what neighborhoods are for.

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Introduction

This book is about the American Metropolis; by which I mean the sum total of the city, its suburbs, and their natural environment. The three are inseparable and the failure to treat them as a whole is endemic to many of our problems. Our impact on the natural environment is dependent on the type of settlements we form and the technologies which serve them. The way we build suburbs effects the viability and vitality of our city centers. And the quality of our cities effects the cultural underpinnings of the American Dream and therefore the nature and location of the growth we choose. They are each interdependent and connected at the root by our concept of community.

This book is about the ecology of communities. Not about the ecology of natural systems – but about how the ecological principles of diversity, interdependence, scale, and decentralization can play a role in our concept of suburb, city, and region. It is about communities more diverse and integrated in use and population; more walkable and human-scaled; communities which openly acknowledge and formalize the decentralization at work in our times. These principles stand in stark contrast to a world dominated by specialization, segregation, lack of scale, and centralization. The blend and balance of these opposites is at the core of how we choose to shape the man-made environment. I believe a new blend and balance is overdue.

Finally, this book is about who we are, how our patterns of settlement affect our economy and environment, and, most importantly, how things can change. New models for the metropolis and the design of community are at the heart of this work – models derived from personal values and practical experience, models which seek to restore the best of our oldest traditions of town planning and join them to forms appropriate to our new conditions. With these models for community and region come new possibilities for the city, the suburbs, and the environment. Periodically, America reinvents itself, simultaneously rediscovering the best of its past and marrying it to irresistible forces for change. I believe that time is now.

The suburb was the driving force of the post-WWII era, the physical expression of the privatization of life and specialization of place which marks our time. The result of this era is that both the city and suburb are now locked in a mutually negating evolution toward loss of community, human scale, and nature. In practical terms, these patterns of growth have created on one side congestion, pollution, and isolation, and on the other urban disinvestment and economic hardship.

We can easily quantify the physical problems of suburban sprawl. But this leads too easily to the sense that we can engineer a solution. Both symptoms and causes are complex, involving history, habits, and dreams as well as infrastructure and economics. The question of cultural and social determinism in relation to planning has been debated endlessly – to no conclusive result. Unfortunately, it is just as simplistic to claim that the form of communities has no impact on human behavior as it is to claim that we can prescribe behavior by physical design. For example, a recent comparison study of ten-year-olds in a small town in Vermont and a new suburb of Orange County showed that the Vermont kids had three times the mobility (distance and places they could get to on their own) while the Orange County kids watched four times as much TV. Is this physical determinism or a cultural difference? The two come to be inseparable. Certainly the Orange County kids had fewer mobility alternatives given the physical structure of their neighborhoods, but their culture and peer group priorities may also have directed their behavior. Or perhaps the technology, cable TV, played the decisive role.

So it is easy to talk quantitatively about the physical and environmental consequences of continued sprawl, but very difficult to postulate their social implications. Many argue that there is no longer a causal relationship between the structure of our physical environment and human well-being or social health. We are adaptable and our communities are formed around interest groups and work rather than any sense of place or history. Our lives are more abstract, less grounded in

place, and our social forms are now disconnected from home and neighborhood. While some have proposed a rigorous return to traditional city forms and an almost pre-industrial culture as a counterpoint, others have praised this placeless evolution of the suburban megalopolis. They claim it is the inevitable and desirable expression of our new technologies and hyper-individualized culture.

This praise of the status quo is reinforced by the belief that design can't change human behavior. Simply stated, building walkable neighborhoods may not get people out of their cars and building front porches and neighborhood parks may not create more integrated, convivial communities. To this I can only assert that people should be given the choice and that, neither black nor white, the result will probably be mixed – and that is OK. People are not simple and we should not attempt to make them so with cities and suburbs that limit their choices. I believe a diverse and inclusionary environment filled with alternative ways of getting around is inherently better than a world of private enclaves dominated by the car.

Along with this sticky question of physical and social form is the erroneous belief that our community's physical form is the result of free choice, the market's wisdom, and the statistical sum of our collective will. In reality, our patterns of growth are as much a result of public policy and subsidies, outdated regulations, environmental forces, technology, and simple inertia as they are a result of the invisible hand of Adam Smith. These forces are like the postulates from which the formulas of our communities are derived. Change one and a new geometry emerges; change several and a new set of alternatives to the way we live and the places we inhabit becomes possible. As these postulates change with the coming of the next century we must attend to the new geometries that emerge and make sure that they form communities that are equitable, sustainable, and inclusive.

Because the social linkages are complex, the practical must come first: land, energy, and resources should be saved, traffic should be reduced, homes should be more affordable, children and the elderly should have more access, and working people should not be burdened with long commutes. These are quantitative effects that have been demonstrated in many of our older neighborhoods, towns, and cities today – and, I believe, can be updated in new developments to match our current conditions. The social consequences of such changes are less quantitative or deterministic, but perhaps equally compelling. They have to do with the quality of our shared world, aesthetics of place, and the social health of our communities.

My perspective and knowledge in this area is largely gathered from a professional practice which combines architecture, urban design, and land use planning. Therefore it lacks the focus of an academic theory or the rigor of analysis and documentation that a specialist can debate. But the work and concepts are practical – they are used every day by clients, elected officals, technicians, and ultimately the marketplace. To date they have been tested in community planning projects that total over 100,000 acres and range from urban infill to new towns, from comprehensive plans for major cities to individual buildings. The results are only radical in their effort to integrate the elements of community currently isolated in both thought and design process; only radical in their effort to respond to current conditions rather than perpetuate models of the past.

In my work there is no possibility of being a specialist. Every project has a political, economic, ecological, social, technical, aesthetic, and ideological dimension. When designing communities these concerns should be inseparable. But architects, planners, landscape architects, traffic engineers, civil engineers, biologists, developers, environmentalists, bankers, and even neighborhood groups too often seek to optimize only a segment, an issue, or an individual system. This work is an attempt to show that community design must be multi-disciplinary and that combining problems often leads to simple solutions while segregating problems typically leads to frustration.

The model presented in this book may seem at times too specific, technical, or too focused on transit. It is meant to be specific and technical in order to go beyond the pleasing policy statements which fill planning documents but are typically lost in implementation. Its focus on transit is meant to broaden a larger movement – Neo-Traditional Planning and the New Urbanism – which has many dimensions and differing emphasis. These approaches share fundamental principles but set out in slightly different directions. I have tried to focus my work into a tool that can be used for the larger structuring of a region as well as the detailed design of a neighborhood. As such, it modifies the treatment of the neighborhood with the perspective of a regionalism based on conservation and transit, rather than sprawl and the car. With regards to all these proposals, it is important to remember that there is no absolute template and that the specifics of place, economics, and politics will always color and balance the different directions.

This book is part polemic, part tool, part proof by assertion, part manifesto, but mostly, I hope, common sense. Beneath the rationales, facts, examples, and guidelines is a simple ethos. This ethos provides a specific aesthetic of place – scaled to the human body, timed to a stride, patterned to ceremony, and bonded to nature. It is an aesthetic grounded in the notion that space is not an infinite grid, that time is not relentlessly progressive, that pattern is not formally mechanical, and that boundaries are not limits.

This aesthetic of place has four dimensions: scale, pace, pattern, and bounds. Our built environment clearly delineates these dimensions for our culture. The scale of our environment is now set in proportion to large institutions and bureaucracies rather than community and neighborhood. The pace is set by electronic sound bites and the auto rather than human breath and step. The pattern is established by mass production and discontinuous ownership rather than local craft and social continuity. And the bounds are set by wealth and power rather than proportion and nature. Some argue that this is a "brave new world" created from the technologies and economies that express our deepest desires and ambitions. Even if this were true, the problem is that there is simply not enough of it to go around and that it is consuming its own future – if not all futures.

This is not to argue that a personal aesthetic is the foundation of this work. Many forces converge; social impacts, economic sustainability, political implications, and environmental limits all focus toward a fundamental change. Aesthetics in its largest sense is a summation and distillation of these forces. Social integration, economic efficiency, political equity, and environmental sustainability are the imperatives which order my thinking about the form of community. Each of these imperatives has causes and implications beyond the physical form of community, but community form remains a central expression of and reinforcement to the underlying culture.

The foundation of our current aesthetic of place is Modernism. Across political ideology, modernism defines the fundamental nature of our times: segregation, specialization, centralization, and an undying dedication to technology. Implicit is its sense of progress and the ideology of materialism. It is systemic to almost all western cultures, beyond national borders, political structure, or cultural values. Modernism is clearly expressed by the evolution of cities and regions in the twentieth century: the segregation of activities and peoples, the specialization and isolation of professions and the systems they create, the centralization of ever-larger institutions, and the monopoly of certain technologies, most notably the car.

In many fields there has been a movement away from Modernist principles. In architecture and design Post Modern theory began to evolve in the early 1970s. It attempted to relearn from history the traditions in architecture and urban design which preserved human scale and urban identity in community. Unfortunately, it hasn't live up to its potential. Rather than defining a new direction and an alternate set of principles, it merely cast a new veneer over our old Modernist structure. It reinforces the modernist tendency toward specialization: facades by architects, environmental systems by mechanical engineers, site design by civil engineers, open space by landscape architects, and the urban environment by traffic engineers and politicians. The desire to re-establish history, place, and community has been reduced to nostalgic facades and sarcastic historicism at the surface of buildings. Post Modernism has been deflected from a real restructuring of the man-made environment to the architectural equivalent of a marketing gimmick. The Modernist landscape of buildings isolated from the environment and any urban vitality remains unchanged, except in costume.

Against this false dichotomy of Modernism and Post Modernism ecology has come to represent, for me, the real counterpoint. Not the literal ecology which deals with natural systems and seems to stop just short of

the human habitat – but a broader, more philosophic "ecology" which teaches that diversity, interdependence, and whole systems are fundamental to health. It is this perspective and the attempt to translate it into specific form for our buildings and communities which has directed my work. It has been an interesting search, not altogether free of mistakes and always full of the next question.

This book moves from the general to the specific. In the first section the philosophical and practical reasoning behind the work is articulated. It is the description of the way things are, and *why* they must change. The second section, in the form of guidelines, describes *how* they can change. It is both a detailed description of an urban strategy and a design tool which can be used in many circumstances. In this sense I owe a debt to Chris Alexander, who in his *Pattern Language* created a model of design guidelines which both educated and informed while providing a specific tool to be used in the design process.

Finally the section on projects demonstrates the application of the principles and guidelines to a range of projects from regional planning to small infill sites. These projects have been presented primarily in plan rather than with renderings or perspectives. This was done to simplify the reading and cross-referencing of the differing scales, and partly to sidestep the complex business of architectural language. It is the thesis of this work that Urban Design – the public quality of buildings and their interrelationships – must be clarified before an architecture can function. It is my belief that the architecture of these places is not as important as the urban order and the quality of their public spaces. Put simply, buildings can be ordinary if they are part of a beautiful street or square and in fact it may be important for more buildings to be "ordinary." In the American town, architecture is eclectic and of an uneven quality – and I hope it will remain so. This eclecticism can be chaotic if built without a sound urban framework or it can be delightful when placed within a strong system of legible and memorable public places.

From where I sit in San Francisco, a major urban transformation seems imminent. Less than twenty percent of the people living in the Bay Area today can afford a median-priced home. People are moving to the Central Valley and commuting three to four hours a day to find affordable housing. Traffic congestion is always on the rise. Citizens are constantly organizing against more of what they believe are the ill effects of growth but are really just the byproducts of sprawl. We must find regional and neighborhood forms which can honor the needs of our diverse population, while safeguarding the environment.

At its base this book is about the infrastructure of community, rather than isolation. Hopefully it provides the counterpoint to the landscape of specialization and separation that our suburbs have become – a counterpoint which could make the debate and final decision between these directions meaningful. As the ideas presented here have been implemented, they have become less pure, more contextual, and, some claim, compromised. Design becomes "the art of the possible." This, in the end, is what interests me most; the intersection between an ideal and the real world. I believe we need both, utopians and engineers, visions and constraints, liberty and responsibility – a new American Dream and a new American Metropolis.

THE NEXT AMERICAN METROPOLIS

The American Dream is an evolving image and the American Metropolis is its ever-changing reflection. The two feed one another in a complex, interactive cycle. At one point a dream moves us to a new vision of the city and community, at another the reflection of the city transforms that dream with harsh realities or alluring opportunities. We are at a point of transformation once again and the two, city and dream, are changing together. World War II created a distinct model for each: the nuclear family in the suburban landscape. That model and its physical expression is now stressed beyond retention. The family has grown more complex and diverse, while the suburban form has grown more demanding and less accessible. The need for change is blatant, with sprawl reaching its limits, communities fracturing into enclaves, and families seeking more inclusive identities. Clearly we need a new paradigm of development; a new vision of the American Metropolis and a new image for the American Dream.

The old suburban dream is increasingly out of sync with today's culture. Our household makeup has changed dramatically, the work place and work force have been transformed, average family wealth is shrinking, and serious environmental concerns have surfaced. But we continue to build post-World War II suburbs as if families were large and had only one breadwinner, as if the jobs were all downtown, as if land and energy were endless, and as if another lane on the freeway would end traffic congestion.

Over the last twenty years these patterns of growth have become more and more dysfunctional. Finally they have come to produce environments which often frustrate rather than enhance everyday life. Suburban sprawl increases pollution, saps inner-city development, and generates enormous costs – costs which ultimately must be paid by taxpayers, consumers, businesses, and the environment. The problems are not to be solved by limiting the scope, program, or location of development – they must be resolved by rethinking the nature and quality of growth itself, in every context.

This book attempts to map out a new direction for growth in the American Metropolis. It borrows from many traditions and theories: from the romantic environmentalism of Ruskin to the City Beautiful Movement, from the medieval urbanism of Sitte to the Garden Cities of Europe, from streetcar suburbs to the traditional towns of America, and from the theories of Jane Jacobs to those of Leon Krier. It is a work which has evolved from theory to practice in some of our fastest growing cities and regions. It is a search for a paradigm that combines the utopian ideal of an integrated and heterogeneous community with the realities of our time – the imperatives of ecology, affordability, equity, technology, and the relentless force of inertia. The work asserts that our communities must be designed to reestablish and reinforce the public domain, that our districts must be human-scaled, and that our neighborhoods must be diverse in use and population. And finally, that the form and identity of the metropolis must integrate historic context, unique ecologies, and a comprehensive regional structure.

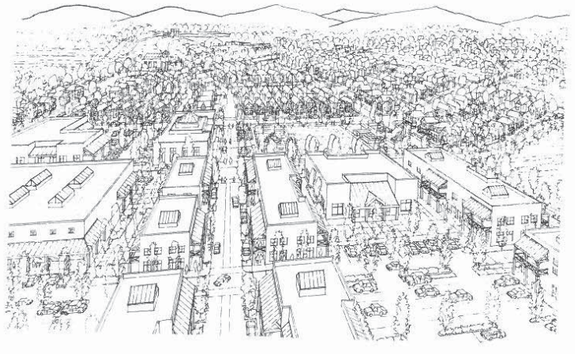
The net result is that we need to start creating neighborhoods rather than subdivisions; urban quarters rather than isolated projects; and diverse communities rather than segregated master plans. Quite simply, we need towns rather than sprawl.

Settlement patterns are the physical foundation of our society and, like our society, they are becoming more and more fractured. Our developments and local zoning laws segregate age groups, income groups, and ethnic groups, as well as family types. Increasingly they isolate people and activities in an inefficient network of congestion and pollution – rather than joining them in diverse and human scaled communities. Our faith in government and the fundamental sense of commonality at the center of any vital democracy is seeping away in suburbs designed more for cars than people, more for market segments than communities. Special interest groups have now replaced citizens in the political landscape, just as gated subdivisions have replaced neighborhoods.

Redefining the American Dream

It is time to redefine the American Dream. We must make it more accessible to our diverse population: singles, the working poor, the elderly, and the pressed middle-class families who can no longer afford the "Ozzie and Harriet" version of the good life. Certain traditional values – diversity, community, frugality, and human scale – should be the foundation of a new direction for both the American Dream and the American Metropolis. These values are not a retreat to nostalgia or imitation, but a recognition that certain qualities of culture and community are timeless. And that these timeless imperatives must be married to the modern condition in new ways.

The alternative to sprawl is simple and timely: neighborhoods of housing, parks, and schools placed within walking distance of shops, civic services, jobs, and transit – a modern version of the traditional town. The convenience of the car and the opportunity to walk or use transit can be blended in an environment with local access for all the daily needs of a diverse community. It is a strategy which could preserve open space, support transit, reduce auto traffic, and create affordable neighborhoods. Applied at a regional scale, a network of such mixed-use neighborhoods could create order in our balkanized metropolis. It could balance inner-city development with suburban investment by organizing growth around an expanding transit system and setting defensible urban limit lines and greenbelts. The increments of growth in each neighborhood would be small, but the aggregate could accommodate regional growth with minimal environmental impacts; less land consumed, less traffic generated, less pollution produced.



Such neighborhoods, called Pedestrian Pockets or Transit-Oriented Developments, ultimately could be more affordable for working families, environmentally responsible, and cost-effective for business and government. But, such a growth strategy will mean fundamentally changing our preconceptions and local regulatory priorities, as well as redesigning the federal programs that shape our cities.

At the core of this alternative, philosophically and practically, is the pedestrian. Pedestrians are the catalyst which makes the essential qualities of communities meaningful. They create the place and the time for casual encounters and the practical integration of diverse places and people. Without the pedestrian, a community's common ground – its parks, sidewalks, squares, and plazas – become useless obstructions to the car. Pedestrians are the lost measure of a community, they set the scale for both center and edge of our neighborhoods. Without the pedestrian, an area's focus can be easily lost. Commerce and civic uses are easily decentralized into distant chain store destinations and government centers. Homes and jobs are isolated in subdivisions and office parks.

Although pedestrians will not displace the car anytime soon, their absence in our thinking and planning is a fundamental source of failure in our new developments. To plan as if there were pedestrians may be a self-fulfilling act; it will give kids some autonomy, the elderly basic access, and others the choice to walk again. To plan as if there were pedestrians will turn suburbs into towns, projects into neighborhoods, and networks into communities.

If we are now to reinvest in America, careful consideration should be given to what kind of America we want to create. Our investments in transit must be supported by land use patterns which put riders and jobs within an easy walk of stations. Our investments in affordable housing should place families in neighborhoods where they can save dollars by using their autos less. Our investments in open space should reinforce regional greenbelts and urban limit lines. Our investments in highways should not unwittingly support sprawl, inner-city disinvestment, or random job decentralization. Our investments in inner-cities and urban businesses ought to be linked by transit to the larger region, not isolated by gridlock. Our planning and zoning codes should help create communities, not sprawl.

Is such a transformation possible? Americans love their cars, they love privacy and independence, and they are evolving ever larger institutions. The goal of community planning for the pedestrian or transit is not to eliminate the car, but to balance it. In the 1970s the national love affair with the car was certainly hot, but we traveled on average 50 percent fewer miles per year than we do now. It *is* possible to accommodate the car and still free pedestrians. Practically, it means narrowing local roads and placing parking to the rear of buildings, not eliminating access for the car. Similarly, the suburban goals of privacy and independence do not have to be abandoned in the interests of developing communities with vital urban centers and neighborly streets. In fact, a walkable neighborhood may produce increased independence for growing segments of the population, the elderly and kids. The scale of our institutions may no longer fit the human scale proportions of an old village, but with careful design they could be integrated into mixed-use communities. Large businesses are quickly becoming aware of the benefits of being part of a neighborhood rather than an office park, with shared amenities and local services topping the list.

This new balance calls for the integration of seemingly opposing forces. Community and privacy, auto and pedestrian, large institution and small business, suburban and urban; these are the poles that must be fused in a new pattern of growth. The design imperatives of creating the post-suburban metropolis are complex and challenging. They are to develop a regional growth strategy which integrates social diversity, environmental protection, and transit; create an architecture that reinforces the public domain without sacrificing the variety and character of individual buildings; advance a planning approach that reestablishes the pedestrian in mixed-use, livable communities; and evolve a design philosophy that is capable of accommodating modern institutions without sacrificing human scale and memorable places.

The Crisis of Place in America

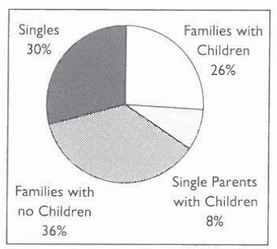
There is a growing sense of frustration and placelessness in our suburban landscape; a homogeneous quality which overlays the unique nature of each place with chain-store architecture, scaleless office parks, and monotonous subdivisions. These qualities are easily blurred by the speed we move and the isolation we feel in our cars and in our dwellings. At its extreme, the new forms seem to have a restless and hollow feel, reinforcing our mobile state and perhaps the instability of our families. Moving at a speed which only allows generic symbols to be recognized, we cannot wonder that the manmade environment seems trite and overstated. Americans moved to the suburbs largely for privacy, mobility, security, and ownership. Increasingly they now have isolation, congestion, rising crime, and overwhelming costs. Meanwhile our city centers have deteriorated as much of their economic vitality has decanted to the suburbs.



A LANDSCAPE OF ISOLATION

At the same time that suburban growth falls short of its promise, its premise is shifting. There is now a striking mismatch between the suburban patterns of settlement that have evolved since World War II and our current "postindustrial" culture. It is at the root of many regional ills: serious environmental stress, intractable traffic congestion, a dearth of affordable housing, loss of irreplaceable open space, and lifestyles which burden working families and isolate the elderly. This mismatch has two primary sources: a fundamental change in the character of our households and a dramatic shift in the nature and location of our workplace.

Our suburbs are designed around a stereotypical household which is no longer predominant. The size of households has been shrinking, from an average of three twenty years ago to two and a half today. The percentage of singles and single-parent families is increasing, from 29 percent twenty years ago to 38 percent today. Of the approximately 17 million new households formed in the 1980s, 51 percent were occupied by single people and unrelated individuals, 22 percent by single-parent families, and only 27 percent by married couples with or without children. People over 65 made up 23 percent of those total new households. Households with children typically now have two workers. Married couples with children now represent only 26 percent of the households, down from 40 percent a generation ago.



