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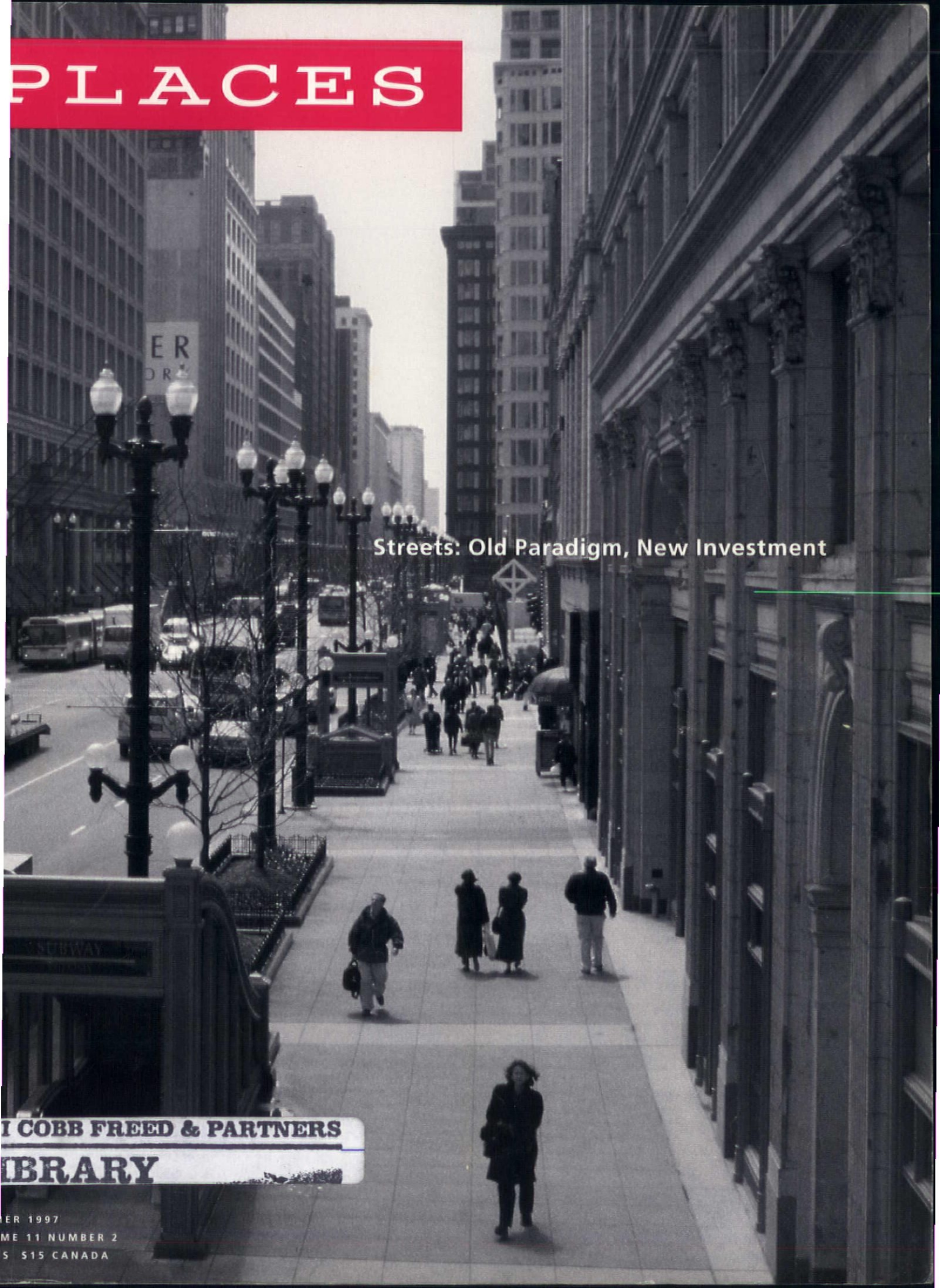