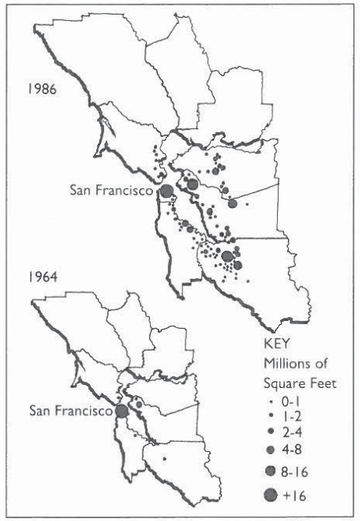
HOUSEHOLD COMPOSITION: 1990

And the economics of the household has changed. Working mothers are becoming the norm with double-income households now representing 54 percent of all families. Women are certainly less available to support a suburban family lifestyle which requires a chauffeur for every child's trip. Add to this the escalating cost of housing and the needs of working women, and the possibility of realizing the old American Dream in existing development patterns becomes increasingly unlikely.

Even these double-income families now find home ownership a troublesome, if not unattainable, goal. With affordable housing growing ever more elusive, families have to move to cheaper but more distant peripheral areas, often consuming irreplaceable agricultural land and overloading roads with long commutes. In 1970 about half of all families could afford a median-priced single-family home; today less than a quarter can.

Beneath the statistics is a more profound change in the structure of family and the role of women in our society. Many have argued that the role of women in the suburbs of the fifties and sixties was oppressive. The model of isolated homemaker, on-call chauffeur, and sole daycare provider may have helped germinate the feminist movement that followed. Whether liberation, necessity, or ambition, the entry of women into the workforce changed the cultural landscape dramatically. And of course it transformed the needs of home, neighborhood, and community. Many now understand that without a full-time caretaker the suburban dream cannot function. "Latch-key kids" and "bedroom communities" describe conditions that no longer fit the needs of our families. We need communities that are occupied full time and that provide a world of opportunity for kids, communities that support women (and men) in their efforts to weave together an ever more complex life of home and work.

The nature and location of the workplace has also changed. As the computer has allowed new jobs to shift from blue-collar to white and gray, employment centers have decentralized into mammoth lowrise office parks on cheap and often remote sites. The shift is dramatic and has far-reaching consequences. From 1973 to 1985 five million blue-collar jobs were lost nationwide, while service fields gained from 82 to 110 million jobs. This translated directly into 1.1 billion square feet of office space constructed in new suburban employment complexes. Nationwide, these complexes have moved outside the central cities with the percentage of total office space in the suburbs shifting from 25 percent in 1970 to 57 percent in 1984.



DISTRIBUTION OF BAY AREA OFFICE SPACE

Traffic congestion in the suburbs is a signal of this deep shift in the structure of our economic culture. The growth of the service industry has led to this decentralization of the workplace, causing new traffic patterns and "suburban gridlock." Where downtown employment once dominated, suburb-to-suburb traffic patterns now produce greater commute distances and driving time. Over 40 percent of all commute trips are now from suburb to suburb. These new patterns have seriously eroded the quality of life in formerly quiet suburban towns. In the San Francisco Bay Area, for example, as in many metropolitan areas around the country, 212 miles of the region's 812 miles of suburban freeway are regularly backed up during rush hours. That figure is projected to double within the next 12 years. As a result, recent polls have traffic continually heading the list as the primary regional problem, followed closely by the difficulty of finding good affordable housing.

Congestion and high housing costs are not the only economic measure of the cost of sprawl. American employers – public and private – face compensation demands that reflect high transportation and housing costs. Worker productivity slides with congestion and long commutes. Raw material and product movement is costly and uncertain. Air quality standards often restrict industrial growth as pollution from cars "uses up" the air shed. Add to these factors the time cost of getting a building permit for expansion or new facilities, and a region's ability to maintain a healthy job base erodes. This is a circumstance not caused just by local citizen opposition to growth, but by the failure of American public policy to set a clear, reliable, and sustainable land use direction.

The problems of suburbia feed back to our city centers. Increas-

ing decay and economic isolation have resulted from forty years of job flight and racial isolation. These problems and their motivations are, of course, complex and well beyond the control of land planning prescriptions. But the impact of federal policies that invest more in suburbs than in cities cannot be overlooked. Beyond the obvious subsidies of highway spending and mortgage tax incentives, the suburbs have benefited from the location of a majority of defense contract jobs over the last twenty years and indirectly benefited from the S&L bailout (to the extent that tax dollars are now paying for the past ten years of booming suburban construction). As long as cheap, clean suburban land is made accessible through unrestrained zoning practices and federal highway dollars, the inner city will continue to suffer from disinvestment.

There is a vicious cycle at work in our inner cities. The more development and tax base decants to the suburbs, the less attractive the inner city becomes to investors, business or homeowners. In the Washington DC metropolitian region for example, it has been estimated that 210 million square feet of new commercial and residential development are needed to pay off the existing municipal bonds, including the $10 billion METRO transit system. Although there is space for three quarters of this development around existing suburban transit stations and within the city, little of it is locating there. The tax revenues that would have come with development are leaking away. Because development and tax base is escaping, pressing urban problems, such as housing, crime, and AIDS are underfunded, leading to an urban environment unattractive to investment of any type. The inner city will not get the development investment or tax dollars its urban citizens need partly because the region is allowed to sprawl. Two complementary strategies are needed. A tough regional plan which limits sprawl and channels development back to the city or around suburban transit stations; and a matching greenbelt strategy to preserve open space at the edge of the region. We cannot revitalize inner cities without changing the patterns of growth at the periphery of metropolitan regions; it is a simple matter of the finite distribution of resources.

The working poor of our cities are at a double disadvantage. They cannot afford to move to the suburbs, and in many cases, they cannot even afford to commute there. The high cost of housing in large-lot, apartment-short suburbia is an economic wall for the working poor, as it is increasingly for the children of suburbanites. In addition, the inadequacy of public bus or rail transportation to suburbia reduces access for the working poor to the decentralized but growing suburban job centers. With an increasing proportion of urban disposable income going to pay for housing, few can afford an extra car to get to a suburban job. In Central Los Angeles an average 71 percent of household income goes to pay for housing. In the central areas of Portland, Oregon, due to a mix of economic constraints and personal preference, 40 percent of households do not own a car.

In contrast, the typical suburban home now has 2.3 cars and generates 12 auto trips per day. The increasingly lower density development patterns that generate those trips have pushed up vehicle miles traveled (VMT) three times faster than population growth for four decades. Our nation's sprawl-generated transportation "system" burns up 69 percent of the nation's oil, half of which is now imported.

Our urban-suburban split has created on one side disinvestment and economic hardship, on the other congestion and pollution. The crisis of place in America affects everyone in that it fails to fulfill the real needs of so many. But in defining an alternate we must clearly distinguish the physical problems and solutions from the social and cultural.

The Traditional American Town

What are the alternatives? Just as we cannot sustain the crisis of place represented by sprawl, we cannot return wholesale to the form and scale of the pre-WWII American town. We cannot simply return to a time in were people walked, the shopkeepers lived upstairs, and neighbors were all on first-name basis. For one thing, the auto, modern suburbia's form giver, will not retreat even if constrained and balanced by land use alternatives. The extended family and mom and-pop-shops will not return regardless of design controls or clever planning. And unfortunately, the varied craftsman-like architecture built in small increments is largely a thing of the past. But more finely integrated, walkable communities with a strong local identity and convivial public places are possible. The forms of these places will and should vary in time and place, but certain design principles will emerge as both timeless and contemporary. Timeless in the sense that human needs and human scale do not change with the advent of each new technology and that certain traditions express fundamental characteristics of place and culture which should be preserved. The traditional American town still demonstrates many of these principles; principles which can be adapted to the contemporary situation.



AFFORDABLE BUNGALOWS AT LAGUNA WEST

The traditional American town had walkable streets. Streets that led to close and useful destinations rather than – like our modern collectors and high traffic arterials – only to other streets. Elm Street led to Main Street, or to the neighborhood park, or daycare or an elementary school. Such a street pattern is actually cheaper to build and results in shorter trip distances even if people don't walk. The streets were narrow, with sidewalks, and tree-lined. They were fronted by porches, balconies, and entries rather than garage doors and driveways. They allowed through traffic but slowed it with frequent intersections and frugal dimensions. There were no collector streets, complete with soundwalls, and cul-de-sacs. Privacy was maintained through layers of space rather than barriers. Security was provided by eyes on the street rather than gates and patrols. Today, such streets would be practical, not merely nostalgic; practical for single parents in need of some mobility for their kids; for the elderly without a car; for the single person looking for accessibility; and for the working family looking for a stronger community.

The traditional American town had diversity of use and users. So does the modern suburb, but in a different, highly segregated form. It is true that the classic town distinctly separated many uses: residential neighborhoods, commercial areas, school sites, and civic centers. But the connections between uses were internal and walkable, close and direct. And the population was diverse in age, income, and family size. These groups may have been physically separated in the traditional American town, but the connections were accessible and they all shared an identifiable commercial center and civic focus.

The center of the traditional town integrated commercial, recreational, and civic life. It was what made a town a town. Main Street was a strollable connector between these pieces. The same integration is possible today, although not common. We have zoned each use into isolated and unrelated sites; a civic "center" complex often away from the historic town center, shopping "centers" at arterial crossroads, and parks on cheap and remote parcels. Bringing these pieces back together can do more than create identity and focus for a community, it can acually enhance the function of each use.



Imagine a village green with daycare, recreation, and a town hall surrounded by homes and fronted on one side by a retail center. The retail center would be directly accessible from the neighborhood and an arterial roadway. This area would contain libraries, post office, and professional offices as well as a transit station. The commercial center would clearly benefit from increased patronage created by civic and recreation users, along with transit activity and local residents. The civic buildings would be more accessible if located at such a hub of activity and within walking distance of residential areas. And the park and recreational facilities could be used by shoppers, on-site workers, transit riders, and of course neighborhood kids. The form of such a mixed-use center may not literally mimic the Main Street of our traditional town, but new configurations are possible which incorporate the functional needs of our modern institutions and businesses while respecting pedestrian space.

Some of the characteristics of the traditional town – its fine grain and scale – cannot be adapted. We now have larger institutions which resist decentralization. Retail markets are growing larger, with the typical supermarket pushing 60,000 sq-ft and discount stores reaching 120,000 sq-ft. Small shops remain but the underlying trend is toward the convenience of "one stop shopping" or the scale of price discount. These "anchors," the ever-larger distribution facilities, will resist a Main Street configuration, demanding the market area and visibility of a major arterial. So hybrid town centers should combine the intimacy of Main Street with the accessibility of strip centers. From the neighborhood side, the commercial center must be pedestrian-friendly, from the arterial it must be auto convenient.

The scale – of development entities, builders, and land assembly – has also expanded dramatically in the last 30 years. Towns no longer grow by individual buildings or even small groups, but by production units of approximately 150 houses or by retail centers often of 160,000 sq-ft. Apartments are rarely developed at under one hundred units because of management economics. Land developers now typically seek permits for over 100 acres (the size of a classic town center) with one master plan. Rather than the architectural diversity of incremental growth, we have large blocks of development with formula configurations dictated by the past successes of each developer and by conservative financing criteria. These sizable developments deserve innovative design if they are to avoid the "theme" quality of isolated subdivisions, shopping centers, and office parks. The new Amercian city requires a new architecture capable of integrating these contemporary pieces into a larger community without nostalgically imitating the scale and diversity of older towns. Simultaneously the architecture should avoid the sterility and highway scale of the modern suburbs. The scale of modern development cannot be ignored, concealed, or denied. But it can be responsive to and contribute to a larger civic order.

There is a fine but important difference between tradition and nostalgia. Traditions are rooted in timeless impulses while being constantly modified by circumstance. Tradition evolves with time and place while holding strong to certain formal, cultural, and personal principles. Nostalgia seeks the security of past forms without the inherent principles. The current interest in the traditional American town can tilt to profound and meaningful principles or merely color suburbia with an old-time style. The difference is in the quality and skill of adaptation.

Our Fractured Commons and the Loss of Public Space

Today the public world is shrunken and fractured. Parks, schools, libraries, post offices, town halls, and civic centers are dispersed, underutilized, and underfunded. Yet these civic elements determine the quality of our shared world and express the value we assign to community. The traditional Commons, which once centered our communities with convivial gathering and meeting places, is increasingly displaced by an exaggerated private domain: shopping malls, private clubs, and gated communities. Our basic public space, the street, is given over to the car and its accommodation, while our private world becomes more and more isolated behind garage doors and walled compounds. Our public space lacks identity and is largely anonymous, while our private space strains toward a narcissistic autonomy. Our communities are zoned black and white, private or public, my space or nobody's.

We must return meaning and stature to the physical expression of our public life. From streets and parks to plazas, village squares, and commercial centers, the Commons defines the meeting ground of a neighborhood and its local identity. Rather than isolated and residual spaces, the Commons should be brought back to the center of our communities and re-integrated into our daily commercial life. Public spaces should provide the fundamental order of our communities and set the limits to our private domain. Our public buildings should be proudly located to add quality, identity, and focus to the fabric of our everyday world.



TOWN HALL, LAGUNA WEST

An important dimension of the Commons was traditionally the marketplace. Ironic that the greatest consumer society in history would evolve a myopic and almost grotesque retail form. Retail centers are now a precise order of types, marketed with misnomers: convenience center, neighborhood center, community center, regional mall, and power center. Each targets a specialized market segment and comes complete with a generic template. The guiding principles of retail are value and convenience. Value leads to ever larger and more

remote distribution centers. Convenience has come to simply mean larger parking lots. Human scale and neighborhood focus have been exchanged for auto access and national distribution. Shopping, even at its most incidental scale, is removed from neighborhood and town, removed from the social dimension it used to play in defining a community. Two traditional aspects of commerce have been lost; shopping as an integral part of a community's center and the unique quality of local products and services.

Is the traditional marketplace merely nostalgic and inefficient, or an option currently untested on a population secretly seeking local quality over chain store homogenization? Marketing and advertising has come to displace quality in products much as signage now substitutes for memorable places. Sadly, the way retail developments are financed is a large part of the problem; only chain store operators seem secure investments – local products and shop owners are hard to "package" in large loans. But in the context of mixed-use communities rather than highway strips, human-scaled and local commerce may find fertile ground. There may be a new balance between the realities of the current marketplace and the needs of pedestrians and communities for an indigenous center, rather than a universal formula.

Parks and open space are another essential ingredient of the Commons. At every scale, parks should establish the social increment of place: whether neighborhood, town, or region. Neighborhood parks have become larger and more remote in part to reduce maintenance costs. But for this small economy the intimate identity of individual neighborhoods is lost. The small park for toddlers, younger children and their parents was once an essential meeting ground as well as a convenience which liberated some kids from being chauffeured to more distant play areas.

On the scale of the town, the village green is rarely considered or used in our modern suburb. This essential piece of the Commons once gave identity to the larger community and acted as the physical glue between residential neighborhoods, commercial center, and civic services. Finally, a network of regional parks and riparian greenways should be a basic element of each metropolitan area. These large scale open spaces, along with the street and transit system, can form the region's connecting network and play a large role in defining the image of place. At each scale identity and connection can be established through what is shared.

The architecture of individual buildings should signal their place in relation to the Commons. Major civic institutions should stand forward as monuments to the community and be assigned special locations. Private and secondary buildings can learn once again the art of humility; they should stand back and reinforce the commons. They must be seen as the "walls" of our outdoor public rooms rather than as isolated, self-referential pieces of sculpture. In a way architects should relearn the art of designing "ordinary" buildings, backdrops to the foreground of public space and civic institution. This relationship of ordinary buildings to public space needs to be reestablished if a basic legibility for the commons is to be achieved.



VILLAGE GREEN

Ecology and Community

Communities historically were embedded in nature – it helped set both the unique identity of each place and the physical limits of the community. Local climate, plants, vistas, harbors, and ridgelands once defined the special qualities of every memorable place. Now, smog, pavement, toxic soil, receding ecologies, and polluted water contribute to the destruction of neighborhood and home in the largest sense. We threaten nature and nature threatens us in return: sunlight causes cancer, air threatens our lungs, rain burns the trees, streams are polluted and poisonous, and soil is too often toxic. Understanding the qualities of nature in each place, expressing it in the design of communities, integrating it within our towns, and respecting its balance are essential ingredients of making the human place sustainable and spiritually nourishing.

The design and technology of our communities determines the basic impact we will have on the natural environment. Each system has its impact. Storm drains and parking lots divert water from the land and concentrate the outflow of pollution. Cars turn each outing into more air pollution, congestion, and pavement. Flood control projects sanitize and destroy the complex ecosystems of our riparian zones. Artifical landscapes displace indigenous species with water-demanding imported plant life. Our architecture ignores the benefits of climate-responsive design and consumes more energy than needed. And we allow the constant erosion of agricultural lands and open space at the metropolitan edge. Each of these elements of modern American life, whether by design or the unanticipated effect of our technology, adds to the environmental crisis of growth.

The treatment of water in our communities is a good example of environmental opportunities lost. Rather than using natural water flows and local plants that match the climate, we divert drainage into treatment facilities and select plant species which require imported water. Communities which use their streams and indigenous plants are far more environmentally benign than those which line their waterways with concrete, sealing out the natural world in an all too literal way. They lose the unique quality of place and gain an artificial landscape that could be anywhere. And in the process they pollute and wastewater.

Nature should provide the order and underlying structure of the metropolis. Ridgelands, bays, rivers, ocean, agriculture, and mountains form the inherent boundaries of our regions. They set the natural edge and can become the internal connectors, the larger common ground of place. They should provide the identity and character that unifies the multiplicity of neighborhoods, communities, towns, and cities which now make up our metropolitan regions. Preservation and care for a region's natural ecologies is the fundamental prerequisite of a sustainable and humane urbanism.

Many overlapping types of open space and natural systems shape the metropolis: parks, waterways and flood plains, ridge lands and bays, prime agriculture lands and special habitats. Each operates at a different scale, some defining the larger context of the region, some focusing the identity of a small neighborhood. The effort to create more compact, walkable communities must be comple-

mented with three orders of open space: those that define the edge and limits of the region, those that form a large-scale connecting network within the region, and those that provide identity and recreation within a neighborhood. Each should respect the pre-existing ecology and climate, and each can be a primary form-giver to the region, community, or neighborhood.

At the regional scale, the man-made environment should fit into and along larger natural systems. Urban limit lines or growth boundaries should be set to preserve major natural resources at the edge of the metropolis. This line should be large enough to accommodate growth for the next generation but small enough to encourage infill, redevelopment, and density at the core. Within this regional boundary major natural features and streams should form an internal structure of park-like linkages, trails, and bikeways throughout the metropolis. Such open space elements should link and limit individual communities. In these areas the natural systems should be preserved and repaired.

At the scale of the neighborhood, parks and open space should stop occupying residual space or "buffer" zones between segregated uses. They should be used as formative elements, providing the focus and order of the neighborhood. Neighborhood parks could be smaller and more accessible, and have a strong civic character. Every child should be able to walk safely to a neighborhood park, a park that need not be "naturalist" but should be of the place, socially and ecologically. Such parks can become the foundation of a memorable and unique public domain for each neighborhood, community, or town.

There should be nature within our buildings as well as within our communities. This not as simplistic as adding plants and fountains, but a complex imperative to make buildings more climate-responsive. The unique qualities of climate can help define an architecture which is appropriate and frugal in the largest sense. Natural lighting in commercial buildings is a good example. We can save energy and provide more beautiful spaces simply by understanding and using natural light. Rather than reflective glass walls and fluorescent ceilings, clear windows with shades and high ceilings make rooms that can use, instead of reject, natural light. At the same time such buildings make a street edge free of reflected glare and scaleless features. Similarly, natural ventilation and solar heating can animate buildings in ways lost by the sealed boxes of modern architecture. Even simple conservation measures and insulation practices add to a sense of investment and durability in buildings.



CLIMATE-RESPONSIVE COURTYARD,
BATESON STATE OFFICE BUILDING
SACRAMENTO, CALIFORNIA

Finally, nature is an essential experience of childhood. When we make neighborhoods and towns without nature we destroy the places of fantasy and autonomy that kids need. Leftover land, small and large parks, preserved river banks, open shorelines, and meadow ridges – these are places that become the refuge of the young. The man-made environment is dominated by adults but the natural world, however small, should be a fundamental right of childhood. Kids need enough wilderness to make their own places, and live their own fantasies.

The Technology of Mobility

Rather than being guided, as it should be, by natural systems or human needs, the quality and placement of growth in our regions is largely dependent on the car. The car is now the defining technology of our built environment. It sets the form of our cities and town, dictating the scale of streets, the relationship between buildings, the need for vast parking areas, and the speed at which we experience our environment. Somewhere along the continuum from convenience to congestion, the auto dominates what were once diverse streets shared by pedestrians, bikers, shoppers, trolleys, and cars. And more importantly, the auto allows the ultimate segregation of our culture: land uses which separate old from young, home from job and store, rich from poor, and owner from renter. The auto has come to dominate the public realm, extending the private world from garage door to parking lot.

What does the car "want," or for that matter what does a pedestrian or transit system need? The car in all cases wants to go fast. Its speed has many implications on the built environment: pressing for a street system with few intersections and many lanes; for streets with wide lanes and soft sweeping turns; for more freeways and ever-larger parking areas. These criteria result in the curvaceous superblock arterial system, freeway networks, and parking lot landscape so common today. The car wants lots of pavement and the low-density development that preserves plenty of space for more and more asphalt. The car also apparently wants to travel more; between 1969 and 1990 the national population grew by 21 percent while the total vehicle miles traveled in cars increased 82 percent.

But the requirements of a humane and efficient transit system are quite different. It simply requires riders. This in turn calls for higher-density land uses (housing at 10 units per acre min.), dedicated rights-of-way (for easy movement), infrequent station stops (one-mile minimums), frequent headways (no more than 15-minute intervals) and big mixed-use job destinations (like city cores). Most importantly, its destinations need to be varied and walkable so that riders are not stranded when they arrive. Some transit systems have modest requirements, wanting only to serve the poor and carless on an infrequent basis with slow speeds – the "safety net" for those unable to use or afford a car. Other systems are very ambitious, looking for urban densities, high speeds, and uninterrupted underground passageways.



The needs of the pedestrian overlap and in some cases contradict these other systemic constraints. Pedestrians want close destinations: shops, schools, services, or recreation. They need direct links to these destinations free of cul-de-sacs, parking lots, or massive intersections. They want safe, interesting, and comfortable streets to walk on and human scale in the buildings which line it. Simply put, they want narrow streets lined with entries and porches leading to local shops, schools, and parks – not curving streets lined by garage doors leading to six-lane arterials. Pedestrians also like transit to extend their range of destina-

tions. These needs can be satisfied in both high-density urban centers and small mixed use towns, but not in sprawling, unplanned suburbs. The issue is not one of the density of a community but the quality.

Each of these modes of travel places differing demands on the environment and architecture. Clearly, the car places the greatest stress on the environment while "liberating" architecture from the limits of urban context and human scale. At the speed of the auto, little more than isolated signature buildings can be read. Transit calls for an architecture more dense, integrated, and urban than our current planning models require. And the pedestrian wants an architecture oriented to the sidewalk, that creates continuity along with diversity, and that has human scale and detail.

Various environments satisfy different combinations of these contradictory requirements. The European city, for example, works for both the pedestrian and transit, but has great difficulty accommodating the car (hence the many efforts throughout Europe to ban the car in old city cores). The traditional American town provided for both pedestrians and cars (back when there was only one car per house), but rarely offered the density or focus needed for transit. The modern American city, violated by urban renewal, suburban flight, parking structures, and freeway interventions, seems to fully satisfy neither car, transit, nor pedestrian. The modern suburb pleases only the car, leaving both transit systems and the pedestrian frustrated and unsatisfied.

Given the social, economic, and environmental forces of our time, some new synthesis of these three structural demands is needed. The challenge is to introduce the needs of the pedestrian and transit into the auto-dominated regions of our metropolitan areas, and to do so without a fanciful attempt to create faux towns, insert unrealistic densities, or place an unattainable percentage of regional growth in urban centers. Our urban centers will grow strong if their suburban areas deliver transit riders to the downtown – and if their infill development favors the pedestrian.

To accomplish such a re-balancing, the metropolitan circulation framework should be layered, providing an arterial grid for through auto traffic, neighborhood streets for pedestrians and slow cars, a transit system reinforced by intensified stations, and a pedestrian-dominated urban center. Pockets of mixed-use development with moderate densities and streets designed for both pedestrians and cars would support transit, even in the suburbs. A network of such developments would focus the now sprawling suburban environment, draw traffic from overloaded arterials and freeways, and balance the housing and job opportunities throughout the region.

Affordable Communities and Affordable Housing

The environmental and economic limits of our current pattern of growth are apparent on many levels. The true costs of air pollution, squandered energy, overtaxed resources, and lost open space may be delayed but never fully avoided. The high cost of wasteful energy uses, to mention one of the most serious, runs through our economy and foreign policy. But even leaving aside the long-term environmental impacts of sprawl, the economics of our current development patterns cannot be sustained. The soaring costs of services, infrastructure, road improvements, land, and housing all raise questions about the viability of a land use pattern which has become dysfunctional. The costs of sprawl cannot be met by the average new home buyer, by local governments, or by the environment.

In addition to the public and environmental costs of our auto-dependent communities are high individual, household and personal costs. In the average American household 20 percent of the total budget is spent on transportation. This average does not include, of course, the increasing burden of time lost to commute distances and congestion. The bill helps to bankrupt homebuyers when the price of road maintenance, improvements, and construction, as well as costs

for auto storage, are added through development fees to the cost of new housing. Finally, deferred environmental impacts (air quality, lost agricultural lands, habitat, and open space) are just beginning, through minimal government regulation, to filter into the consumer's checkbook. Such government regulations, which adds the costs of environmental impacts now unexpressed in the marketplace, are seen as creating undue burdens to business and consumer. But the resolution to these long-term environmental costs may not have to be increased current costs; it may simply involve a change to more efficient and benign ways of doing things. But, such adjustments are unlikely as long as the true costs remain hidden.

Patterns of development should be judged by life-cycle cost analysis, not just first costs. Life-cycle analysis not only values the present expenditures of a system, building, or institution, but factors in its long term maintenance, resource supply, replacement expense, and clean up and demolition cost. When these currently "external" expenses are included many current investments, such as nuclear power, make little sense. Conversely, many items not economically feasible in a short payback period become quite competitive in a longer time frame once environmental, energy, and maintenance costs are calculated. Street trees, for example, are considered too expensive for many entry-level subdivisions in the newer parts of Sacramento. In the long term these trees can save significantly in air conditioning bills. The older tree-shaded parts of town are typically ten degrees cooler in the summer than the new treeless suburbs. Although the private marketplace often cannot make such long-term and inclusive judgments, the public sector must begin to demand this broader perspective in setting its criteria for long-term infrastructure investments. Land use patterns, transit systems, solid-waste technologies, water treatment, and even recreation and schools should be seen in this light.



An ecological urban pattern will be economically sound, and a truly economic metropolitan structure will be ecological. Communities in which families are close to shops, jobs, and services will provide a more affordable lifestyle and therefore a more competitive local economy. Such communities will also decrease costs for local governments, and reduce impacts on the environment. A recent study by Rutgers University comparing compact development to sprawl found that $1.38 billion could be saved in roads, infrastructure, and school construction in New Jersey over the next twenty years. It also found that auto use and air pollution would be significantly reduced and 30,000 acres of farmland would be saved.

All over the country, jobs and businesses migrate to regions with affordable housing, functioning transportation systems, and fiscally sound governmental services. In California, the Central Valley is benefiting from a mass influx from the expensive and congested coastal cities. The challenge for this and similar areas is to prevent a repetition of what occurred in Los Angeles and the Bay Area. As in the New Jersey study, a more compact, mixed-use urban form is critical to the dynamic of ecology and economy.

The need for affordable housing illustrates the desirability of integrated solutions. Strategies for creating affordable housing often run toward subsidies, density bonuses, special financing, and lower construction quality. But subsidies are scarce, multi-family density is an anathema to many neighborhoods, creative financing a rarity in the post-S&L debacle, and construction quality is already cut to the bone. Solutions can no longer come only from the mindset of cutbacks and subsidies. A broader picture of how we form communities and how we see the home itself is central to rethinking this relentless problem.

Affordable housing must start with affordable neighborhoods. Imagine a neighborhood in which transit was within three blocks and ran conveniently every ten minutes. One could stop on a short walk at a daycare center, shops, bank, health club, or video shop. Imagine that the streets were treelined, free of backyard soundwalls, and speeding cars – a neighborhood in which some trips could be made conveniently on foot, transit, or bike. Think of a neighborhood in which a three-car home could be a two-car family, or a two-car home

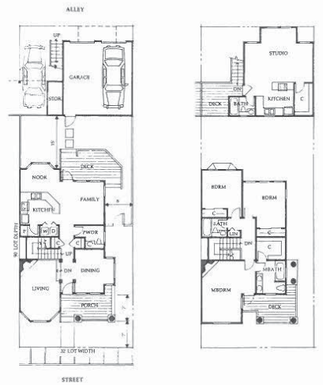
might choose to have only one. Imagine a place in which the average auto miles per household could be 15,000 rather than the average of new suburbs – 30,000 miles per year. A neighborhood in which the money spent on those miles and that car could be used instead for mortgage or rent. And the time spent in the car could be traded for time in the community, with the family, or reading on the train.

Such an walkable neighborhood could support a different type of affordable housing. Take the standard 65' by 100' lot typical in many suburbs and cut it in half, and add an alley and an in-law unit over the garage in the rear. The cost of half a lot will not necessarily be half-price. Finished-lot pricing is part land, streets, and utilities (which is proportional to size) and part services (which is proportional to the number of units). But the lot price per home will be considerably less than full price. The density will be higher – good for transit and local stores – but it will still be a single-family neighborhood – providing the privacy and ownership desired by many. The in-law unit may be used for a relative, a guest, a home office, or a grown child, or it may be used to generate income. In all cases the neighborhood becomes more diverse, more complex, and perhaps more interesting.

The economics of combining these elements – reduced auto costs, small lots, and rental unit income – is instructive. The Sacramento Region represents a good example of the economic conditions in an average mid-sized American metropolis. It has a current population of 1.5 million which is expected to increase by fifty percent in the next twenty years. The cost of owning and operating the average car in the Sacramento area is about $5,000 per year ($415 per month). The cost for an average suburban lot is $60,000. Assume the half-lot is priced at $40,000, a savings of $20,000, and that an in-law unit is affordable housing for a single person and brings in $300 per month after tax and costs an additional $15,000 in purchase price. Such a home on a small lot with an in-law unit – in a walkable transit-served neighborhood – sells for $140,000. The mortgage for such a home would be close to $1000. Given the rental income and potential savings on auto ownership or usage, $700 of the monthly mortgage would be covered. We simply turn the people who cannot afford a home into landlords who walk more and the affordable ownership housing problem disappears for those with a down payment. Simultaneously we could create affordable rental housing for singles which is integrated within a diverse, mixed-use community.

Is such a community possible? Typically not. Zoning regulations and the general plans for most cities wouldn't allow the mixed use or the small walkable streets. And they often zone only for single-family or multi-family densities, with nothing as complex as the small-lot home with in-law unit allowed. And finally (since we spend less on mass transit in this country than on advertising cars each year) we don't have transit service convenient enough to justify the savings in auto use, even if we had walkable neighborhoods.





BUNGALOW WITH ANCILLARY UNIT

The simplicity of this type of affordable housing is largely unfeasible because of public sector policies rather than economic limits. We choose to subsidize highways rather than transit, we choose to zone mixed-use neighborhoods out of existence, and we choose to standardize and isolate housing types into two large categories: low-density unaffordable or high-density undesirable. Changing these policies will not only begin to resolve some dimensions of the housing question, but can also break the logjam of traffic congestion, deteriorating air quality, and loss of open space. These are simple solutions for complex interconnected problems.

A Taxonomy of Growth

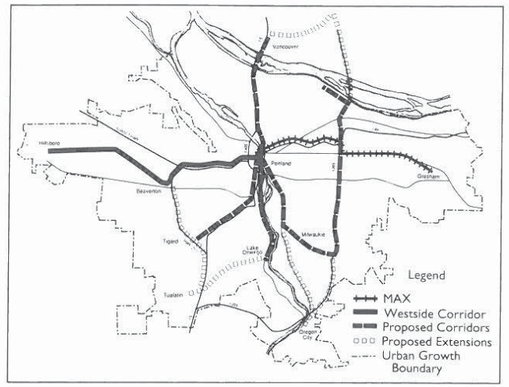
People argue heatedly about growth: where, how much, what type, what density, and if it is really necessary at all. Sprawl is bad, infill is good (if it is not in our neighborhood), new towns destroy open space, master planned communities are sterile, and urban redevelopment is fine for "other people." A region with a high growth demand has several fundamental growth choices: try to limit overall growth; let the towns and suburbs surrounding the metropolitan center grow until they become a continuous mass; attempt to accommodate growth in redevelopment and infill locations; or plan new towns and new growth areas within reasonable transit proximity of the city center. While each strategy has inherent advantages and problems, every region will have to find an appropriate mix of these very different forms of growth.

Limiting growth on a local level without regional controls often spreads development into remote areas more receptive to piecemeal projects. This increases commuting distances and creates our well known hopscotch land use patterns. Sometimes called "Managed" or "Slow" growth, this strategy is often used by a jurisdiction seeking to avoid its fair share of affordable housing or the expansion of transit in its area. Unless there is a strategy for limiting growth at a regional level, local attempts will only extend and displace the problem.

At the other extreme, allowing the uncontrolled growth of existing suburbs and towns is our most common growth strategy. It has the most common results: sprawl, traffic, and a loss of the identity for what may have been distinct neighborhoods, villages, and towns. And it is an approach which seems inevitably to lead to powerful citizens' no-growth movements, growth limitations, and the regional sprawl cited above.

Infill and redevelopment should always be a central part of a region's growth policy. It represents the best utilization of our existing infrastructure and the best opportunity to preserve open space. But to expect infill sites to absorb most new development is often unrealistic, in some cases because there are too few sites to accommodate the demand, and in others because no-growth neighborhood groups inhibit development of infill sites. Once again, without a regional political force to balance the larger economic and environmental needs against the anti-infill tendency of individual communities, there is little hope infill will reach its potential.

There are two general types of infill sites, urban and suburban, and associated with each are special concerns and constraints. Over the last thirty years, urban infill and redevelopment has been a frustrated, but prime, objective for most cities. There have been some successes but many failures. The list of problems is long: racial tensions, economic stagnation, gentrification, ossifying bureaucracy, cheap suburban alternatives, deteriorating schools, and red-line appraisals, to name a few. There are many strategies for resolving or reducing the magnitude of these constraints, and they all need to brought to bear in any future urban infill efforts. But it is clear these strategies are falling short and that additional means to advance urban infill are needed.



PORTLAND REGIONAL LIGHT RAIL SYSTEM

Portland is an example of a city and region which has gone beyond the traditional programs for infill and urban revitalization. It has successfully supported urban infill in two progressive ways: an Urban Growth Boundary (UGB) and zoning that supports a transit system focused on the central city. The UGB is a state-mandated limit to growth around the metropolitian region which was established in 1972. Both strategies are central to the thesis of this book – that a regional system of open space and transit complemented with development patterns which are pedestrian-friendly can help to revitalized an urban center at the same time they order suburban growth. Downtown Portland, because of its light rail transit mall, sensitive urban planning, and regional limits, is growing in a healthy proportion to its suburbs. Jobs in the central business district are expected to grow twenty percent by the year 2010 and account for half of all employment in the region. A site on the light rail line in the downtown recently captured a major regional shopping center. A good example of appropriate infill, the design of this retail center respects and reinforces the traditional urban fabric of Portland, rather than interrupting its pedestrian-scaled city blocks with a typical mall configuration. Both the Urban Growth Boundary and Portland's expanding light rail system has helped to focus new development and economic activity back in its thriving downtown.

Suburban infill represents a different set of problems and constraints. Typically, no-growth and slow-growth neighborhood groups inhibit density and mixed-use while driving the cost of development ever upward. The existing street systems and zoning codes stand as further blocks to creating walkable communities. Finally, the density and configurations typical to suburbia make transit a heavily subsidized safety net rather than a functional alternative to the car. If we are to have significant growth as suburban infill, much must change. Foremost, local citizens must understand that there are options beyond no-growth or sprawl. Local concerns must be tempered with regional needs – needs for an equitable distribution of affordable housing and jobs, needs to preserve open space and agricultural lands, and needs to support transit. This calls for regional policies and governance which can both educate and guide the complex interaction of economics, ecology, jurisdiction, and social equity. Unfortunately, suburban infill options may be caught between regional interests and local fears for some time to come.

When urban and suburban infill cannot match the quantity or rate of growth in a region, new growth areas and new towns should be considered. These two forms differ primarily in scale, with the larger new towns incorporating more jobs than new growth areas. Such new growth areas and new towns, if transit-oriented, can complement urban infill. An effective transit system can help invigorate downtown, as transit envitably focuses on the central business district. Transit delivers people (not just cars) to the heart of our cities, reduces the need for parking structures, and avoids the need for destructive urban freeway projects. Adding more sprawling suburbs to a metropolitan area, in contrast, only increases pressure for more parking and freeways downtown while competing with the city for jobs and retail activity. Adding transit-oriented new towns and new growth areas can reinforce the city's role as the region's cultural and economic center. The transit system that is supported at the region's edge with new growth can also become the catalyst for redevelopment and infill at the center.

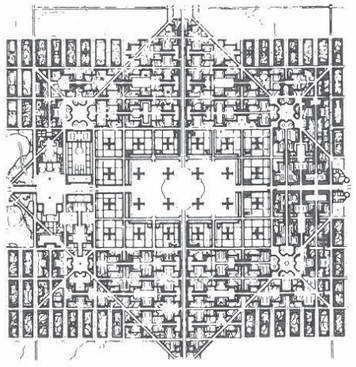
The recent history of new towns and new growth areas, sometimes called master planned communities, has given such developments a bad name. In Europe, with some notable exceptions, new towns are sterile and suburban. In America they are sterile, suburban, and, even worse, economic failures – for at least the first 20 years. But the question remains: are these qualities inherent or a product of a dysfunctional design philosophy? And if new towns could be designed more intelligently, would they be justified or necessary?

To answer this question it is useful to understand the history of new town planning. At the turn of the century and during the great depression the theory of new towns evolved in several directions. Ebenezer Howard and the Garden Cities movement defined a Luddite's vision of small towns built for workers surrounded by a greenbelt, combining the best of city and country. These towns were formed around rail stations and formally configured with a combination of the Romantic and Beaux Arts urban traditions; powerful civic spaces surrounded by village-scaled neighborhoods. In the same period Tony Garnier developed the first modernist approach to town planning, segregating industry, isolating different uses, and freeing buildings from the street. His was the first modernist vision of the twentieth-century city. During the depression Le Corbusier and Frank Lloyd Wright expanded this modernist vision in the urban and suburban context while retaining fundamental modernist principles: segregation of use, love of the auto, and dominance of private over public space. In these utopias (which after WWII came to guide development patterns) the street as the community's habitable common ground disintegrated. Even in the most progressive of the post-WWII new towns and master planned communities, these basic modernist postulates have compromised, if not destroyed, their ability to evolve into vital urban communities. The next generation of new towns should learn from these failures, avoiding their sterile and suburban character while defining a form of growth that can help mend the metropolis.

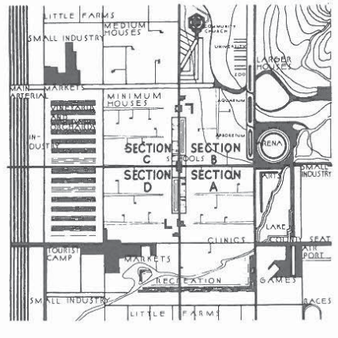
It is often hard to pin down the difference between new growth



WELWYN GARDEN CITY,
EBENEZER HOWARD & LOUIS SOISSONS



CONTEMPORARY CITY,
LE CORBUSIER



BROADACRE CITY,
FRANK LLOYD WRIGHT

areas: suburb, "edge city" or "new town." Suburbs have become more like Modernist new towns; they have jobs, retail, recreation, and a diverse population. They also have their placeless quality. And when you study the planning procedures required of suburban "master planned communities" and "specific area plans," they resemble intentional new towns in scale, effort, and conception. But neither are real towns and probably never will be. Suburbs lack, as do many of the so-called modern new towns and "Edge Cities," the fundamental qualities of real towns: pedestrian scale, an identifiable center and edge, integrated diversity of use and population, and defined public space.

These qualities are lacking in our growth patterns regardless of context. Urban infill sites, suburban new development areas, master planned communities, and new towns all fail when planned without pedestrian scale, land use diversity, public space, and a strong center. Urban infill often succeeds because these qualities pre-exist and need only be preserved, not necessarily created. Nevertheless we see many infill projects which succeed in destroying these pre-existing qualities. Modern suburbs and new towns clearly lack a real center, definitive edges, or significant common ground. They have diversity in use and user, but these diverse elements are segregated by the car. They have none of the places for casual and spontaneous interaction which create vital neighborhoods, quarters, or towns. In short they are without pedestrian scale.

In every context the quality of new development should follow town-like principles: housing for a diverse population, a full mix of uses,

walkable streets, positive public space, integrated civic and commercial centers, transit orientation, and accessible open space. For urban infill, such development can become "new town in town" designs. For smaller parcels in existing urban neighborhoods the task is to complete the mix of a community while honoring the unique qualities of the place. For suburban sites, even with the political constraints, mixed-use neighborhoods can be infilled. No blank slate, suburban infill sites sometimes offer rich histories to work with, as well as debilitating sprawl to overcome.

Satellite new towns at the outer edge of the metropolitan region can help provide greenbelts for the region. At the same time they buffer their own edges, they can help establish permanent edges for the region. Without greenbelted new towns or stable Urban Growth Boundaries, a fast-growing region will continually expand into close-in natural edges and open space. Additionally, new towns can help manage the growth of older suburbs and towns by absorbing excess development demand and permanently positioning their open space buffers.

Sprawl is destructive in all conditions – as infill, suburban growth, or new towns. Projects which are diverse, centered, and walkable are useful in all three areas. The specific nature of a metropolitan region will dictate how many and which of these growth strategies are necessary and useful. Some regions with a very slow rate of growth may only need incremental infill. Some regions with fast growth and much undeveloped suburban land may benefit from both infill and new growth area projects. Other regions may require all three strategies, including new towns, to absorb massive growth without destroying the identity of existing small towns and urban centers. The quality of development we allow, not just its location or size, is the principal problem and opportunity of growth.

Integrated Regional Planning and Political Will

Along with piecemeal land use planning at the local level, we have piecemeal planning at the state and federal level. The problems of open space preservation, affordable housing, highway congestion, air quality, and infrastructure costs are treated independently at these levels, as if there were no linkages. Policy makers have persisted in unsuccessfully treating only the symptoms of these integrated problems rather than addressing the development patterns at their root. We control air pollution with tailpipe emissions, fuel consumption with more efficient engines, and congestion with more freeways, rather than simply making cities and towns in which people are less auto-dependent. Treating both symptom and cause is now essential for real and meaningful change.

At the federal level, public investment in roads, transit, housing, civic facilities, and open space must be tied to more efficient and sustainable patterns of community development. But these patterns of community development cannot be realized by localized growth control measures or discontinuous jurisdictions. Progressive federal and state policies must be administered by regional governance to intelligently guide development and our larger investments.

The absence of long-term regional policies results in development patterns which do not adequately consider the overall environmental or economic implications of piecemeal growth. The problem is multifaceted: first, local land use control is balkanized and unable to balance the regional issues of jobs/housing distribution, transit, air quality, traffic, and open space; second, current land use controls are outmoded, responding to outdated conditions with outdated strategies; and third, federal policies and investments redirect growth unconsciously and fail to integrate the problems. People are fed up with sprawl, but rather than

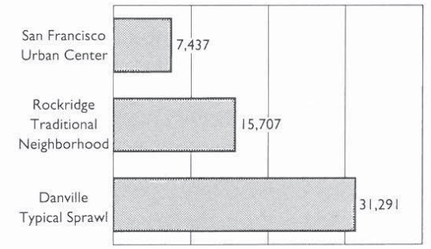
comprehensive regional planning we see a rising tide of building moratoriums and down-zoning. The result is a policy gridlock in which development is endlessly delayed and diluted – adding cost but not quality to growth.

Without a land use policy reform strategy, Congress, state legislatures, and local jurisdictions will continue to be limited to treating the symptoms of socially harmful development patterns, instead of addressing the cause. For example, fuel consumption is largely a result of sprawling land use patterns that compel use of the car. Congress has attempted to cut fuel consumption by increasing the fuel efficiency of cars. The new car fleet went from 13 mpg in 1973 to 29 mpg in 1989. Yet even this impressive doubling of fuel efficiency was outstripped by the continuing explosion of sprawl-driven auto use: the U. S. transportation sector burned 19 percent more fuel in 1989 than in 1973. In the last twenty years, while the California population increased by 40 percent, the vehicle miles traveled have increased by 100 percent. We are driving more and we (and the environment) are enjoying it less. But the form of our communities gives us few viable alternatives.