Streets: Old Paradigm, New Investment

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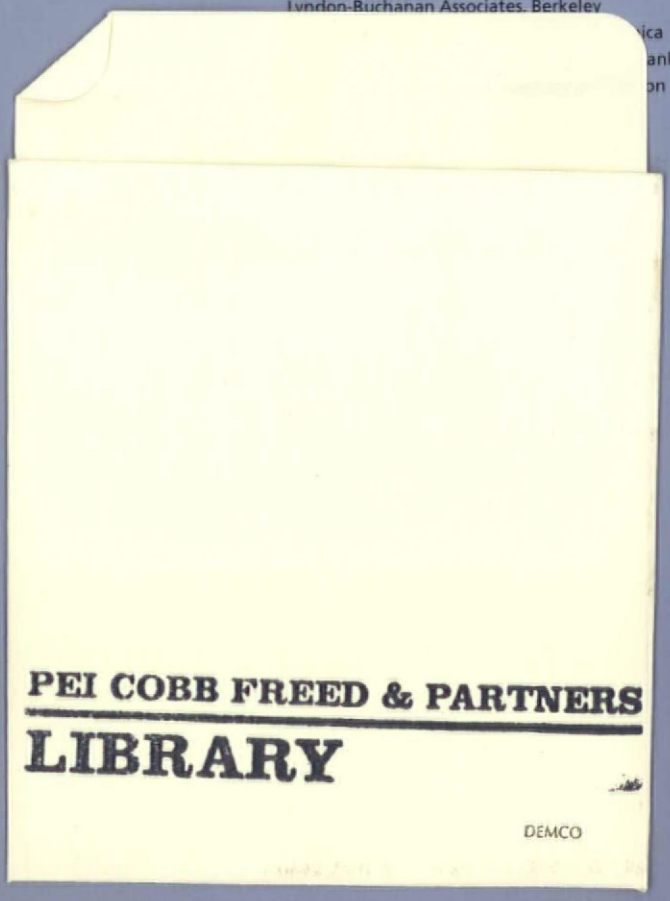

This special expanded issue and the two conferences from which many of the articles in this issue are drawn were supported by grants from the Graham Foundation and the DeMars Fund at the University of California, Berkeley. Several firms also contributed support: Duany/Plater-Zyberk, Thompson Associates, and Buckhurst Fish and Jacquemart. Pratt Institute's School of Architecture and the University of California, Berkeley, College of Environmental Design hosted and provided support for the conferences.

About the cover: State Street, Chicago. Photograph courtesy Skidmore, Owings, Merrill.

State Street, downtown Chicago's main commercial street, was converted to a transit mall in 1979, but businesses along it continued to decline. In the 1993, the city decided to restore street, with help from federal ISTEA funds. The city issued design guidelines that outlined priorities for using the street space.

The design, by Skidmore, Owings, Merrill and Consoer, Townsend, Environdyne, involved narrowing the sidewalks to concentrate pedestrian activity, and adding new streetlights (based on a 1920s design), new kiosks, bus shelters and subway enclosures. The elements keep a low profile so the shop windows and buildings attract the most attention. The street was re-opened last November.

Pratt

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Streets are networked extensions of our brains; our use of them leaves traces of the social fabric woven through the impressions of daily life.

Streets not only provide access to sites we consider important, they also surround us with information. That information is limited and highly controlled in the case of high-speed roadways, richly layered in the centers of great cities. The information they carry is about us; about what we do, what we care for, who we are and what we profess to be.

In most cities only a few streets stand out as subject to conscious design and often they become landmarks in the city. Others may have achieved significant status in our mental place maps because of the concentrations of activities in buildings that form their edges or in the transitional spaces that link private properties to public domain of the city. The character of districts and their imprint on our consciousness results, in large part, from the nature of the transactions along a street.

The information we garner from streets is conditioned by countless details — by the frequency of entrances, the transparency of boundaries and systems for veiling privacies, the scale and style of graphic manipulation, the qualities of light, shade and illumination, the rhythms established by elements (such as street trees and lamp posts) that pace the public passages. They provide us with qualities of embracing enclosure or expansive outreach that are embodied in the section of a street — its width, horizontal surfaces and vertical boundaries. Their character is further elaborated by the evidence of craft and attention invested in the making of each of its parts, public or private, plain or embellished, controlling or suggestive.

On city streets the traces of many hands and minds are available to the most casual investigation and their consistency, counterpoint, radical disjunction and/or modulated harmonies set the underlying tone of our life in common, the mood for social encounters. The visible, touchable, smellable particulars of a given street combine in the substrate of our minds with the qualities of movement that its surfaces are structured to afford; and they are entwined with our knowledge of the place and its history, with the stories and fabrications of city life.

Alas, the design of streets has all too often been assumed to be a moot issue, the province of faceless, if not soulless, engineers and subject to the dictates of civil engineering manuals and the mysteries of traffic flow. The mentality of "freeway" (with all its misleading implications of freedom of action and for free) has come to so dominate the building of roads that sections of city streets have been seen as compromised extensions of that free, unencumbered movement. They have been measured first by the capacity to move traffic and only very secondarily by their capacity to sustain the life of the city around them.

This issue of *Places* is dedicated to the knowledge that these attitudes are changing. It contains a body of good, solid work that is reclaiming city streets for a more expansive view of public life. What is remarkable is the degree to which the articles here investigate the many layers of information embedded in streets — from the placement of utilities underground and lighting above, from the agility of emergency vehicles to patterns of pedestrian movement. As Ken Greenberg writes in his introductory essay, the struggle now is to assemble as much of that information as possible "on the same page," so that the many hands that shape and manage streets can work in consort.

Most important, the projects and research included in this issue claim for streets their rightful role as places of public good, places that serve many needs for a diverse people and are deliberately shaped to enhance the lives of local citizens. The streets projected here are ones that promise to offer to our consciousness the sense that we could, after all, share common aspirations and do, after all, use our senses.

— *Donlyn Lyndon*

Keynote: Looking, Learning, Making

Allan B. Jacobs

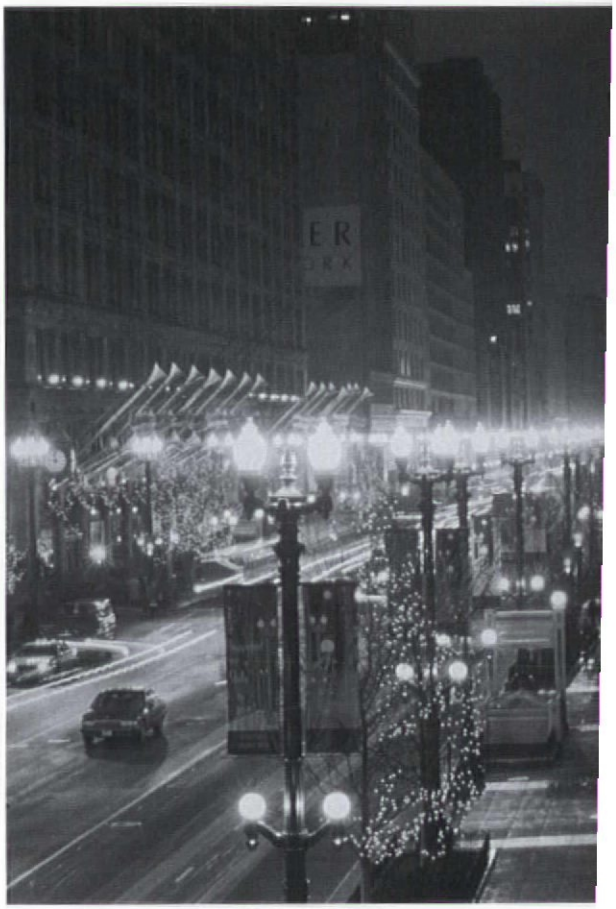
This article is adapted from a keynote speech given at "Streets: Old Paradigm, New Investment," a symposium at the University of California, Berkeley, November 19, 1995.