Air pollution is another symptom of sprawl which cannot be cured without treating the disease itself. The 1990 amendments to the Clean Air Act are predicted to cut carbon monoxide, nitrous oxide, and hydrocarbons by 10% by the year 2000. However, despite the tightened tailpipe emission standards, sprawl-induced increases are projected to make these same pollutants 30% worse in 2010 than they were in 1989.

Highway congestion results from the trips generated by poor land use decisions. Yet solving congestion by building more freeways is self-defeating as well as ineffective. New roads and road improvements in existing developed areas are sorely needed. While adding new freeways and beltways may temporarily reduce congestion, it does nothing to reduce trips, and often increases auto use by inducing more sprawl. Apart from that, the money available to deficit-strapped federal and state legislative bodies is inadequate to build freeways fast enough to keep up with traffic growth, even assuming freeways had no other problems.

Even though treating only the symptoms is clearly inadequate, addressing the land use question at the root raises many legitimate concerns. Changing land use patterns is a monumental task, and it is fair to question the viability and effectiveness of such an approach. The land planning principles of Transit-Oriented Development have now been developed and tested in several major regions across the U.S: San Diego, Sacramento, Portland, and Montgomery County, Maryland. While there are few fully functioning models of this approach to development, studies show that households in older neighborhoods, which share many of the prime characteristics of Transit-Oriented Development, travel half the auto miles per year when compared to households in a modern suburb. These older neighborhoods are mixed-use, walkable, and have adequate transit services. Similar studies document a quadrupling of transit use and a doubling of walking and biking in these older neighborhoods. The highway congestion, fuel consumption, and air quality implications are plain.



VEHICLE MILES TRAVELED PER YEAR

It is time to break the cycle of government investment in an "interstate system" of highways which fundamentally breeds sprawl on the beltways of our cities while subsidizing decentralization. Our efforts to improve air quality, preserve sensitive habitat, open space, and agricultural lands, provide affordable housing and lifestyles, and reduce congestion are constantly contradicted by the land use patterns indirectly supported by these highway investments. Coherent land use patterns should guide our public investments in roads, infrastructure, open space, and transit. In fact, such investments ought to be made contingent on redirecting the growth in our regions toward more compact, affordable, walkable, and transit-oriented forms.

Such a major reordering of government policies and subsidies will take a powerful political coalition. The coalition against such integrated planning can be large: localities looking for growth and tax base regardless of development quality or regional implications; devel-

opers looking for opportunities to repeat past successes without regard for changing times or consequences; neighborhood groups hoping to preserve and enhance property values by exclusionary practices; and people (i.e. voters) simply afraid of the unknown or a loss of control. The forces for the status quo are powerful drives that are self-reinforcing. The defensive desire for a secure and exclusive private domain, and the tendency of specialists to maximize segments rather than wholes, both conspire to inhibit change.

The multi-faceted dimensions of the problems facing the American metropolis could form the foundation of an alliance between environmentalists, developers, and urban advocates. Environmentalists increasingly recognize that we must selectively build our way out of land use problems. Preserving open space while supporting a growing transit system should be basic goals for the environmental community. This means encouraging housing and jobs to be built in concert with transit investments rather than simply opposing sprawl. Housing and jobs linked to transit should be as much a part of an environmental agenda as pollution controls or open space conservation.

Those that advocate inner-city investments ought to support regional transit systems and Urban Growth Boundaries as part of their strategy to get housing and commercial development in central city locations. Inner-city investment gains a broader rationale when joined with proposals for regional transportation and open-space systems. By linking the two objectives, and by transcending the urban/suburban boundary, both environmentalists and urban reformers gain allies. Green space should be part of the transit-oriented development concept of regional infrastructure investment, along with inner-city redevelopment.

The private sector also can become an ally in this strategy. The development community needs financing for infrastructure expansion and a dependable road map of land use policy. Current conditions force them into years of expensive, lengthy, and uncertain approval process. Because many municipalities are unable to fully fund services and infrastructure, fees are disproportionately added to developments to cover what was once a more efficient and evenly distributed public burden. Regional plans that provide certainty and expedient entitlements would be a boon to the development industry. And more compact, infrastructure-efficient development patterns would further reduce costs.

But ultimately, the development community must respond to the marketplace, providing what the home buyer or business seeks. Mixed-use, walkable, and transit-served developments are gaining broad acceptance in a market wise to the shortcomings of stand-alone office parks, subdivisions and shopping malls. This market acceptance is in some sense a signal that many now perceive the problems and understand that more of the same will not work.

These three constituencies – environmentalists, enlightened developers, and inner-city advocates – can find common purpose in regional planning goals. They can form a powerful coalition for larger scale ecological programs, expedited permit processing, efficient and affordable housing polices, and regional investments that balance inner-city needs with regional growth. Each share a concern for the next generation – those who cannot be in the voting booth today. The developers because they would like to build for them, the environmentalists because they seek to preserve healthy ecosystems for them, and the urbanists because they hope to pass on a more equitable and stable society.



APPLE COMPUTER LOCATED AT MIXED-USE LAGUNA WEST OVER MANY TYPICAL OFFICE PARKS

Public Poverty and Private Affluence

In the same way that the metropolis is a mirror of the American Dream, government and its policies are a mirror of our social character. The rise of the modern suburb is in part a manifestation of a deep cultural and political shift away from public life. Such an inclination has certainly been a part of our society for some time. But historically a secure private domain complemented a rich public world. It did not displace it.

The balance between a secluded, segregated private life and a diverse, shared public life has changed dramatically in recent decades. The suburbs have come to represent and facilitate the privatization of our lives in social form, in political priorites, and in physical character. The movement is circular; the more privatized our technology and social forms become, the more isolated and defensive we are. To walk or take transit is a public act which makes the street a safer component of community; to drive is a private act which turns the street into a utility. The former leads in many ways to a richer public domain, the latter to the world we have come to know, if not love. The loss of variety in these modes is both the symbol and the reality of a loss of balance between our private and public lives.

The gated community is perhaps the most blatant and literal expression of the trend. Physically it denotes the separation, and sadly the fear, that has become the subtext of a country once founded on differences and tolerance. Politically it expresses the desire to privatize, cutting back the responsibilities of government to provide services for all and replacing it with private and focused institutions: private schools, private recreation, private parks, private roads, even quasi-private governments. Socially, the house fortress represents a self-fulfilling prophecy. The more isolated people become and the less they share with others unlike themselves, the more they *do* have to fear. To this extent privatization is a powerful force in the marketplace which directs the home-building industry and our land use patterns.

The private domain, whether in a car, a home, or a subdivision, sets the direction of the modern suburb. But it is a direction affordable to a rapidly decreasing segment of the culture. It may be that more open, integrated communities could be built for people desirous of a more public life. For many others, such a shift may be their only economic choice. Perhaps this constraint can become a virtue by necessity. Or it may be creating a different kind of self-fulfilling prophecy; the more diverse and open a community is, the less people come to fear one another. There are may unknowns about this direction, but the argument is central to viability of the American Metropolis as it is described in this book. In fact, one of the primary obstacles to innovations in community planning remains the impulse toward a more gated and private world.

Consider the kinds of people who may freely choose or profit from a more integrated, walkable community. Kids certainly thrive in neighborhoods where they can get around on their own. Once many believed that the subdivision offered the protected domain children need. But it is increasingly clear that it offers too little access, with parents shuffling them around to scheduled activities, rather than enabling kids to make their own worlds and events. Additionally, the many

dangers subdivisions hoped to exclude now follow kids into their schools, their hangouts, and even the once secluded cul-de-sac.

Working parents certainly could also profit from a less isolated lifestyle. Mixed-use neighborhoods become more convenient because the demands on adults to be chauffeurs could be reduced and daily needs brought closer. Working women clearly have much to gain from such circumstances. They are too often the ones called upon to link all the pieces now dispersed in suburbia. The elderly also might choose the life of a "town-like" place over the suburb, given the chance to do so. Walkable places with interesting activities and services might extend their independence. Singles have always gravitated to places that offer a rich public life. And there are others, across demographic lines, who simply desire a richer public experience and a stronger sense of community.

The reality, of course, is that both impulses reside in all of us: a defensive exclusionary desire for retreat and an optimistic desire to create community. Many factors play in the balance between these universal impulses, including history, traditions, technology, ideology, environment, subsidies and economic necessity to name a few. Our history and traditions offer much to support both. The nature of our current technologies, from cars and TVs to computers and VCRs, clearly facilitate a retreat into the private domain. New economic pressures, in the largest sense, will now move us back toward stronger communities and more environmentally benign technologies. But the choice we make is finally personal and complex, drawing on our values, our aesthetics, and finally our optimism. The beauty of our culture is that experiments will happen. Through this experimentation new directions will be found that express the complex interactions between our patterns of settlement and our lives.

GUIDELINES

The following guidelines define an integrated strategy for growth in our cities, suburbs, and towns. Unlike typical "design guidelines," which deal primarily with aesthetic and architectural principles, these guidelines attempt to define a new context and direction for the built environment – for the way we develop our communities, neighborhoods, districts, and regions. They are shaped according to three general principles: first, that the regional structure of growth should be guided by the expansion of transit and a more compact urban form; second, that our ubiquitous single-use zoning should be replaced with standards for mixed-use, walkable neighborhoods; and third, that our urban design policies should create an architecture oriented toward the public domain and human dimension rather than the private domain and auto scale.

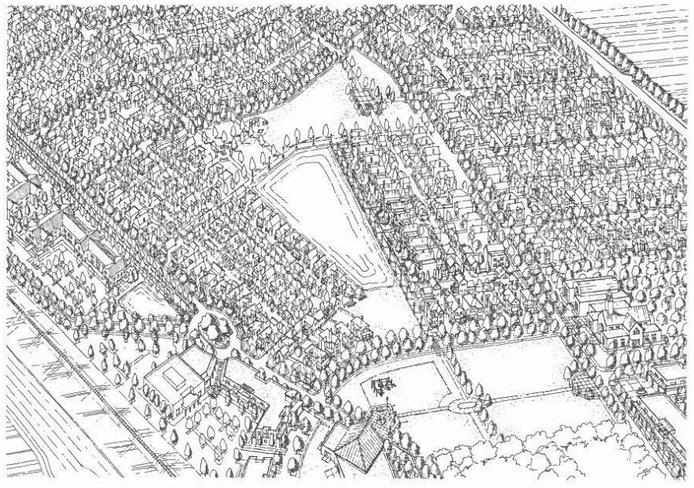
Technically the guidelines can operate at different scales. They can be used to redirect and reconfigure a region's General or Comprehensive Plans, help establish Urban Growth Boundaries, designate appropriate new growth and infill areas, aid in setting standards for the development or redevelopment of neighborhoods through "Specific Area Plans," and they can help to revise existing zoning ordinances to allow more mixed-use, pedestrian-oriented land plans.

The Transit-Oriented Development (TOD) concept is simple: moderate and high-density housing, along with complementary public uses, jobs, retail and services, are concentrated in mixed-use developments at strategic points along the regional transit system. Recently, similar concepts have gone by many names: Pedestrian Pockets, Traditional Neighborhood Developments, Urban Villages, and Compact Communities to name a few. Although different in detail and emphasis, these concepts share a common perspective, design principles, and set of goals. TODs add emphasis to the integration of transit on a regional basis, providing a perspective missing from strategies which deal primarily with the nature and structure of individual communities and neighborhoods. This regional perspective helps to define a meaningful edge for the metropolitan area, eliminating the danger of random growth in distant sites served only by highways. Such a larger view can help order growth across our balkanized metropolitan regions as well as encourage infill and redevelopment efforts. Transit is not the only goal of these development patterns, it is however a potential end result which adds to a strategy with many other benefits.

A "walkable" environment is perhaps the key aspect of the concept. In order to develop alternatives to drive-alone auto use, comfortable pedestrian environments should be created at the origin and destination of each trip. No one likes to arrive at work without a car if they cannot walk comfortably from transit to their destination or run a mid-day errand on foot. TODs seek to bring many destinations within walking distance, allowing trips to be combined. Placing local retail, parks, day care, civic services, and transit at the center of a TOD reinforces the opportunity to walk or bike for many errands, as well as combine a

trip to transit with other stops. Streets lined by trees and building entries also help to make the TOD environment "pedestrian-friendly." Although focused on reinforcing transit, such land use configurations would equally support carpools and more efficient auto use. Given historic development trends and projections for the future, each of these travel modes can play an important role in solving a city's or region's increasing traffic problems.

Transit-Oriented Developments can, and ironically should, develop without transit – with a justifiable focus on the pedestrian and a healthier community structure. More walkable, integrated communities can help relieve our dependence on the auto in many ways other than just transit. Reducing trip lengths, combining destinations, carpooling, walking, and biking are all enhanced by TODs. A healthy walking environment can succeed without transit, but a transit system cannot exist without the pedestrian. The growth of such pedestrian-friendly developments, if coordinated at a regional scale, can form the armature for future transit growth. In fact, this type of development must precede, not just follow, the growth of our transit networks. TODs can exist without transit, but our transit systems have little chance of surviving in the low-density environment of sprawling suburbs without TODs.



The fundamental structure of the TOD is nodal – focused on a commercial center, civic uses, and a potential transit stop. This nodal quality is the result of the contemporary bias of retail to develop in distinct "packages," the spacing requirements of transit stations, and the qualitative need for an identifiable social center in our neighborhoods and districts. This is in sharp contrast to the linear form which used to dominate the form of grid towns or strip commercial suburbs. Defined by a comfortable walking distance, the TOD is made up of a core commercial area, with civic and transit uses integrated, and a flexible program of housing, jobs, and public space surrounding it. The densities and mix of these primary uses, though controlled by certain minimums, is determined by the specifics of each site and economy. Surrounding the TOD is a Secondary Area for low-density uses, the large-lot single-family residences, schools, larger businesses, and major parks.

There are many "mixed-use" Planned Unit Developments and Master Planned Communities which speak of similar goals but employ fundamentally different planning principles. These strategies, which have dominated the "progressive" side of sprawl for some time now, differ from TODs in several significant ways.

First, while they typically have a mix of uses, they unfortunately separate these uses into individual development zones segregated by major arterial roadways and property lines. This segregation often makes walkable connections weak. Second, they tend to isolate the pedestrian from the street, either on greenways or designated paths, leaving the street solely for auto use. Third, they still employ a hierarchy of streets, focusing congestion by forcing traffic onto the arterial network. Fourth, they continue to design neighborhood streets for the convenience and speed of autos rather than for a mix of uses and slower traffic. And finally, they reverse the hierarchy of public and private space by facilitating an architecture of autonomous "objects" rather than an architecture which helps define and create memorable public places.

TODs not only promote alternates to auto use, but can be a formula for affordable communities – affordable in many senses. Communities are affordable to the environment when they efficiently use land, help to preserve open space, and reduce air pollution; they are affordable for diverse households when a variety of housing types, at various costs and densities, are encouraged in convenient locations; they are affordable to families with limited incomes when the mix and configuration of uses allow reduced auto dependence and auto-related expenses; they are affordable to businesses seeking to relocate when the workforce can be freed of the gridlock and high housing costs typical in many growing metropolitan regions; and they are affordable to the public taxpayer when infrastructure is efficient, and public amenities are well-used.

In summary, the principles of Transit-Oriented Development are to:

- organize growth on a regional level to be compact and transit-supportive;
- place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops;
- create pedestrian-friendly street networks which directly connect local destinations;
- provide a mix of housing types, densities, and costs;
- preserve sensitive habitat, riparian zones, and high quality open space;
- make public spaces the focus of building orientation and neighborhood activity; and
- encourage infill and redevelopment along transit corridors within existing neighborhoods.

These principles are not new; they are simply a return to the timeless goals of urbanism, in its best sense. They are principles which over time have created our most treasured man-made environments and which, although constantly evolving with culture and technology, remain true to the human dimension and our deepest social aspirations. But they are fundamentally different from the ideas that have guided planning for the last two generations.

Sustainable Communities, Pedestrian Pockets, and Transit-Oriented Development

A brief history of the progression of ideas and models which led to the guidelines may be helpful in understanding their underlying assumptions and concepts. The book *Sustainable Communities* was an early work which attempted to redefine our patterns of settlement primarily in relation to environmental concerns. Involving biologists, architects, sociologists, traffic engineers, planners, and economists, it was a multidisciplinary effort to show how ecological systems could be integrated into cities, suburbs, and new towns. It succeeded in demonstrating technologies and designs which could build a more ecological infrastructure for communities through energy conservation, waste recycling, open space preservation, and walkable neighborhoods. But in some ways it went too far in literally bringing nature into the human settlement. The balance between urbanism and naturalism was lost – urban vitality was too often sacrificed to green spaces in an effort to incorporate organic systems within the city. The concerns became almost myopic; buildings locked in a single orientation to optimize solar heating, for example. Communities should be compact, diverse, and urban, and their natural systems should be integrated at a regional scale, not necessarily in each block and neighborhood.



RADBURN, NJ

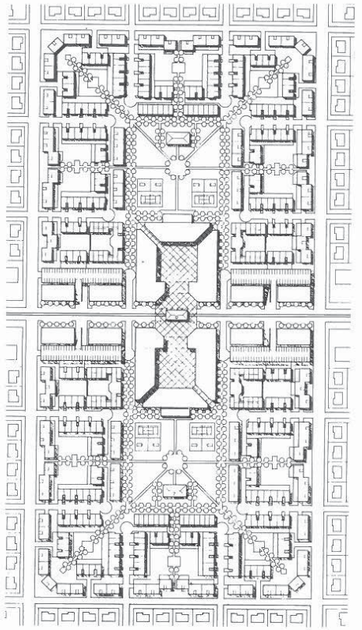
A simple expression of this imbalance between urbanism and environmentalism was in the treatment of the street. Separating the pedestrian onto "greenways" and carless paths was a flawed strategy from the Radburn experiment of the 1930s – a neighborhood design which, in attempting to control the car, sacrificed the street to it. Likewise the Modernist's "building in the park" approach to town planning ultimately helped kill the life of the street by separating it from the activities of the buildings that lined it. Both of these approaches were incorrectly adopted into *Sustainable Communities* and the models it presented. Environmentally sound communities need parks, regional greenbelts, and high-quality open space, but they also need density and street-life. Isolated from a larger concept of human habitat, the environmental movement could be in danger of becoming another "special interest group" which can optimize its goals while losing sight of a larger purpose.

Through a grant from the NEA arts program I had an opportunity, along with architect Mark Mack, to develop designs which attempted to integrate environmentalism and urbanism. On the one hand the ideas were greatly influenced by Leon Krier who defined, in his early works, a pure and compelling vision of urbanism. On the other was the problem of the American suburb and the decentralizing forces that produced our current palette of building types. The work became an attempt to join these two seemingly divergent directions.

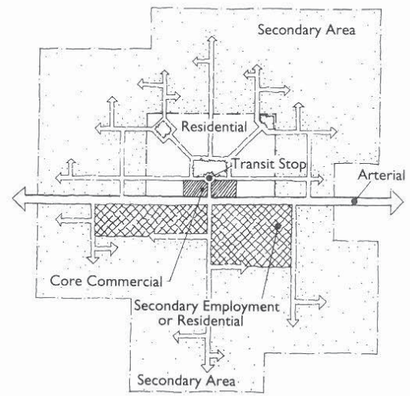
The concept that resulted used walkable, mixed-use neighborhoods to reinforce transit, preserve open space, and make a more compact metropolitan form. These places, called Pedestrian Pockets, were meant to form a regional network spanning infill and greenfield sites, inner-city and suburban locations. They were built on the notion that retail, employment, and transit were nodal and decentralizing at a rapid rate. The diagram for the Pedestrian Pocket mixed several mid- to high-density housing types with jobs over shops at a transit stop. The size of the Pocket was set by the comfortable walking distance of one quarter mile. Although a grid, it was still based on the Radburn model; cul-de-sac streets with segregated pedestrian paths leading to the center.

Since that time the concepts evolved through theoretical design research at University of California at Berkeley, design charrettes at University of Washington, and through private practice. One of the charrettes produced a book, *The Pedestrian Pocket Book*, which outlined the thinking prior to the practical experience of major regional and neighborhood planning projects. Under the influence of the private sector projects, the design approach was expanded to include a clearer understanding of the development types viable in the current marketplace – the architectural components which could make the concepts buildable today. The realities of the modern American city require a model which incorporates and reconfigures the diverse uses at work in the marketplace, not a theoretical construct which hypothesizes a fundamental change in the architectural "building blocks" of development.

The original Pedestrian Pocket model was expanded through the larger projects to include concepts for new towns, regional growth strategies, and a wider range of residential densities – particularly low-density single-family homes, the mainstay of sprawl. Incorporating a reasonable and realistic proportion of single-family housing called for a fundamental rethinking of a model which started primarily as a multi-family infill proposal. "Secondary Areas" were added around the denser mixed-



PEDESTRIAN POCKET



TRANSIT-ORIENTED DEVELOPMENT

use core to incorporate many of the low intensity uses excluded from the early Pedestrian Pocket model. This provided an excellent location for large schools, major recreation parks, and light industrial uses, as well as a range of single-family housing. The larger projects also fostered consideration of transit and its implications on regional form as well as the structure of individual neighborhoods. They ultimately produced the guidelines for "Transit-Oriented Development" from which this section of the book is derived.

Transit-Oriented Development and Travel Behavior

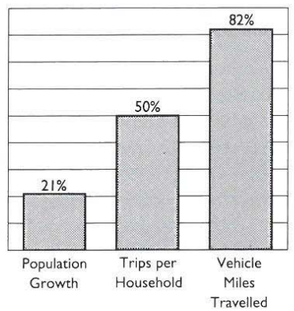
Central to the utility of these concepts is their implications on travel behavior: the way we choose to get around, the frequency of trips, and the distance of each journey. Though many factors other than land use configurations affect our travel behavior – such as the cost of gas, auto ownership, parking expenses, the amount of time lost to congestion, and the quality of transit – the effects of land use on travel behavior are formative. In fact, land use patterns are the foundation upon which the viability of travel cost, time, and investment factors depend. If land use primarily supports the auto, then increasing the costs of operating cars and allowing congestion to grow will only result in pain, not a fundamental reorientation of travel behavior. Without coordinated land use policies, increasing transit investments will only lead to underutilized facilities. On the other hand, if land use configurations support alternatives to the car, then many results are possible: people may choose to walk, bike, and use transit more often; they can combine trips more easily; there may be shorter, more direct routes to local destinations; they may actually be able to reduce the number of cars they own; and because of these changes, reduced congestion on highways and arterial roadways is possible.

As land use patterns and travel behavior change, many positive "feedbacks" can occur. If transit ridership rises, service can be increased and transit becomes convenient for more people. As air quality improves, health costs could be reduced. As more people walk or use bikes, the federal and local costs for road and highway maintenance can be reduced. With more people arriving at work or shopping areas without their cars, the size of parking lots can be limited. The end result of shifts away from auto usage would result in reduced energy consumption, greenhouse effect, and dependence on foreign oil. But these changes are dependent on understanding, quantifying, and valuing the effect that land use can have on travel behavior. Unfortunately these linkages are not fully understood.

Traffic engineers have developed sophisticated modeling programs for predicting the multiple and interdependent effects of population growth and traffic. The models are calibrated by, and therefore tend to replicate, the way things are in our sprawling cities – rather than the way things could be. These programs are sensitive to household size, household incomes, residential density, costs of travel, congestion levels, type of trips, and proximity of destinations. But they are not sensitive to the walkability of a neighborhood, the density of destinations within a neighborhood (a measure of mixed-use), or the implications of these factors on transit use. They effectively are not sensitive to the possibilities of walkable and transit-oriented communities.

In order to fully understand the dynamic of land use and travel behavior, and be able to use it in the design of communities, the components of traffic analysis must be understood. There are several critical yardsticks used in traffic analysis, each with special implications. Auto ownership per household is a fundamental measure of the travel bias of a region. And it affects the pressed American household budget directly. In California, auto ownership per household has been increasing while the size of households has been falling. Across the country our love affair with the car is becoming more of an obsession when compared to other industrialized countries. In an average Swedish city there are 1.5 autos per household, compared with an average 2.2 autos per household in the USA.

Vehicle Miles Traveled (VMT) per household is another significant milestone. VMT directly affects the amount of road usage and therefore maintenance and construction costs. Once again, VMT has been increasing much faster than the growth in population would predict; from 1969 to 1990 it increased 82 percent while the national population only increased 21 percent.

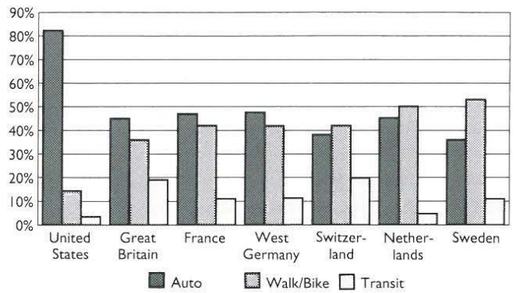


GROWTH TRENDS: 1969 - 1990

The number of trips per household per day is another factor on the rise, from approximately eight per household per day in 1969 to twelve in 1990. Trip generation is critical because it is used to calculate the effect of development on local street intersections and because air quality is directly related to the number of times a car is started (cold starts) rather than simply the distance traveled.

Finally, "mode split" is the percent of trips by each type of travel means: auto, walking, bike, or transit. It can vary greatly, depending on the quality of the environment and demographics. For example, suburban Huntington Beach has a 91% auto mode split while inner-city Philadelphia has only 23% of all trips in autos. Each of these interdependent travel factors is governed by the type of communities we build and the economics of the alternatives.

Different countries demonstrate significant variations in the relationship between land use, public transportation policies, and travel behavior. In European communities auto use is generally between 30% and 48% of all trips; transit comprises between 11% and 26% of all trips; and pedestrian/bike trips are from 33% to 50% of the total (transit there is supported with healthy pedestrian environments). In comparison, the U.S. average mode split is 86% via auto, 8% walking, 3% bike, and 3% by transit. Canada has a similar walk/bike mode split but a much higher transit utilization – 15% of all trips rather than 3%.



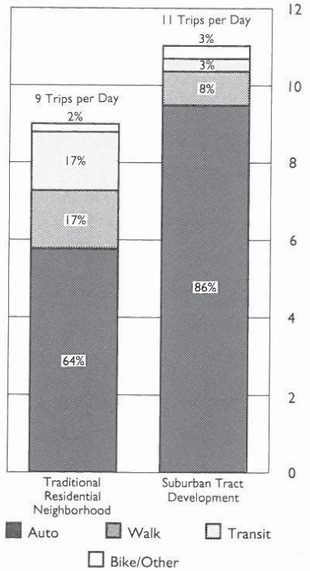
MODE SPLIT AS PERCENT OF TOTAL TRIPS

Of course the cost of gas and transit infrastructure investments affect these distributions, along with land use patterns. In Europe today gas costs are three times those in the USA. Perhaps this explains a portion of the difference. But to what degree are our land use configurations inhibiting our ability to set similar public

pricing policies? And to what degree would more compact, walkable, and transit-oriented land use patterns independently change travel behavior?

Although few of the new generation of TODs or Traditional Neighborhoods have matured to a stage to answer these questions directly, neighborhoods with similar characteristics – typically built before WWII – may offer a reasonable comparison. One study by Fehr & Peers Associates for the International Association of Traffic Engineers compared older TOD-like neighborhoods in the San Francisco Bay Area with some of its newer suburban areas. These older neighborhoods were not inner-city locations with high densities, but the older centers of small towns throughout the region. Taken from travel surveys conducted in 1980, the results showed both a significantly lower number of trips per household (nine in the TOD-like neighborhoods vs. eleven in the new suburbs) and a dramatic shift in the mode split. Auto trips were 86% in the suburbs while only 64% in older neighborhoods. Walking and bike trips were 19% for the older neighborhoods and 11% in the suburbs. The transit trips in the older neighborhoods accounted for 17% of the total vs. only 3% in the suburban areas.

A similar survey in Portland, Oregon showed that walking trips in the older, mixed-use neighborhoods were three times those of the typical suburb. In another empirical study done by John Holtzclaw of NRDC in the Bay Area, odometer readings were aggregated by neighborhood type and location. The TOD-like neighborhoods had almost half the VMT per household per year of the new suburbs; 15,700 miles vs. 31,300. Using the cost per mile devel-oped by Hertz Corporation in 1987 of $0.57, this difference represents a savings of $8,883 per year for the average household in a TOD-like neighborhood.



DAILY TRIP GENERATION IN THE SAN FRANCISCO BAY AREA

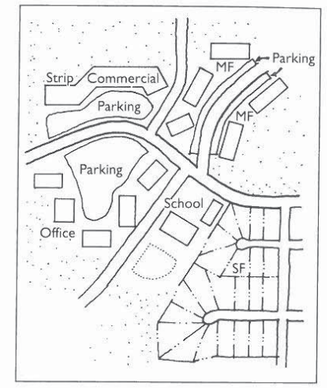
There were several factors other than land use configuration which affected this dramatic shift for the older neighborhoods. Lower average household incomes, better transit service, and closer proximity to the metropolitan center all characterized the older neighborhoods. New TODs may not be able to match the proximity and they may have slightly higher average incomes than the older neighborhoods, but they should have equivalent transit service and similar land use diversity and density. Even if new TODs cannot exactly replicate the performance of these older neighborhoods, the numbers indicate a possible range of results that are very promising. And they are, in cultural nature and public policy, specific to America.

It has been shown that a higher percentage of people are likely to use transit if they can walk to the station, rather than get in their cars to drive to a "park-and-ride" lot. As the convenience retail, recreational, civic, and entertainment elements of new TODs develop, combined trips would increase as people run errands on foot to and from the transit stop. Park-and-ride lots would continue to be a part of any transit system, but should not typically be located within TODs. Transit utilization in TODs would increase over time as the mix of uses reaches build-out, as the transit corridor develops, and as residents and employees come to see the convenience of transit service. Simultaneously, the type of transit service coming to TODs can mature. It may start with local bus service, add express bus service as ridership grows, and finally provide fixed rail connections.

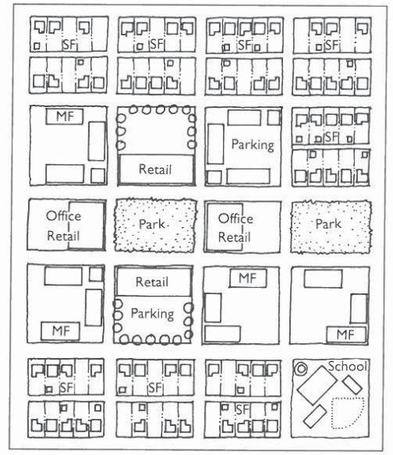
Even without increasing transit or walk trips, the TOD street system can reduce traffic congestion on major streets. Standard suburban development patterns presently force all local shopping, recreation, and school trips, as well as work trips, onto the arterial street system.

This pattern leads to the congestion about which neighborhood groups typically are most concerned. In a hypothetical study by Walter Kulash for the American Society of Civil Engineers, a suburb with standard street configurations was compared with a mixed-use development with a grid of local street connections. Because of the more direct routing possible in the gridded neighborhood, the overall VMT for trips with destinations in the area was reduced by 33% and the VMT on the arterial network was reduced by 75%. Although this study only calculates local trips and not through traffic, such local trips typically represent over 50% of all travel. Clearly, an interconnected system of local streets, internal to the neighborhood, reduces congestion on main roads even if people are using their cars. In TODs, arterials are seen as edges, providing for through traffic and regional access only. Local streets should be designed to minimize the potential for through traffic while providing access to local destinations.

Clearly much more research and analysis is needed to clarify and quantify the potential results of a new land use pattern on our travel behavior. It is critical work; critical to effectively directing federal and state transportation dollars, critical to many of our most pressing environmental issues, and critical to our quality of life. We are driving twice as much as we did in the 1970s yet the result seems to be less mobility and more frustration. Understanding this important linkage is fundamental to charting an intelligent and benign vision of the Next American Metropolis.



CONVENTIONAL SUBURBAN DEVELOPMENT



TRADITIONAL NEIGHBORHOOD DEVELOPMENT

Regional Context and Implementation

Where and how these guidelines are used is critical to their success. The overall distribution of development rights across three primary types of sites – redevelopment, infill, and new growth areas – must be balanced and analyzed from a regional perspective; balanced in environmental, economic, and social terms. The quantity and limitations of infill and redevelopment sites must be understood when making decisions on the quantity and location of new growth areas. In the reverse, too many new growth areas may reduce demand for inner-city redevelopment and infill. The balance is complex and critical; on the one hand economic health for the region often calls for suburban housing opportunities and adequate industrial sites, on the other hand too much of such growth can drain investment from the city. Regional land use governance is key to applying these land use patterns in a way which creates viable transit systems, open space networks, and inner-city reinvestment as well as a vital regional economy. In each of the potential settings, Redevelopment, Infill, and New Growth areas, TOD plans should respond to sensitive environmental circumstances and to the context and character of existing adjacent neighborhoods.

Inner-city development has been a crucial problem for most regions; a problem with many dimensions. Planning at a regional scale, with transit expansion as a framework, can play a role in focusing development into these critical areas. Using the catalyst of transit and redevelopment funding, inner-city areas and older neighborhoods may gradually transition to new and more intensive uses. Such changes should be guided to reinforce the transit system, producing land uses and configurations that are more pedestrian-oriented, affordable, and linked to the greater metropolitan region. Intensification and redevelopment must, however, be balanced with sensitivity to protecting existing neighborhoods and a recognition that additional development is not appropriate in every setting.

Infill sites, land that has been "skipped over" but is surrounded by existing development, often occur in areas similar to redevelopable sites. However, infill sites are often large enough to develop all or a major portion of a TOD, with the existing surrounding neighborhoods functioning as a support area. Both infill and redevelopment sites can be located in older urban areas or in new suburban situations. When a street grid is present, as is typical in older inner-city locations, horizontal connections between local uses is easy and small sites can develop to balance the mix of uses surrounding it. In the new suburban context the disconnected street patterns make it difficult to establish walkable connections to local destinations. Therefore smaller infill opportunities cannot simply add a missing component to the neighborhood, they must also provide the walkable connections. One prime infill and redevelopment possibility exists in the suburban fabric: old commercial areas with large parking lots offer the opportunity to insert density and new uses into central suburban locations.

Finally, each metropolitan region has viable New Growth Areas which are environmentally suitable for development and are within reasonable distance of transit. While New Growth Areas are the easiest to develop with transit and pedestrian-oriented patterns, there is a caveat: they also may spread the size of the city. In many cases transit service to these sites is only at preliminary planning stages and they may be required to function for some time without full transit service. In these larger areas the concept should be applied in a manner that respects environmental constraints, works with topography, and functions in the interim without strong transit service.

Every piece of land in the USA is controlled by codes and planning documents that evolved after WWII. These controls have been largely founded on modernist principles – segregation of uses, circulation systems focused on the car, and a loss of public orientation for buildings and gathering places. With the exception of a few urban centers, every city, county, and town has a set of zoning ordinances, planning codes, street standards, and perhaps a comprehensive plan that binds the area to a future of sprawl-like development. To redirect the form of growth for the next generation, each of these documents must be revised. The TOD guidelines provide an overview, a set of goals, and a specific set of principles to direct such revisions. Each case and each place will have unique and special conditions which should enhance, modify, and extend the concepts inherent in the guidelines. But underlying the specifics of each place are some universal postulates of human scale, environmental limits, and social order. These postulates define a new template for growth, one formed to the technology, economics, demographics, and culture of our time.

There are four layers of planning that are affected by this change: regional plans, Comprehensive Plans, Specific Area Plans, and zoning ordinances. Regional planning, though rarely implemented in the U.S., should shape the overall distribution of development, coordinate transit and circulation, balance jobs and housing in an economic fashion, administer regional pollution controls, and set limits to protect open space resources. Without such a regional framework, the local jurisdictions often compete with and contradict one another.

Each "layer" of existing plans needs change. The Comprehensive Plans for each city, town, or county should be updated, or in some cases created from scratch. Local ordinances and standards eventually should be rewritten to allow mixed-use and more walkable neighborhoods, and to eliminate the current bias toward the auto. An additional planning tool should be developed to allow site-specific, integrated planning for areas larger than single parcels but smaller than those typically covered in community plans. This tool would be similar to the Specific Plan used in many areas of California.

These guidelines were distilled from work in several sub-regional areas: the County of Sacramento, Tri-Met in Portland, the Santa Clara Transit Authority, and the City of San Diego. Within these areas the primary focus for the regional elements of the guidelines was the relationship of development to an expanding transit system. In order to complete the picture at a regional scale, the placement of growth should also be directed by an analysis of long-term open space needs, natural resource assets, and the establishment of an Urban Growth Boundary. The Sacramento County General Plan update proposes such a boundary within its jurisdiction and identifies the critical agricultural lands and river zones that should be permanently preserved.

Identifying rational infill and revitalization districts, New Growth Areas and potential New Town sites should be the work of an agency which spans the numerous cities and counties within a metropolitan area. Lacking such entities, counties, air quality boards, and regional transportation agencies often take on the task without legal power to fully implement the results. Regional governments are needed if growth is to be managed and directed in a sustainable manner.

The Comprehensive Plan establishes each jurisdiction's fundamental goals and policies along with its basic distribution of land uses and development controls. This plan is often completed without real regard for regional concerns and sometimes exhibits a parochial or even xenophobic quality. For example, parts of Placer County represent an excellent growth area for the Sacramento Metropolitan Region, but Placer's Comprehensive Plan effectively limits growth in this area by zoning for higher-income households and open space. In another adjacent jurisdiction, West Sacramento, development is welcomed even when the sites would replace prime agriculture. Each jurisdiction is acting according to its perceived local interests, but the regional impact is a poor distribution of development.

At the same time that Comprehensive Plans rarely express regional intelligence, their goals and policies are often too vague to redirect the quality of growth. The land use map of the Comprehensive Plan typically reinforces the segregation of uses into generic single-use types. There is no "mixed-use" or equivalent designation. The typical zoning map further reinforces the isolation of uses while its ordinances require many features which frustrate the goals of a more integrated mixed-use environment. Finally, the street standards adopted by most areas are myopic, favoring the auto over all other concerns and reinforcing the notion that streets must form a hierarchy of speed and capacity rather than a network of parallel routes and walkable places.

Each level of our planning codes needs revision and updating, but the sequence is key to the result. First, broadly based community support for the alternatives to sprawl must be developed. Before any plan revisions begin, a common understanding that there are significant alternatives to sprawl and that they are bound by specific principles must be developed within all segments of the community. The TOD guidelines can be used as a point of reference in this process. Developers, environmentalists, neighborhood groups, bankers, business interests, and politicians should participate in an effort to redefine the quality and form of growth in their region. A good example of this inclusionary effort was used in developing and adopting the guidelines for San Diego. Such a common vision and consensus is essential to the scale and political complexity of revising the many layers of planning controls and legislation.

With a clarified common vision, the task of creating a regional framework for growth is possible. One special element of the regional plan should be identification of potential transit corridors and sites for TODs. These "corridor plans" often cross jurisdictional lines and need to be coordinated by a regional planning agency along with the regional transportation agency. Regional plans and "corridor plans," along with the goals and policies of the community consensus, could then be used to guide a revision of each local Comprehensive Plan. The Comprehensive Plan ought to support the emerging regional vision and prescribe a new standard of development. Here again, the guidelines can be referenced as policies and standards to clarify what is meant by mixed-use development. For areas identified with major infill or new growth, Specific Plans should be prepared which detail the application of the guidelines. Finally, the zoning ordinances ought to be updated or supplemented with new standards. In some cases, a new ordinance can be created to guide development in TOD areas while only modifying the existing zoning elements.

The Structure of the Guidelines

The TOD guidelines are designed to provide direction and policies for all levels of planning: regional, comprehensive, specific area, and zoning ordinances. They are expected to be modified for each region and locality, and are not intended as a universal model. At each level of planning, sections of the guidelines can play a greater or lesser role. For example, the Definitions and Guiding Principles sections can be used for regional and comprehensive plan direction, while the sections on streets or specific uses can be used for more detailed zoning ordinance modifications. Taken together, they represent a new vision for the kinds of places we build, and amount to a detailed statement of progressive community goals and the means to achieve those goals.

The guidelines are arranged from the general to the specific. The Definitions and Guiding Principles sections form a summary of concepts. These two sections can stand alone. The Ecology and Habitat section defines in a general sense goals and techniques to make growth more environmentally sensitive and site-specific. The next four sections – on commercial, residential, secondary areas, and parks and civic uses – focus on the nature and quality of each of the primary elements of a TOD. Finally, the remaining sections deal with differing aspects of the circulation system, streets, pedestrian and bicycle environments, transit stops, and parking. The following is a summary of each section with a focus on the critical changes each calls for.

DEFINITIONS The fundamental building blocks of the guidelines are three "new" land use types: Urban TODs, Neighborhood TODs, and Secondary Areas. These new land use types differ from one another in their varying mix of uses, their relationship to transit, and their density. They differ from most existing zone classifications because they have defined spatial limits relating to the pedestrian scale, and they are mixed-use. The mix of uses – commercial, residential, and public – are defined with minimum densities and land areas, rather than the maximum limits typically found in old zoning codes. Finally, three locations are identified in which TODs can occur: Redevelopable, Infill, and New Growth Sites.

GUIDING PRINCIPLES The basic principles for all TODs, regardless of type or location, are simple: they must be mixed-use, transit-oriented, walkable, and diverse. Reordering private space to make the public domain more usable, memorable, and the focus of each neighborhood is an overarching goal. The principles may seem radical and familiar at the same time. Making such changes would reverse forty years of planning that put cars ahead of pedestrians, put private space before public, put segregation and isolation of uses before integrated and diversity. To accomplish these types of integration, we should look beyond individual parcels and develop a process that allows larger areas to be planned in a coordinated way.

ECOLOGY AND HABITAT The Next American Metropolis needs a broad array of environmental strategies at all scales: Urban Growth Boundaries, greenbelts, biological sewage treatment systems, water reclamation, drainage systems that maintain natural water flows, indigenous and drought-tolerant landscaping, and energy conservation techniques in buildings. They are approaches too long ignored in an era of cheap energy, free water, and relative environmental neglect.

CORE COMMERCIAL AREAS This section outlines some significant evolutions for retail development, both in terms of location and configuration. Creating accessible commercial centers from both local and arterial streets, placing an emphasis on the needs of pedestrians, and integrating retail with civic and transit uses would represent a considerable change from the current norm. These are clearly the most challenging transformations called for by the guidelines and ones that will take time, experimentation, and evolution. Hybrids between our old "Main Street" configurations and our newer strip and mall configurations will be neccessary to combine the needs of walkable neighborhoods with large-scale convenience retail. Additionally, retail development will typically be last to develop in new neighborhoods – which raises questions about phasing and interim development patterns.

RESIDENTIAL AREAS The key to the housing program for TODs is diversity and flexibility. By defining an average minimum density, the guidelines allow considerable flexibility for developers to invent new combinations of housing types. The guidelines outline several new types of housing to fill the gap between conventional single-family and multi-family needs, including courtyard cottages, small-lot single-family, and ancillary units. These higher-density forms could provide affordable alternatives while maintaining the ownership patterns and private yard features of the single-family home. With these new types of housing mixed with

traditional attached housing, the makeup of a TOD residential area can respond to many dimensions of the housing market. This idea of mixing a broad range of housing types is timely because many land developers are coming to understand the wisdom of market diversity. Nevertheless, the challenge of mixing housing types and economies is difficult in an industry and market accustomed to isolated enclaves.

SECONDARY AREAS These lower-density areas within a mile of transit represent a desirable place for the housing and low-intensity employment uses typical of the modern suburb. The quantity of land allocated for this use will establish the fundamental single-family/multi-family housing ratio for a region. The difference between a Secondary Area and a conventional subdivision is found in its street pattern. The Secondary Area is close enough for walking and biking, and is directly linked by local streets to the mixed-use TOD. Its streets are tree-lined and comfortable to walk along. It is an area which integrates schools, neighborhood parks, and some employment into an accessible framework.

PARKS, PLAZAS, AND CIVIC BUILDINGS Over the last generation parks have grown larger and more remote. The small neighborhood park and village green have been eliminated in favor of larger facilities (and their reduced maintenance costs) or useless "buffer zones." These guidelines call for a return to local, accessible parks. They also call for prominent locations for civic and public buildings to add identity and focus to the neighborhood. This highlighting of civic facilities along with the requirement to combine them with commercial development represents another new direction. The careful placement of elementary schools at the periphery of TODs is critical because one of the most common pedestrian trips is to school.

STREETS AND CIRCULATION SYSTEM Traffic is one of the most important and controversial aspects of TODs. Reducing street widths to slow traffic and make pedestrian crossings comfortable is difficult. Although empirical studies have shown that narrow streets are safer, changing the current standards raises issues of legal liability. Even though simple feasibility demonstrations show that fire trucks, school buses, and other large vehicles can safely use such streets, care must be taken in detailing intersections and landscaping. The other significant change outlined is the elimination of simplistic street hierarchies – "connector" streets rather than "collector" streets are needed. High design speeds, responsible for our familiar sweeping turns and large lane widths, should be reduced within the TOD. There is no reason to design for 35–45 mph in a mixed-use pedestrian zone.