It is dangerous for a group of people of similar minds to come together and conclude that their experience and world views are representative, or at least broadly shared. One should be aware of the pitfalls of generalizing from limited experience. Nevertheless, I think it is not too dangerous, nor stretching reality too much, to observe that recently there has been a convergence of interest related to the design of streets of all types. More than a few professionals concerned with urban life and the physical arrangement of cities have found reasons to focus on streets and street and block patterns as among the most fundamental physical elements of cities.

This is a period in which the many roles that streets can play in people's daily lives are being re-examined — a period of restatement and reconsideration of the values associated with public life, those activities that can occur only in public places. This re-examination is, in part, a reaction to the excesses of the past, which have been generated by a simple view that streets are merely traffic conduits, or by design standards associated with streets that fundamentally serve a single purpose. In part, it is a reaction to and a questioning of the excesses generated by what has been called the "functional classification of streets."

Above: Via dei Giubonnari, Rome. Automobiles are permitted, but this is clearly a pedestrian street. Pedestrian volumes can reach seventeen persons per meter of width per minute, but it remains a comfortable street. Courtesy Allan B. Jacobs. Above right: Streets are always changing. Chicago's State Street was recently rebuilt to accommodate both transit and private vehicles and to improve the pedestrian realm. Photo by Dave Maenza, courtesy Skidmore, Owings, Merrill.

This is a somewhat heady period of new research directed to many different aspects of streets, research that focuses on details of design, such as lane widths, turning radii and tree spacing, for example, rather than on generalities or systems alone. This is a time of wonderful experimentation and creativity focused on streets of every scale — short and long streets, residential and commercial ones, main streets, boulevards, park streets and minor streets.



Before progressing further, I would like to pay homage to the late Donald Appleyard, my friend and colleague, whose early work is a reason why many of us are presently concerned with the design of streets. Donald's research on street livability, most notably the study he did for the Urban Design Plan of San Francisco in 1970, provided hard evidence of the relationship between traffic volumes and speed and a sense of well being on city streets. Donald's studies gave substance to what most people intuitively knew and focused many of us on the subject. Those studies on street livability are classics, done over and over by students at Berkeley, where I teach, always with the same conclusions. They have provided a base for so many actions — traffic calming, through traffic diverters and more. We owe a lot to Donald.

Why are streets so important, and what are their roles?

We go back to some streets more often than others, not just because the things we have to do are more centered on one street than another. We may chose to focus a part of our lives on a street for reasons that are not necessarily economic or functional. Maybe a particular street unlocks memories, or offers expectations of something pleasant to be seen, or the possibility of meeting someone known, or someone new, the possibility of an encounter. It is possible to recall some streets, what they feel and look like, and the things to do on them, and to anticipate how pleasant it might be to spend time along them. Because some streets are more pleasant than others, we may go out of our way to be on them, even on a trip to somewhere else.

Streets are more than public utilities, more than linear physical spaces that permit people and goods to get from here to there. Communication is a major purpose of streets, along with providing unfettered public access to property. But streets also moderate the form, structure and comfort of urban communities. They can focus one's attention and activities on one or more centers, at the edges or along a line, or they simply may not direct one's attention to anything in particular.

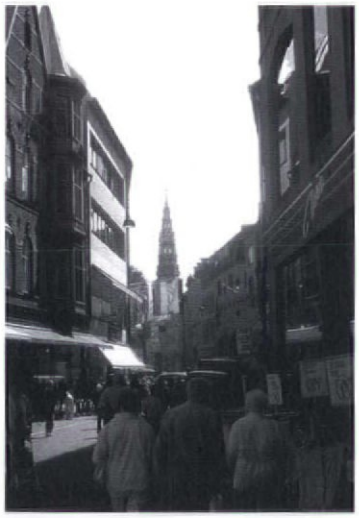
Streets allow people to be outside; that sounds simple enough, but it is pretty important. They are places of social and commercial encounter and exchange. They are places where you meet people, which is a basic reason to have cities in the first place. Streets are political spaces, where citizens discuss issues and have celebrations, where people demonstrate. Try doing that in your local mall.

Streets are places for movement, watching and passing, especially the movement of people, of fleeting faces and forms, changing postures and changing dress. Knowing the rhythm of the street is to know who may be on it or at a place along it during a given period.