PEDESTRIAN AND BICYCLE SYSTEM The purpose of these guidelines is to encourage streets that are comfortable, interesting and safe to walk along rather than segregated pathways which isolate the pedestrian and result in an expensive, duplicative system. This is the reverse of the popular "Radburn" system of pedestrian "greenways" in that it uses the street as the common ground of the neighborhood. Similarly, the emphasis for bikes should be to integrate them on the street rather than create a separate network. Within TODs it is better to slow cars down to allow bikers safety and comfort on the local streets. However, a larger bike trail system connecting TODs with regional destinations can benefit from separated rights-of-way. Streets should be seen as a multi-purpose mixing ground rather than a single-use utility for cars.

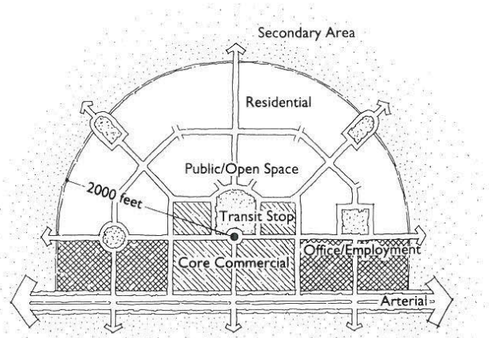
TRANSIT SYSTEM Land use and transit systems must be planned together. This may seem obvious, but for too long the two have been disconnected. Unfortunately, transit systems have been overlaid on inappropriate densities or uses and station areas have been designed as bus transfer zones or park-and-ride lots. Often, trunk line systems follow existing growth in suburban areas rather than helping to define needed New Growth Areas which, in turn, can be planned in a transit-oriented fashion. Transit systems should help guide regional growth and land use, and transit stations should be treated as neighborhood and community focal points. Placing stations at the center of mixed-use commercial and residential neighborhoods will increase ridership as it allows people to combine errands on foot. Trunk line systems should be designed to allow "walk-and-ride" or "bike-and-ride" rather than "park-and-ride" as the central means of access.

PARKING REQUIREMENTS AND CONFIGURATION The handmaids of streets designed for the speed and comfort of cars are large parking lots. The size, location, and configuration of parking lots send a clear and simple message: "arrive by car only." In mixed-use areas several strategies should be employed to reduce the functional and aesthetic dominance of parking lots. On-street parking should be credited, the number of stalls should be reduced to reflect the joint-use time of day or time of week needs of different uses, and lower standards should be set to reflect non-auto arrival modes – transit, bike, or pedestrian. Where possible, parking lots should be placed to the rear of buildings with entries and windows fronting on streets and sidewalks. Reducing and relocating parking lots will be a difficult change, as developers do not want to be at a disadvantage in competing with conventional projects. This is why city- or region-wide standards should be established.

Definitions

Transit-Oriented Development (TOD)

A Transit-Oriented Development (TOD) is a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial area. TODs mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car.



TODs offer an alternative to traditional development patterns by providing housing, services, and employment opportunities for a diverse population in a configuration that facilitates pedestrian and transit access.

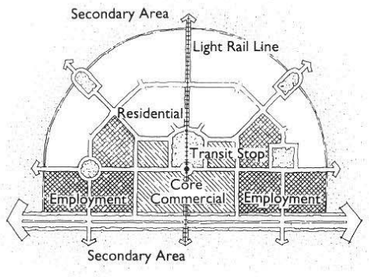
They can be developed throughout a metropolitan region on undeveloped sites in urbanizing areas, sites with the potential for redevelopment or reuse, and in new urban growth areas. Their uses and configuration must relate to existing surrounding neighborhoods.

They must be located on or near existing or planned segments of a trunk transit line or feeder bus network. Adequate auto accessibility is also important. These design guidelines establish standards for site selection and development to ensure that TODs succeed in providing a mix of uses, a variety of housing types, and a physical environment that is conducive to pedestrian and transit travel. Developing a network of TODs throughout the region will also serve to strengthen the overall performance of the regional transit system.

The size of a TOD must be determined on a case-by-case basis. The average 2,000-foot radius is intended to represent a "comfortable walking distance" (±10 minutes) for a majority of people. In some locations, comfortable walking distance is affected by topography, climate, intervening arterials or freeways, and other physical features. Therefore, their size will be greater or lesser depending on surrounding features.

Urban TOD

Urban TODs are located directly on the trunk line transit network: at light rail, heavy rail, or express bus stops. They should be developed with high commercial intensities, job clusters, and moderate to high residential densities.



Each TOD may assume a different character and mix of uses depending on its location within the region, market demands, and the surrounding land uses. Urban TODs are suitable for job-generating and high-intensity uses such as offices, community-serving retail centers, and moderate- to high-density housing because they allow direct access to the transit system without requiring passengers to transfer. Similarly, the intensity of development along the trunk line network should reflect the significant investment necessary to construct the transit system and should generate the greatest number of transit-bound trips.

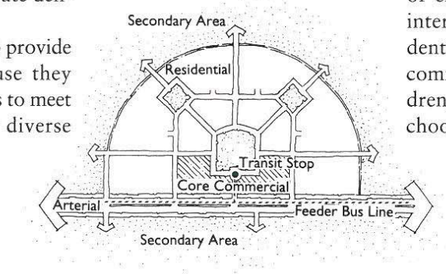
Special development guidelines are recommended for sites that are highly accessible by trunk line transit to permit higher-density residential development and to encourage a higher percentage of job-generating uses. When Urban TODs are located in existing developed neighborhoods, it may be appropriate to apply the densities and mix of uses recommended by a local planning effort. Urban TODs are typically sited approximately 1/2 to 1 mile apart to meet station spacing guidelines, although they could be sited closer together, as transit planning and market demand permit.

Neighborhood TOD

Neighborhood TODs are located on a local or feeder bus line within 10 minutes transit travel time (no more than 3 miles) from a trunk line transit stop. They should place an emphasis on moderate density residential, service, retail, entertainment, civic, and recreational uses.

Neighborhood TODs should have a residential and local-serving shopping focus at densities appropriate for its context and lesser transit service level. Where the feeder bus stops are frequent, TODs can be sited close together and form a "corridor" of moderate density, mixed-use nodes.

Neighborhood TODs can help provide affordable communities because they include a variety of housing types to meet the needs of our increasingly diverse population in a land use pattern that minimizes the need for multiple car ownership. If properly designed, Neighborhood TODs can meet local needs for public facilities and parks, respect the character and quality of existing neighborhoods, and limit inter-community traffic through residential areas. They are also walkable communities, providing access for children, the elderly, and those adults who choose to walk or bike.



Core Commercial Areas

Each TOD must have a mixed-use core commercial area located adjacent to the transit stop. At a minimum, the core area should provide convenience retail and local-serving offices. Larger core areas may also combine major supermarkets, restaurants, service commercial, entertainment uses, comparison retail, second-floor residential, and employment-intensive office and light industrial uses.

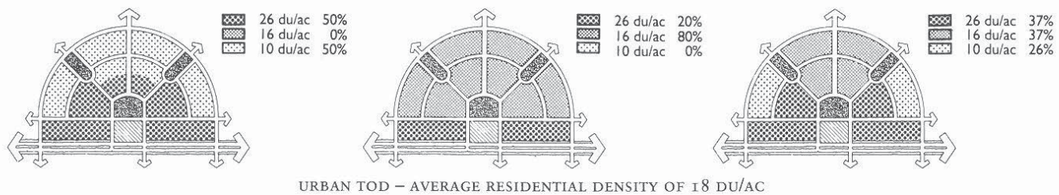


A commercial core at the center of each TOD is essential because it permits most residents and employees to walk or ride bicycles for many basic goods and services. This is particularly advantageous for those without cars and individuals with mobility limitations. Those who still choose to drive to shop will have to go fewer miles and can avoid using arterial streets for local trips. Core commercial areas also provide a mixed-use destination that makes transit use attractive. People are more prone to use transit to get to work if the transit stop is combined with retail and service opportunities.

The size and location of core commercial areas should reflect anticipated market demand, proximity to transit and phasing considerations. Optional upper-floor office and residential uses in the core commercial area increase the mixed-use, round-the-clock nature of the core area. Employment-generating uses, such as office buildings and employee-intensive light industrial uses, may be located adjacent to or amongst the retail component of the core commercial area. The transit stop and core commercial area should be complemented with a "village green" or public plaza which can serve as a focal point for community activities. Secure and convenient bicycle parking facilities should be provided to encourage bicycle access.

Residential Areas

TOD residential areas include housing that is within a convenient walking distance from core commercial areas and transit stops. Residential density requirements should be met with a mix of housing types, including small lot single-family, townhomes, condominiums, and apartments.



URBAN TOD – AVERAGE RESIDENTIAL DENSITY OF 18 DU/AC

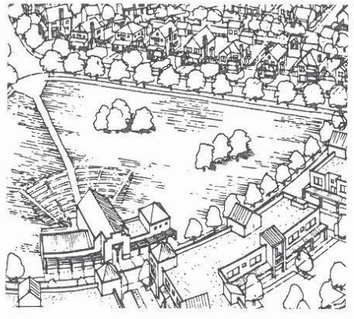
TOD residential areas provide a higher concentration of households in close proximity to transit service and core commercial areas than typical suburban land use patterns. Average minimum densities of at least 10 du/net acre are necessary to support local bus service; higher densities are necessary for adequate light rail and express bus service. To this end, the TOD concept encourages walking and biking, reduces reliance on the automobile, supports transit service, and creates distinct, identifiable neighborhoods.

Residential areas should extend from the core commercial area and transit stop over an area that is an average 2,000 feet in radius, representing a 10-minute walking distance. They should contain a variety of housing types and ownership patterns, ranging from small-lot single-family homes with carriage units to apartment buildings.

The average minimum density requirement is intended to set a baseline density standard for all TODs, as well as encourage variety. A mix of housing types may be used within this area, some high density and some low density, provided the overall average minimum density is met. For example, a TOD residential area may include a mix of small lot single-family homes with ancillary units (12 du/acre), townhouses (15 du/acre) and apartments (25 du/acre) combined to meet an average density requirement of 18 du/acre. Net densities are roughly 20% higher than gross densities, once streets and other infrastructure improvements are accounted for. Higher average density standards may be adopted by site-specific plans to respond to locational differences within a community. Community Plans, Specific Plans and/or zoning studies will clarify how the minimum average density standards are applied to individual sites.

Public Uses

Public uses are required to serve residents and workers in TODs and neighboring areas. Parks, plazas, greens, public buildings, and public services may be used to fulfill this requirement. Small public parks and plazas must be provided to meet local population needs.



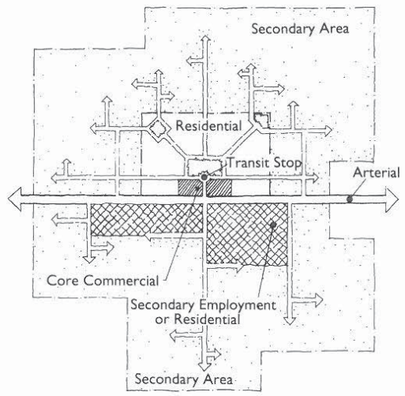
The structure of a TOD is built around accessible and convenient public facilities and spaces. A strong sense of community, participation, identity, and conviviality is important to support a sense of safety and comfort within a neighborhood. Public uses serve this role by providing meeting places, recreation opportunities and lunch time picnic spots essential to the vitality of TODs. A well-used park is centrally located in a neighborhood, has good visibility from the street, and often benefits by being next to a public library, civic services, transit, or retail.

Each TOD must contain open space areas available to the public and facilities which serve the needs of the surrounding community. Varying sizes and types of TODs will require or justify inclusion of civic buildings and public facilities. Appropriate public facilities include day care, libraries, community buildings, police and fire stations, post offices, and governmental services. Public buildings should be placed in central locations, as highly visible focal points, or adjacent to public parks and plazas. Civic uses such as an urban plaza, community center, post office, and library are best located in the core area in conjunction with retail businesses and offices. Recreation-oriented uses, such as parks, recreation facilities, and community buildings, as well as large parks and schools, should be centrally located with easy access from TOD residences and the core area. Schools should be placed at the perimeter of TODs in their Secondary Area.

Secondary Areas

Each TOD may have a Secondary Area adjacent to it, including areas across an arterial, which are no further than one mile from the core commercial area. The Secondary Area street network must provide multiple direct street and bicycle connections to the transit stop and core commercial area, with a minimum of arterial crossings. Secondary Areas may have lower density single-family housing, public schools, large community parks, low intensity employment-generating uses, and park-and-ride lots.

The Secondary Area provides for uses which are not appropriate in TODs because they are lower density and more auto-oriented. These areas will, however, provide market support for TOD businesses because Secondary Area residents and workers may shop in the core commercial area and generate riders for the transit system. Employment-generating uses should be located directly across the arterial from the transit stop.



Commercial uses which are very similar in nature and market appeal to those located in the core commercial area should not be permitted in Secondary Areas. They may diminish the ability of the TOD to establish a viable retail center. Similarly, very low intensity industrial and warehousing uses which are highly auto- and truck-dependent are not appropriate for Secondary Areas; they do not have a sufficient number of employees to contribute to create a healthy pedestrian environment.

Single-family residential development is and will continue to be an important land use. These areas typically have too low a density to be adequately serviced by transit. By maximizing street connections to TODs and making it convenient for residents to bike or walk to the transit stop, transit utilization in single-family areas may increase. This is important both in New Growth Areas and in existing neighborhoods where streets may need to be retrofitted. Providing multiple, interior street connections between TODs and Secondary Areas will keep many auto trips off arterials. Locating public schools in Secondary Areas will provide a service for the TOD without using valuable transit-accessible land.

Other Uses

Uses that rely extensively upon autos, trucks or have very low employment intensities are not appropriate uses for TODs or Secondary Areas. Rural residential, industrial uses, and travel-commercial complexes should be located outside of TODs and Secondary Areas.

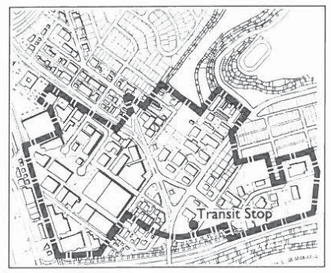
Many uses typically allowed in commercial areas rely predominantly upon auto travel to generate business patrons. These uses, such as auto dealers, freestanding car washes, mini-storage facilities, highway commercial uses, and motels, should not be permitted in TODs or Secondary Areas.

Similarly, low-employment-generating industrial uses should not be permitted in TODs or Secondary Areas. They are not compatible with nearby residential uses and generate few employees to support core commercial areas. Industrial uses are more appropriate where existing industrial activities occur and where major freeway noise impacts are anticipated.

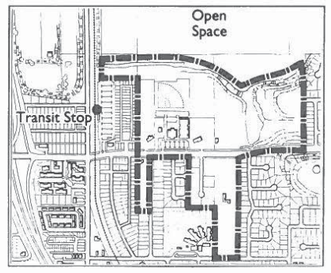
In order for more frequent transit service to be economically viable, uses near transit stops must have moderate residential densities and the commercial uses must create a high level of pedestrian activity. Land near the transit stop should reinforce transit use by supporting higher density, pedestrian-oriented uses and development patterns. Uses that are primarily auto-oriented are not appropriate for TODs and are better located near major highways.

Location Types

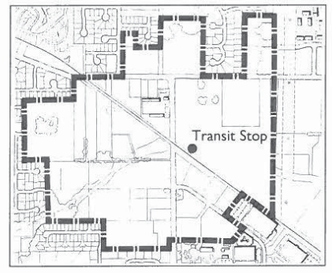
TODs may be located in Redevelopable Sites, Infill Sites, or in New Growth Areas. Redevelopable Sites are developed areas that could be revitalized with new, more intensive uses and transit service. Infill Sites are vacant parcels surrounded by existing urban development. New Growth Areas are larger, undeveloped properties typically on the city's periphery. Regional comprehensive plans, local community plans, and transit corridor plans should identify appropriate sites in each of these settings.



REDEVELOPABLE SITE



INFILL SITE



NEW GROWTH AREA

TODs are an opportunity to promote efficient development patterns, both in the existing urbanized fabric of the city and in New Growth Areas. Three types of settings have been identified which broadly characterize the physical pattern of development throughout most American cities. These three functional settings represent the range of conditions where TODs could be located and linked by transit.

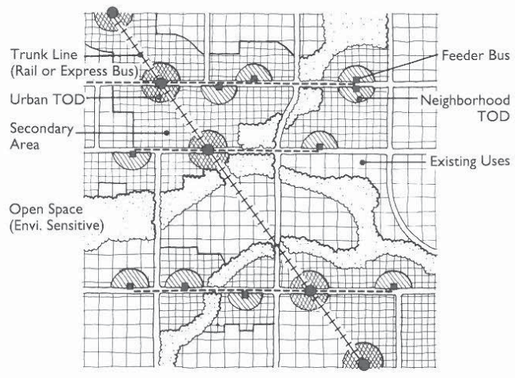
Implementation on Redevelopable and Infill Sites has the opportunity to transform development patterns that are presently highly auto-oriented into mixed-use, transit-oriented development. Careful site selection and integration of viable, existing uses within the site and its surroundings can help ensure its future success. Furthermore, traffic and infrastructure constraints must be addressed if TODs are to function well.

The TOD concept is also a strategy to promote efficient and environmentally sensitive development patterns in newly developing areas. Because these sites are relatively free of existing land uses, New Growth Areas offer a great opportunity for creating mixed-use destinations and interconnected street systems. Constraints generated from topography and sensitive habitats can be overcome by carefully selecting sites and by configuring streets to relate to the topography. A fundamental premise, however, must be to limit sprawl by clustering development within planned urban growth areas.

Guiding Principles

Relationship to Transit and Circulation

The site must be located on an existing or planned trunk transit line or on a feeder bus route within 10 minutes transit travel time from a stop on the trunk line. Where transit may not occur for a period of time, the land use and street patterns within a TOD must function effectively in the interim.



The trunk line network represents the region's express transit system. It typically consists of either light rail, heavy rail, or express bus service, with at least a 15-minute frequency of service and a dedicated right-of-way. Providing a dedicated right-of-way, whether fixed rail or HOV lanes, serves two important purposes: 1) it ensures expedited and free-flow transit travel; and 2) it represents a long-term transit commitment that allows developers to make similar investments.

The feeder bus network is a system of timed transfer local bus routes that link to the trunk line network. Transit stops on the feeder bus network should be within 10 minutes transit travel time (approximately 2 to 3 miles) from a trunk line network stop, with buses running at least a 15-minute frequency of service. 10 minutes transit travel time is the maximum people are typically willing to ride prior to a mode change. In some circumstances, a feeder bus can be provided by a private transit system that meets this level of service criteria.

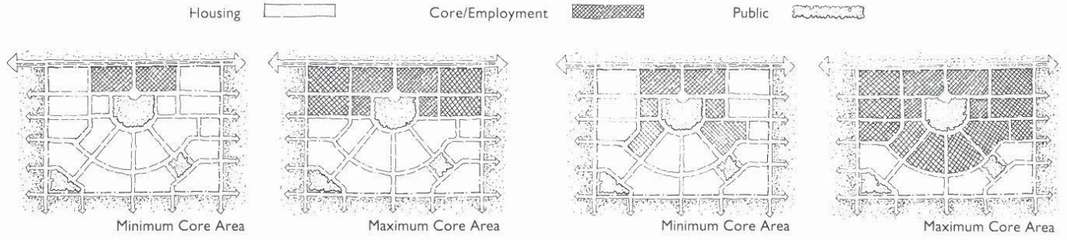
Even with an ambitious 40% non-auto mode split, 60% of all trips will continue to be via autos. The land use patterns in TODs, as well as their internal street systems, must plan for on-going auto use. Adequate auto access from arterials and freeways, as well as frequent transit service, will also be an important locational consideration for the more intensive, employment-oriented TODs. Not all transit stops will be TODs; some stops will be developed as park-and-ride lots.

In many locations transit service is planned, but will not be implemented until well after development ocurrs. A region has the opportunity to guide transit planning by providing the densities necessary to support transit with advanced land use planning. In early years, express bus service can serve planned light rail lines and establish ridership clientele. Land use patterns should lead transit service planning, rather than expecting transit to come to an area that must be retrofitted to provide transit-supportable densities.

Mix of Uses

All TODs must be mixed-use and contain a minimum amount of public, core commercial and residential uses. Vertical mixed-use buildings are encouraged, but are considered a bonus to the basic horizontal mixed-use requirement. The following is a preferred mix of land uses, by percent of land area within a TOD:

USE	NEIGHBORHOOD TOD	URBAN TOD
Public	10% - 15%	5% - 15%
Core/Employment	10% - 40%	30% - 70%
Housing	50% - 80%	20% - 60%



NEIGHBORHOOD TODS URBAN TODS

A certain minimum proportion of uses is required to stimulate pedestrian activity and to provide economic incentives for developing with mixed-use patterns. The proportion of uses is based on site area, not density or building intensity. It does not preclude additional, different uses on upper floors. At a minimum, retail, housing, and public uses are required in all TODs. Employment uses within the core commercial area may be used to augment these minimum uses, as market conditions permit. The public use component should include land devoted to parks, plazas, open space, and public facilities. The different mix of uses for Neighborhood TODs and Urban TODs is intended to reflect the variations in intensity and type of development desired at these sites.

The mix of land uses and appropriate densities should be clarified in a community or site-specific planning process, in order to address site-related issues such as context, market demand, topography, infrastructure capacity, transit service frequency, and arterial/freeway accessibility. Special care should be taken to respect the context of the site and the character of surrounding existing neighborhoods.

Vertical mixed-use buildings do contribute to a healthy pedestrian environment, but are much more difficult to implement due to current real estate practices that encourage single-use buildings. For this reason, vertical mixed-use should not be solely relied upon to create pedestrian-oriented places.

If a neighborhood or employment area has local destinations within convenient walking distance, residents and employees are more likely to walk or bicycle. Furthermore, if local destinations are accessible to drivers without requiring use of the arterial street system, congestion can be reduced. The required proportion of uses is designed to encourage pedestrian activity, yet allow flexibility to create neighborhoods with different use emphases, such as primarily residential TODs (Neighborhood TODs) and TODs which emphasize job-generating uses (Urban TODs).

Residential Mix

A mix of housing densities, ownership patterns, price, and building types is desirable in a TOD. Average minimum densities should vary between 10 and 25 dwelling units/net residential acre, depending on the relationship to surrounding existing neighborhoods and location within the urban area.



Small-Lot Single-Family



Townhouses



Duplexes



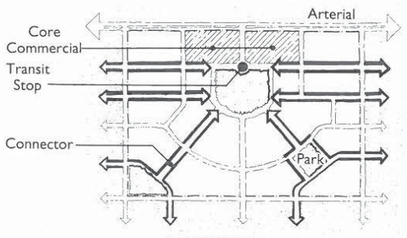
Apartments & Condominiums

While each TOD will take on a different character and will have a different proportion of single-family and multi-family densities, care should be taken to provide a variety of housing types, costs, and ownership opportunities. Residential areas can combine small lot single-family units, duplexes, townhouses, and apartment buildings.

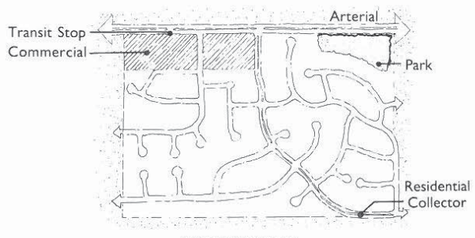
In order for TODs to be affordable to the diverse range of households, they must provide a mix of housing types. Single-family housing has, and will continue to have, strong market demand in most communities. Higher density townhouses and multi-family units are, however, gaining an increasing proportion of the market share. The range of permissible residential densities can accommodate all of these household needs. Providing a mix of housing types will also result in more "cosmopolitan" communities.

Street and Circulation System

The local street system should be recognizable, formalized, and inter-connected, converging to transit stops, core commercial areas, schools and parks. Multiple and parallel routes must be provided between the core commercial area, residential, and employment uses so that local trips are not forced onto arterial streets. Streets must be pedestrian friendly; sidewalks, street trees, building entries, and parallel parking must shelter and enhance the walking environment.



PREFERRED



DISCOURAGED

The street pattern should be simple, memorable, and direct, avoiding circuitous routes. Streets should converge at common destinations, such as transit stops, core commercial areas, and parks. They should allow autos, bikes, and pedestrians to travel on small local streets to any location in the TOD without crossing or following an arterial. Street connections should be designed to keep through trips on arterial streets and local trips within neighborhoods. At no time should an arterial street be the only route to and from the different land uses of the TOD.

Where there is steep topography or other sensitive natural resources, it may be necessary to curve streets and create some cul-de-sacs. On-street pedestrian and bicycle paths should be provided to allow residents to walk to all local destinations, rather than segregated off-street paths.

Clear, formalized, and inter-connected street systems make common destinations visible. They also provide the shortest and most direct path for pedestrians and bicyclists. With an inter-connected street system, any single street will be less likely to be overburdened by excessive traffic, thus reducing the need for cul-de-sacs. A street pattern which is circuitous and complex will discourage pedestrians; a street system with landmarks and a simple form will be memorable and familiar.

General Design Criteria

Buildings should address the street and sidewalk with entries, balconies, porches, architectural features, and activities which help create safe, pleasant walking environments. Building intensities, orientation, and massing should promote more active commercial centers, support transit, and reinforce public spaces. Variation and human-scale detail in architecture is encouraged. Parking should be placed to the rear of buildings.

Orienting buildings to public streets will encourage walking by providing easy pedestrian connections, by bringing activities and visually interesting features closer to the street, and by providing safety through watchful eyes. Moderate-to-high intensities and densities also support frequent and convenient transit service. Retail centers with pedestrian-scale features and configurations will support the walking environment critical to that transit service.

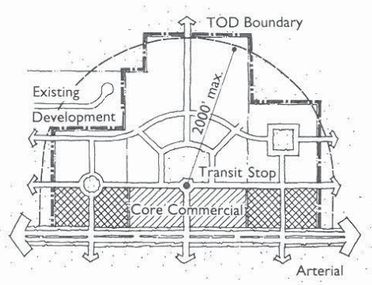


With the possible exception of anchor retail stores, primary building entrances should be physically and visually oriented toward streets, parks and plazas, and not to the interior of blocks or to parking lots and garages. Parking lots should be placed to the rear of buildings. Secondary entrances, oriented toward parking lots, are permitted. Where existing viable uses are separated from the street by large parking lots, infill is encouraged at the street. In addition, new internal streets may be constructed closer to existing entries, thus creating a "Main Street" pedestrian setting.

Core commercial areas should be intensive enough to provide a "Main Street" shopping spine. Furthermore, multi-storied buildings and structured parking are strongly encouraged in Urban TODs to better utilize land adjacent to a transit line. As a region continues to grow, land economics may make future intensification desirable. Commercial area development plans should include long-term strategies for additional stories and buildings, along with structured parking. Residential infill should also be possible by permitting some ancillary dwellings in single-family residential areas.

Site Boundary Definition

The size of the TOD is variable depending on the ability to provide internal, local street connections. Parcels within an average 10-minute walking distance of the transit stop shall be included if direct access by local street or path can be established without use of an arterial. To allow for a basic mix of uses, the TOD area should be a minimum of 10 acres for Redevelopable and Infill Sites, and 40 acres for New Growth Areas.



While the majority of the site should be within a quarter to half mile walking distance, the total area will vary based on parcel sizes, topography and other intervening features. Oddly shaped parcels may extend the site boundary beyond 2,000 feet to include areas which are the equivalent of a 10 minute walking distance; sites limited by topography or adjacent to freeways or arterials may be smaller. Where a majority of a parcel is within 2,000 feet, the whole parcel should be included in the site area. The distance from the transit stop to the outer boundary of the Secondary Area should be no greater than one mile. The arterial network in a New Growth Area should be located to maximize the potential size of TODs and not bisect viable sites.

If a candidate site does not have a street system that can provide direct auto and walking connections to the core area and transit stop, the site must be strictly limited to the parcels that do or can provide connections. This site may be a single property, but must be a minimum of 10 acres in size. All required uses must be provided within this smaller site area.

Sufficient vacant or redevelopable land must be available in the site to allow full application of the development standards. In Redevelopable Areas, there should be a mix of underutilized properties that could be redeveloped to more intensive uses. On Infill Sites, the undeveloped parcel should be surrounded by uses that fit with the TOD concept. Adjacent existing uses, such as employment or multi-family housing, can essentially function as part of the TOD or its Secondary Area if their intensities and densities are consistent with the design guidelines.

Sites in New Growth Areas may consist of 40 to 160 acres of land that are wholly undeveloped or have some minor amount of existing uses. Sites may consist of parcels in multiple ownerships provided that the planning for the designated site is coordinated among the property owners.

Coordinated Planning and Specific Area Plans

Regardless of the number of property owners, development of a TOD must provide a coordinated plan for the entire site. This "Specific Area Plan" should be consistent with the Design Guidelines, coordinate development across property lines, and provide strategies for financing construction of public improvements.

TODs represent a departure from traditional single parcel/single use development and require coordinated planning and implementation of public improvements such as streets, pedestrian paths, bikeways, and plazas. While a few sites will be owned by a single entity, many sites will consist of numerous parcels under multiple ownerships. To ensure that the area is planned in a coordinated manner, a single plan should be developed. Property owners may jointly prepare a single development plan or work cooperatively with the local jurisdiction to prepare a Specific Plan.

There are several aspects of a Specific Plan that can expedite and reduce costs in the development process. Specific Plans allow street alignments and land use configurations to be planned across property lines in order to achieve community goals that are broader than a single parcel; standard zoning and PUDs cannot ensure this level of coordination. A common Environmental Impact Report may be prepared for the entire Specific Plan area, freeing individual property owners from duplicative analyses and lengthy and expensive review processes. Specific design guidelines and development standards for the site can be prepared which replace restrictive and inappropriate elements of the local zoning ordinances, as well as encourage design qualities appropriate in mixed-use areas.

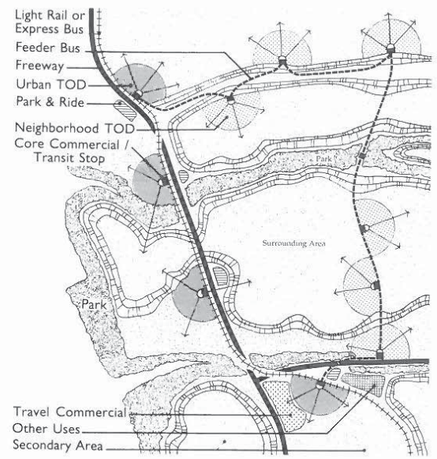
Implementation plans should be prepared as part of every Specific Plan. These plans should include financing strategies to ensure that public improvements, such as schools, parks, public facilities, roads, and other infrastructure are build in a coordinated and timely manner, and that the cost of those improvements is equitably distributed among property owners and other beneficiaries.

Distribution of TODs

TODs should be located to maximize access to their Core Commercial Areas from surrounding areas without relying solely on arterials. TODs with major competing retail centers should be spaced a minimum of one mile apart and should be distributed to serve different neighborhoods. When located on fixed rail transit systems, they should be located to allow efficient station spacing.

Appropriate TOD spacing provides convenience retail opportunities that are within an easy walk for most residents, ensures the viability of the retail centers, and better links transit stops to concentrations of residents and core commercial services.

TODs should be distributed throughout a New Growth Area in a pattern that allows the greatest number of residents and workers access to a variety of shopping opportunities. They should also be distributed to permit residents to walk to retail and public facilities without having to cross an arterial street, whenever possible. The one-mile spacing guideline relates to the market area necessary to support a grocery store (often the anchor store in a neighborhood shopping center), as well as being a typical spacing for transit stops. Shopping centers with uses that are not directly competing may be sited closer than one mile apart.

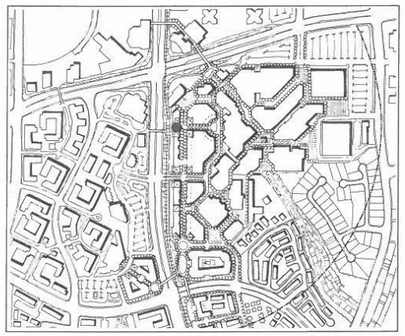


Redevelopable and Infill Sites

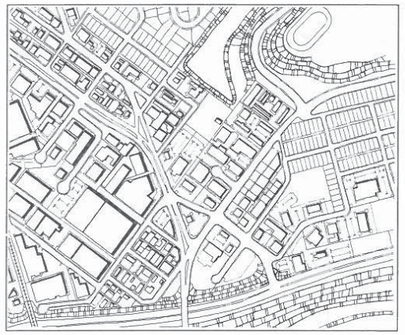
Redevelopable and Infill Sites should develop underutilized parcels with new uses that allow them to function as walkable, mixed-use districts. Existing uses which are complementary, economical, and physically viable should be integrated into the form and function of the neighborhood. Existing low-intensity and auto-oriented uses should be redeveloped to be consistent with the TOD's compact, pedestrian-oriented character.



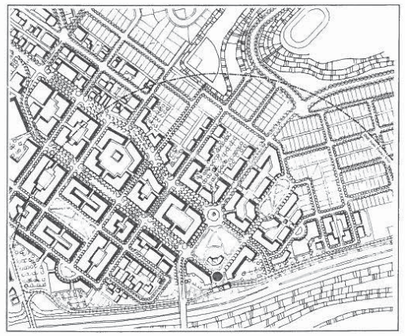
BEFORE



AFTER



BEFORE



AFTER

As land values increase over time or as the result of transit investments, older neighborhoods may gradually transition to new uses and economically underutilized areas may redevelop to more intensive uses. TODs may be able to take advantage of this change to reinforce the transit system with pedestrian-oriented land uses. Existing on-site uses that are economically viable can serve as the starting point and in some cases will represent the nucleus for future economic revitalization. The condition, density, and intensity of these existing uses must be compatible or be made compatible with pedestrian and transit travel. New uses which are missing from the ideal mix of land uses can be introduced. Uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, motels, or low-intensity industrial uses, are not likely to contribute to pedestrian activity in the TOD and should be discouraged. Intensification and redevelopment must, however, be balanced with sensitivity to protecting existing neighborhoods and to the problems of gentrification.

Site plans should integrate existing uses by respecting their on-going operations, basic access requirements, and, if appropriate, existing building massing and architecture. Site improvements may be required to make these properties more pedestrian-oriented. Infill buildings may be needed to meet density and intensity requirements and to better address streets. Safe, direct and pleasant pedestrian connections should be provided to surrounding areas. Site landscaping and building frontage treatments may also be needed to enhance streets and mitigate areas where streetside conditions, such as parking, blank walls, and service entries, are unavoidable. If these guidelines cannot be met initially, plans for implementing necessary improvements over time should be developed.

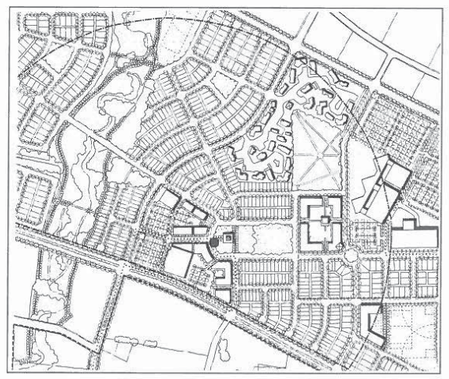
Infill Sites represent undeveloped parcels of land that have been "skipped over" in the process of growth and are surrounded by existing development. This can occur in inner-city locations or in suburban areas. In many cases these parcels do not have an established street system, but are connected to surrounding neighborhoods or adjacent to existing commercial developments. These sites are often large enough to develop all or a major portion of a TOD; the existing surrounding neighborhoods will then function as its Secondary Area.

New Growth Areas

New Growth Areas are typically located at the edge of the metropolitan region or on large sites which have been passed over. They may be large enough to create a network of Urban and Neighborhood TODs, as well as Secondary Areas, and should be planned in coordination with extensions of transit and an Urban Growth Boundary. New Growth Areas should not, however, be used to justify "leap frog" development or degrade sensitive environmental habitat or valuable agriculture lands.



BEFORE



AFTER

A high growth region may need to designate areas at its perimeter to handle the growth not feasibly accommodated in redevelopable or infill locations. New Growth Areas are generally free of existing urban uses and are therefore often the easiest to develop with transit- and pedestrian-oriented land use patterns. However, because they are generally located at the edge of urban development, they may ultimately spread the size of the city.

A key criterion for selecting New Growth Areas should be transit system viability once the area is fully built-out. Areas that are too distant from the metropolitan center or present expensive obstacles to transit should not be designated for new growth. Corridor plans should be prepared along planned transit lines to select appropriate sites for tods and determine whether sufficient ridership can be generated along the entire corridor.

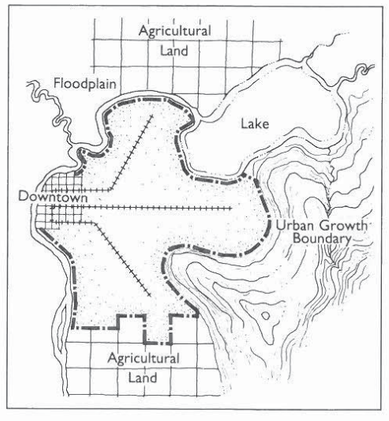
Development within New Growth Areas should be located along existing or planned trunk transit lines, and developed as tods and associated Secondary Areas. This is part of a strategy to maximize preservation of open space, focus development potential into pedestrian-oriented patterns that can be served by transit, and limit urban sprawl. While some sites may only have sufficient land to develop a single Urban or Neighborhood tod, many sites are large enough to create a network of tods, each served by transit, thus stimulating a significant positive impact in local travel behavior and congestion trends. Site-specific plans should be prepared to ensure that environmental constraints are respected.

Because it may be a number of years before transit reaches some potential sites, projects should be planned to function in the interim without strong transit service. In initial years, trunk line service may be provided in the form of express buses, with later conversion to light rail. Rights-of-way should be reserved for light rail, exclusive bus lanes, bus turn-outs, and transit stop facilities in the early phases of planning and development.

Regional Form

Regional form should be the product of transit accessibility and environmental constraints. Major natural resources, such as rivers, bays, ridgelands, agriculture, and sensitive habitat should be preserved and enhanced. An Urban Growth Boundary should be established that provides adequate area for growth while honoring these criteria.

Regional growth has been largely directed by highway capacity and location. The cycle starts with housing pioneering more remote sectors of the metropolitan region in the form of bedroom communities. With the federal and state highway investments of the last thirty years, these seemingly remote suburbs and small towns became commute-accessible to the existing major job centers. The remote suburbs offered low-cost land and affordable housing



ownership, and therefore viable housing for the regional workforce. Retail, services, recreation, and civic uses followed in proportion to the demand created by the housing. At a critical mass, the new suburban areas began to attract jobs themselves and "Edge Cities," as Joel Garreau calls them, were formed. As these new decentralized job centers grew, the process began again creating another layer of sprawl extending out from the decentralized job centers. Today, the suburb-to-suburb commute now represents forty percent of total commute trips.

The next generation of regional growth is in crisis. Putting aside the environmental and social implications of repeating this old pattern, the highway funds are no longer present to support the next layer of sprawl. The alternative is a regional form which sets reasonable boundaries and directs growth to infill and transit-accessible locations. Natural features can contribute to a justifiable regional boundary that is reinforced from within by strongly supported internal transit corridors. Regional form is then directed from within, by transit, and from without, by natural boundaries.

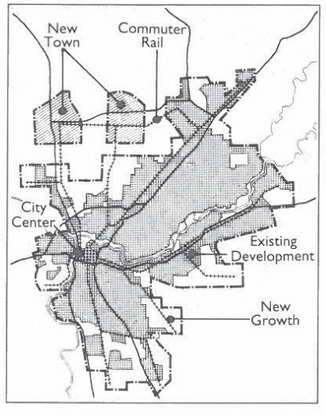
It is important that such planning be done with an eye to the long-range needs and implications of growth, and that the area defined has adequate room for urban expansion as well as infill. Constraints that are too tight can easily lead to increased housing costs, flight of working families, and the resultant exodus of jobs. Infill and New Growth Areas that are diverse in their housing profile and transit-supportive can allow a region to retain a healthy job base by providing housing that is affordable and accessible.

Criteria for New Towns

New Towns should only be planned if a region's growth is too large to be directed into Infill and adjacent New Growth Areas. They should be used to preserve the integrity of and separation between existing towns, as well as plan for a regional balance in jobs and housing. Appropriate sites should have a viable commuter transit connection and are not on environmentally sensitive lands.

In rare cases, a region's growth cannot be reasonably contained within Infill and New Growth Areas. This is most common in areas with distinct small towns which want to preserve their character, but are under growth pressure from a nearby metropolitan center. Rather than simply rejecting growth and indirectly propagating piecemeal development in unincorporated or uncontrolled areas, these regions can choose to plan for a coherent New Town. This strategy can help preserve the identity and separation of existing small towns, without instigating sprawl in more remote sites.

Another circumstance for New Towns is the availability of a major site within transit access of a metropolitan center and within an Urban Growth Boundary. This type of site should be planned as a "satellite" New Town, with a strong jobs/housing balance and a greenbelt separation between existing communities. New Growth Areas and New Towns are similar in this circumstance, but for the size, intensity of jobs, and greenbelt. Such satellite towns can stabilize the edge of a metropolitan region by providing a greenbelt, while absorbing the demand which could fuel sprawl. They also have the advantage in some circumstances of lower land costs and therefore can provide housing at more affordable levels. If planned intelligently, New Towns also can provide infrastructure and services in an efficient form. In contrast, areas in which the existing infrastructure is overburdened and in need of reconstruction and major expansion often have to pay a premium for redevelopment.



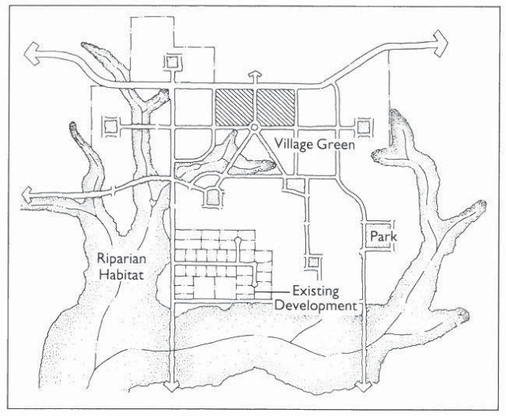
Ecology and Habitat

Open Space Resource Protection

Major creeks, riparian habitat, slopes, and other sensitive environmental features should be conserved as open space amenities and incorporated into the design of new neighborhoods. Fencing and piping of creeks should be avoided and channelization should be minimized.

Natural features provide visual relief and establish a unique character for a community. Whenever possible, open space resources should be incorporated into the design of TODs and Secondary Areas. Sensitive site planning should be encouraged so that natural habitats are protected and natural features become an integral part of the community. These resources should be treated as key amenities, rather than as edges to developments.

Natural features can often serve dual purposes, as resource protection and public access. Public access should be permitted while important natural features and sensitive habitats are preserved. Bicycle paths can often be constructed along creek systems, thus serving a dual function of allowing public access to open space and providing paths to destinations along the edges of linear parks. Major public facilities, such as schools, parks, and recreation centers, should be linked by these open space/bicycle trail systems.

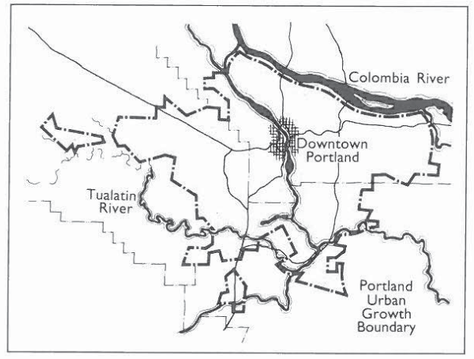


Ridgetops and other topographic features should serve as primary urban form determinants. In New Growth Areas, there is an opportunity for open spaces to shape and enhance neighborhoods, to provide a scenic resource from roads, and to serve as permanent wildlife corridors.

Urban Growth Boundaries

Urban Growth Boundaries (UGB) should be established at the edge of metropolitan regions to protect significant natural resources and provide separation between existing towns and cities. Lands within the UGB should be transit accessible, contiguous to existing development, and planned for long-term urbanization.

Oregon is one of the few states that has enabling legislation for UGBs. Fundamental to such a device are regional governing bodies that have the power to establish and protect limits to growth. The problem of a single jurisdiction establishing such a line is that a simple change of the elected board can reverse or revise the line. A UGB typically has to be created in the context of multiple jurisdictions to be meaningful. One alternative to state-level empowerment or regional governments is a joint power agreement between several jurisdictions. If, for example, a county and several cities were to agree upon a boundary and corresponding holding capacities, any change would require unanimous agreement – an unlikely political event, short of a new regional consensus.

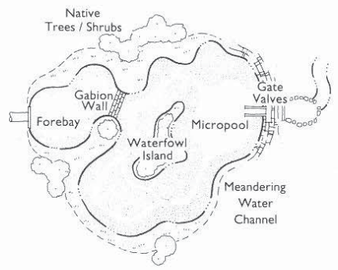


The placement and configuration of a UGB is a complex, site-specific task. It is important that the boundary be large enough to absorb a reasonable amount of growth for a significant period of time. It should not be a mechanism for down-zoning lands imminently vulnerable to development. It is a long-term tool to direct growth and regional form. One of its purposes is to prevent investments from being squandered on land speculation in inappropriate areas. It can serve to keep development intelligent and efforts focused on coherent sites. Such a boundary must respect and protect major environmental assets and integrate the needs of transit. This transit criterion means that there should not be gaps in the urban fabric, and that all areas within the UGB be transit accessible.

Wastewater Treatment and Water Reclamation

On-site wastewater treatment facilities which use biological systems to reclaim water should be used whenever possible. The reclaimed water should be used for on-site irrigation or for nearby farming.

Emerging technologies are allowing more efficient water treatment and re-use at the scale of neighborhoods and small communities. Typically, biological wastewater treatment systems incorporate wetlands, streams and ponds to aerate and dissolve water-borne pollutants. Wastewater is treated to a high level of purification (tertiary treatment), whereas most municipal systems only filter solids (primary treatment) or partially treat the wastewater (secondary treatment). The result is two-fold: recycled water that can either be re-used or filtered back into the local ecology; and an enhanced on-site riparian system that is an amenity.



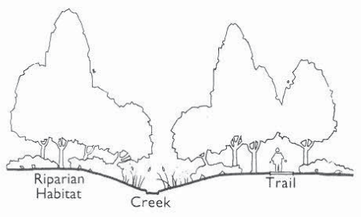
Drought conditions and water rationing in many western states are often forcing new development to use this precious resource more responsibly. Water reclamation systems allow a doubling in efficiency by re-using treated wastewater for irrigation. Bio-mass can also be harvested for fertilizer. Farms at the periphery and parks within New Growth Areas can benefit from these new water resources.

Drainage and Wetlands

Existing drainageways and wetlands should be maintained or enhanced in a natural state. In lower-density areas, drainage systems should recharge on-site groundwater by using swales and surface systems, rather than storm drains. All urban runoff must be treated on site with biological retention and filtration areas.

A key element of this approach to community design involves making a stronger connection between nature and our cities. More aggressive approaches should be taken to preserve and repair on-site creeks and riparian habitat, so they can become integral community elements. Many communities, for example, are opening up creeks that have been piped under neighborhoods and business districts, so they can re-emerge as natural local amenities.

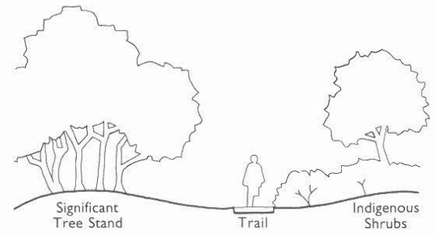
New drainage systems in lower-density areas should use shallow open swales and retention ponds that are designed to function effectively during peak flows, create small picnic and play areas during the off-season, and introduce landscape corridors that meander through neighborhoods. This approach is less feasible in high-density areas where land is at a premium. Village Homes, in Davis, CA, for example, uses surface drainageways to collect all storm- water run-off into a creek system that flows throughout this lushly landscaped neighborhood. Small detention areas double as children's play areas; walking paths follow the open space network. Similarly, the lake at Laguna West serves both as a flood detention basin and a biological treatment system for urban run-off.



Indiginous and Drought Tolerant Landscaping

Landscape species used on public and private lands should be indigenous or proven adaptable to the local climate. In areas with water limitations, drought-tolerant species should be used in a majority of sites. Prominent stands of trees should be preserved.

Trees and other landscaping help to establish a distinct character and quality of life for a community. Indigenous species, in particular, create a unique identity and carry forward the history of a place at a scale that is recognizable. Some sites are fortunate to have prominent stands of heritage trees which make identifiable landmarks within the larger community and serve to establish character for newly developing areas. The use of native plants, as well as preservation of existing important natural resources, should be encouraged.



A number of the elements of mixed-use, higher-density neighborhoods also lead to the need to utilize plant species that are drought-tolerant and adaptable to the local climate. Streets lined with trees, small and frequent parks, and preserved creek corridors all make these compact neighborhoods more livable. In the context of water conservation, use of drought-tolerant species becomes essential. Public areas in particular should serve as models for the private sector in terms of appropriate plant selection and use of landscaping techniques.

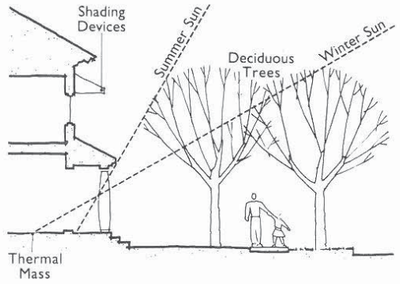
Energy Conservation

Energy conservation should be a goal of site, as well as building design. Strategies such as passive solar, natural ventilation, daylighting, and simple shading should be employed when cost effective and appropriate to the climate. Micro-climate effects can be enhanced or mitigated through intelligent building configuration and landscape treatments.

There are several strategies for energy conservation in community planning: reduced auto usage, enhanced microclimate, conservation in buildings, and climate-responsive architecture. Interestingly, they tend to overlap and reinforce one another. For example, an enhanced microclimate, through shade trees or wind barriers, can affect auto usage by creating more comfort for the pedestrian, and simultaneously eliminate the need for architectural shading. Climate-responsive buildings, with courtyards for thermal buffering or clear glass for daylighting, can add interest and safety for the pedestrian and avoid the negative microclimate impacts of reflected glare or wind tunnel effects. Reduced auto usage can have a positive impact on building energy consumption by reducing asphalt areas and the associated heat buildup. This interaction of effects means that a careful balancing of strategies, appropriate to the climate and region, is important.

In all cases the strategies for buildings should be cost-effective and appropriate to the use and climate. For most mild and partly cloudy climates, insulation and shading are important residential features, while daylighting and natural ventilation are appropriate for commercial buildings. This means that strict solar ori-

entation is not critical in these areas. In cold sunny climates, certain passive solar heating strategies may be cost effective. Here, street and building orientation may be important. It is undesirable in mild climates to attempt passive solar orientation for all buildings, partly because this constrains the site plan too much and partly because passive solar heating in mild climate zones is often less cost effective than super insulation or district heating systems.



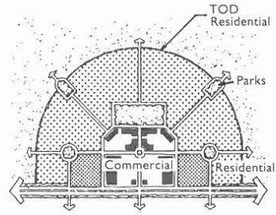
Microclimate design strategies provide a wealth of design concepts for community planning. The use of water and landscaping to temper local climate is a well-documented art. In some circumstances building massing and orientation can play a role; narrow streets in hot arid climates and setbacks for solar access in cold climates are two examples. Finally, the building itself can layer the environment with buffer zones of intermediate temperatures: porches, courtyards, overhangs, and trellises are a few such devices.

Core Commercial Areas

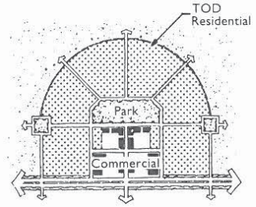
Core Commercial Areas Size and Location

The core commercial area may mix ground floor retail, office, and commercial space. It must occupy at least 10 percent of the total TOD site area and have a minimum of 10,000 sq-ft of retail space adjacent to the transit stop.

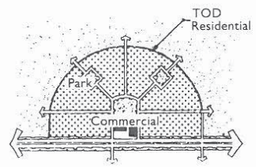
Mixed-use core commercial areas are the primary link between transit and land use. Sufficient retail and commercial space must be provided to form a useful shopping center and create opportunities for residents and employees to run errands during lunch-time or while traveling to and from work. Without shopping opportunities within convenient walking distance, residents and workers will use their cars for more trips and will lose an incentive to use transit.



COMMUNITY CENTER



NEIGHBORHOOD CENTER



CONVENIENCE CENTER

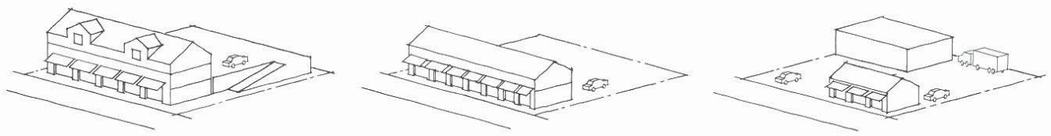
While commercial uses do not need to be concentrated in a single location, a minimum amount of retail space should be directly accessible from the transit stop. Appropriate uses include retail shops, professional offices, service commercial uses, restaurants, cinemas, health clubs, and other entertainment facilities. Small hotels, pensioners, and single-room occupancy hotels are also encouraged to provide a greater choice of accommodations near potential transit destinations and to provide needed housing.

The size and mix of uses in each core commercial area can vary depending on the size, location, and overall function of the site in the region. It should, at a minimum, serve as a convenience shopping area for TOD and Secondary Area residents and employees. Types of commercial centers include: convenience shopping and services (10,000 to 25,000 sq-ft); neighborhood centers with a supermarket, drugstore, and supporting uses (80,000 to 140,000 sq-ft); specialty retail centers (60,000 to 120,000 sq-ft); and community centers with convenience shopping and department stores (120,000 sq-ft or greater). Other employment-generating uses can be located within the core commercial area to provide a balance to shopping and residential uses.

Street-level retail, office, and service commercial space should form a pedestrian-oriented circulation system that is accessible from the surrounding neighborhood without requiring use of an arterial street. Office and employee-intensive light industrial uses should be located adjacent to the shopping portion of the core commercial area. In redevelopable areas where a connecting street is not possible, at least one pedestrian pathway is required from surrounding areas. Core commercial areas should also be designed to encourage shopping during travel to and from the transit stop or at mid-day by office workers.

Office and Retail Intensities

Intensive office and retail development is strongly encouraged to best utilize land surrounding transit stops. Where feasible, structured parking is encouraged. Offices without structured parking must have a minimum 0.35 Floor Area Ratio (FAR). Retail must have a minimum FAR of 0.30 with surface parking. For both office and retail development, higher than minimum FARs are strongly encouraged; maximums should be set by local plans.



1.00 FAR

0.50 FAR

0.30 FAR

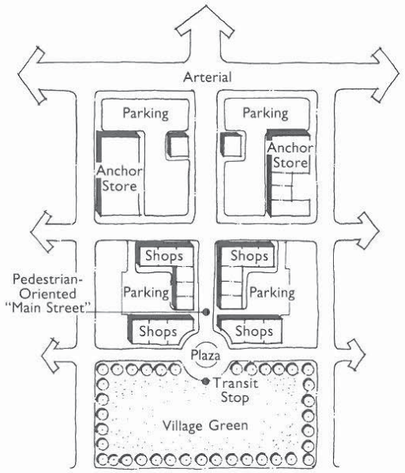
As land values in a region rise, structured parking in selected locations will become economically feasible. This guideline encourages development of multi-story buildings for office and retail uses with structured parking, thereby allowing more efficient use of land in a TOD. Floor Area Ratios represent the proportion of building square footage to land area. For example, an FAR of 1.0 would allow either full coverage of the site with a single-story building, or a two-story building that covers only 50% of the site. Additional setback and building height standards further clarify the intended character of a building.

Office areas should promote efficient utilization of land near transit stops. These FARs encourage multi-story buildings and structured parking whenever possible. Larger office areas should be located in Urban TODs to create a major focus of symbiotic uses. Smaller, local-serving office areas create opportunities for small businesses in close proximity to retail and transit. Professional offices with resident-serving uses should be given priority in location.

Core Commercial Configuration

The configuration of shops in the core area must balance pedestrian and auto comfort, visibility, and accessibility. While anchor stores may need to orient to an arterial and parking lots, smaller shops should orient to pedestrian "Main Streets" and plazas. Direct local street access from the local neighborhood is required.

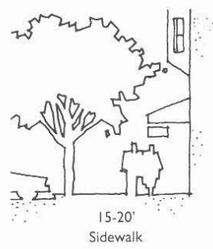
The typical form of a suburban retail center is oriented entirely to the auto and parking. Smaller shops are dependent on their relationship to the anchor stores when arrival is only by car. TODs offer the opportunity for a more diverse patronage, both from the traditional auto/anchor and from the walk-in neighborhood and transit activity. To attract foot traffic to local shops, the configuration of streets, entrances, and parking must provide a comfortable route for pedestrians. Traversing large parking lots and access roads designed for heavy auto traffic will discourage them. Configurations which provide traditional "Main Street" sidewalk storefronts in combination with arterial-oriented anchors can provide for both pedestrians and auto accessibility.



Core commercial areas should be configured to allow standard parking quantities, access, and visibility for the car, as well as a convenient path for local pedestrians. Often, the smaller shops can turn to form a pedestrian-oriented "Main Street" with streetside parking and rear parking lots. This "Main Street" forms a pleasant place to walk, and should connect the residential areas and parks with the shops and transit stop. Simultaneously, the edge of the core area fronting the arterial may house larger parking areas and anchor stores in locations visible from arterials. Anchor stores, such as supermarkets and drug stores, are encouraged to provide entries to both their parking lot and the pedestrian-oriented shopping street.

Commercial Building Setbacks

Building setbacks from public streets should be minimized. Setbacks should reflect the desired character of the area and bring buildings close to the sidewalk.



The street and sidewalk is the main pedestrian activity center. Minimal setbacks bring buildings close to the street and the pedestrians. This defined and close edge enlivens commercial areas by encouraging window shopping and streetside activity.

Buildings in core commercial areas should be encouraged to build to the sidewalk edge whenever possible. Anchor tenants in New Growth Areas, such as supermarkets, should not be strictly held to this requirement because patrons will tend to use their cars for major grocery shopping trips and anchor tenants often require visible surface parking. Smaller ancillary shops should be brought to the street edge with minimum setbacks. Parking areas and parking garages should be recessed or placed to the rear of buildings when possible. Larger setbacks of no more than 20 feet should be permitted for multi-story office buildings and streetside outdoor cafes and patios in core commercial areas.

Commercial Building Facades

Building facades should be varied and articulated to provide visual interest to pedestrians. Street level windows and numerous building entries are required in the core commercial area. Arcades, porches, bays, and balconies are encouraged. In no case shall the streetside facade of a building consist of an unarticulated blank wall or an unbroken series of garage doors.

Varied and interesting building facades are key to making a place "pedestrian-oriented." Streets with monotonous and unarticulated buildings are not conducive to pedestrian activity and make walking less appealing.

Building designs should provide as much visual stimulus as possible, without creating a chaotic image. Buildings should incorporate design elements at the street level that draw in pedestrians and reinforce street activity.



Streetside buildings should encourage window shopping, heavy foot traffic in and out of stores, and people-watching from outdoor seating areas. Facades should vary from one building to the next, rather than create an overly unified frontage. Building materials such as concrete, masonry, tile, stone, and wood should be encouraged; glass curtain walls and reflective glass should be discouraged.

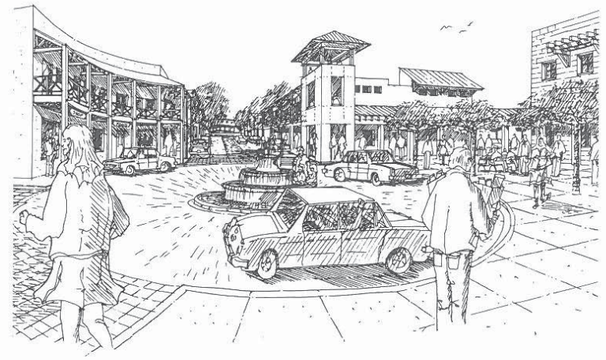
Commercial Building Entries

Primary ground-floor commercial building entrances may orient to plazas, parks, or pedestrian-oriented streets, not to interior blocks or parking lots. Secondary entries from the interior of a block are also permitted. Anchor tenant retail buildings may have their entries from off-street parking lots; however, on-street entries are strongly encouraged.

The pedestrian life of a building is at its entry. If the entry orients to parking lots, it steals the activity and life from the street, the main pedestrian route, while signaling that auto access is preferred.

Entries into small shops and offices should face directly onto a pedestrian-oriented street. Buildings with multiple retail tenants should have numerous entries to the street; small single-entry malls are discouraged. Off-street parking should also be located at the rear of buildings with "paseos" leading to the street and primary entrances. Handicapped access must be incorporated into the overall commercial area design.

Some retail anchor stores (above 30,000 sq-ft), such as grocery stores, need parking lot access to the primary entry. In these cases, pedestrian access to the entry should also be provided from the street and configured so pedestrians are not required to walk through the parking lot to enter the store. Along walls without entries, building elevations should include windows and display areas, and/or be lined with small retail shops; secondary retail signage along these walls is also permitted.

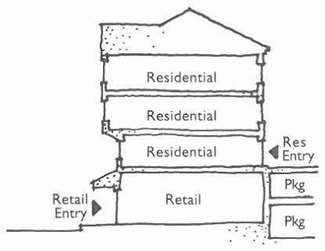


Upper-Story Uses

Retail developments in the core commercial area may exceed Floor Area Ratio standards by adding additional floors of residential and/or office uses. When using this bonus, the intensity of the retail use must not be reduced. The required amount of retail parking may be reducèd while parking for residential units and office space must be added.



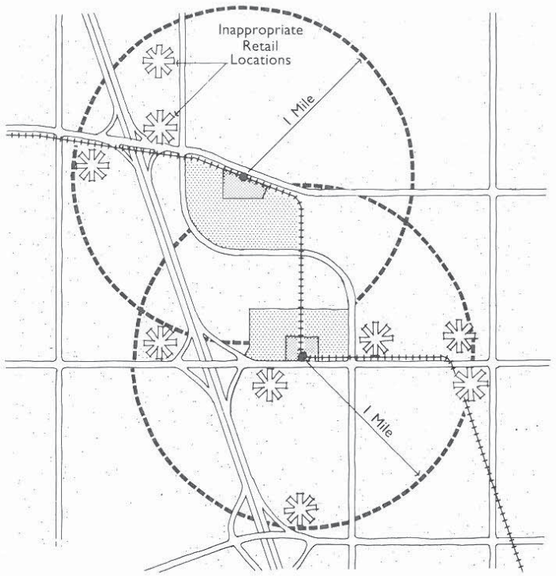
This density bonus for retail buildings is designed as an incentive for developers to provide office and residential uses in the core commercial areas. The amount of upper floor office or residential use may be determined on a site-specific basis through the community plan or specific plan process. Special care must be given to the design of residential units to ensure privacy and security.



Taller buildings are encouraged in the core commercial areas to provide visual interest, a more urban character, street security at night, and to concentrate pedestrian activity. In addition, upper-floor residential and/or office space can support the retail by bringing a greater number of lunch-time and after-work shoppers.

Proximity of Competing Retail

New neighborhood and convenience retail centers should be incorporated into TODs, as much as possible. New competing retail uses should be strictly limited within one mile of the core commercial area.



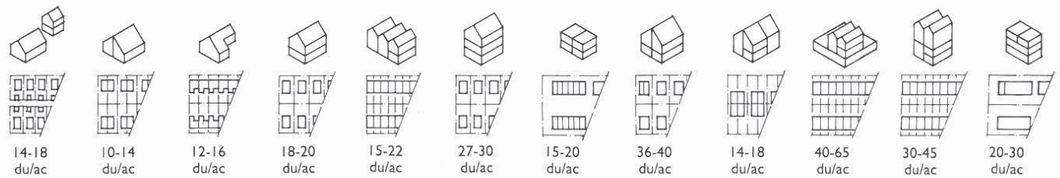
TODs depend on retail uses for a focus and pedestrian destination. Competing centers in locations which do not support transit or pedestrian-oriented neighborhoods can diminish the opportunity to build transit-oriented mixed-use centers. Many General Plans, in fact, significantly overzone for commercial sites, thus diminishing the ability of an area to concentrate retail uses and create activity centers. Each growth area should be examined to determine whether the location of these commercial uses may be in conflict with the goals of promoting transit usage, encouraging walking or biking for some daily trips, and building a network of streets that allows auto users to travel to local shops on local streets.

In order for the core commercial area to attract major anchor tenants and be economically viable, new competing retail centers must be limited through zoning amendments within the TOD's market area. This provides an incentive for development on Redevelopable and Infill Sites and is a key guideline to enable linear areas to function as TODs. Strip commercial uses that extend beyond a 10-minute walking distance of a transit stop should be limited so that businesses that fit into the TOD can capitalize upon their location and proximity to transit.

Residential Areas

Residential Densities

Residential densities within Neighborhood TODs must be a minimum of 7 units per net acre and a minimum average of at least 10 units per net acre. Residential densities within Urban TODs must be a minimum of 12 units per net acre and have a minimum average of at least 15 units per net acre. Maximum densities should be set by local plans.



The range of permissible densities is designed to encourage transit ridership, as well as provide a variety of housing types. Residential densities are measured in net densities on residential land area. Minimum densities are established to avoid "squandering" valuable transit-accessible land.

Small-lot single-family homes can range from seven to ten units per acre. Single-family homes with ancillary units are feasible between 12 and 17 units per net acre. Ancillary units are calculated as 1 unit per lot. For example, a 4,500 sq-ft or smaller lots will create densities of 16 units/net acre or greater if developed with an ancillary unit. Townhouses can provide between 18 and 29 units per acre. Apartment buildings up to three stories can provide densities of 35-50 du/net acre. Actual densities should strike a balance between emphasizing the impor-tance of development around transit stops and blending in with existing surrounding neighborhoods.

The required "minimum average" density requirement allows flexibility to respond to changing market conditions and encourages a mix of housing types. The range of permissible residential densities which can be combined to achieve this "minimum average" density is broad, with its maximum determined by the nature of the surrounding community.

Ancillary Units

Ancillary "granny" units are encouraged to increase affordability and diversity. These units should be located in the single-family portion of residential areas. The additional unit will be counted toward meeting the minimum average density requirement.

Ancillary units, or second units, create affordable rental units without changing the character and quality of single-family areas. They can also serve to offset housing costs for the primary unit, provide needed space for a teenager or elderly family member, or act as transitional single-family housing. Ancillary units can be