Streets represent 25 to 35 percent of all developed urban land. They constitute, in large measure, the public realm. The space set aside for parks and other public spaces, when added together, doesn't come close to equaling the space we use for streets.

And streets are ever changing. It isn't as if once they're done, they're done. Look at the budgets of municipalities and see how much is spent on streets — not just on building new ones, but on improving existing ones. Every time you repave a street, there is the chance to change it in significant ways. Changes to streets are normal activities. Over and over again, people vote significant sums to make a particular street better, to be a special place.

Let me review some basic elements of the best streets. Good streets have places to walk with leisure and safety. They are where you can meet people, they invite you to do that. On the Via del Giubonnari, in Rome, and on Stroget, in Copenhagen, pedestrian volumes reach 17 persons per meter (of width) per minute, over extended periods. At these volumes people may touch each other, it is not possible to walk fast, yet people may be seen strolling with small children in tow.



The Stroget, Copenhagen, a street to walk along in leisure and safety. Courtesy Allan B. Jacobs.

The best streets are comfortable. They are shady when it's hot; they offer sun when it's cold. They minimize the wind. There is a location on Market Street, in San Francisco, where people are literally blown off their feet by winds created by an unsensitively designed building, the Fox Plaza building, I believe.

The best streets have definition. When you are on one you are in a place. Definition can be

Right: Trees should be planted close together and well maintained. Foro Buonaparte, Milan. Courtesy Gregory Tung. Below: Good streets have a sense of transparency, as does this street in central Copenhagen; one can sense what is beyond the surface of whatever defines the edge of the street space. Courtesy Jahn Gehl.

established by buildings or by trees, or by both. Definition can be a complicated subject. Suffice to say here that our research suggests that street definition is usually achieved when the defining buildings (or trees) have a height of at least one-half the width of the public right-of-way.

The best streets have a sense of transparency; one knows, or one thinks one knows what is beyond the surface of whatever it is that defines the street along its sides. And so, one's eye or one's mind's eye moves beyond the surface and into the space beyond. Among other things, one gains a sense of the presence of other people and a sense of safety, a sense of place.

Glass does not necessarily mean transparency. Witness any number of black-glass-clad buildings, such as the ones on Colorado Boulevard in Pasadena, certainly the Darth Vaders of all buildings. On the other hand, a blank wall can be transparent if there is a little bit of a tree or green that comes over the wall and takes you inside with it. Transparency is not as simple as it might seem.

The best streets have things on them to engage the eyes. Eyes have to move. On the Cours Mirabeau, in Aix en Provence, the sun, always moving, passes through branches and leaves that move as well. It is a glorious street upon which to stroll, under what must be the tallest London Plane trees ever grown. One is in and out of the dappled light and the eyes cannot help but respond. You walk to one end and invent a reason to walk back. Three times are better than two, but this time, maybe, we will walk along the other side, the eyes always engaged.

The Boulevard St. Michel, in Paris, is an equally exciting street. The trees, although not as

great as those on the Cours Mirabeau, still do their magic, but here there is more; many stores and intricately detailed buildings over which the sun constantly plays, with ever changing shadows to delight the eyes and keep them moving.

To be sure, some of the best streets in the world are without trees. But if you have very little money, and if trees are appropriate in the first place, then that's probably the best single place to spend your money. That's where the biggest bang for the buck will come. But if you're going to do it, do it right. Don't plant them and let them die; they have to be planted correctly and they have to be maintained. Trees should come right to the corners, they should never stop shy of the corners, and they should always be close together. On the best streets the trees are rarely more than 35 feet apart and are often 15 feet apart.

On the best streets, clear beginnings and endings are important, if not absolutely critical. Ceremonial gates, fountains, sculptures, columns and obelisks, and parks are age-old beginnings and endings that can be delightful in their own rights, and all of them can work. If a street is long enough, then open places along the way small or large ones, can be important. They are breathing places, pausing places, places at which to focus activity. The mini-park on 24th Street in San Francisco has been such a place.

In one way or another, the projects in this issue are geared to the kinds of qualities that I have described, however briefly. In helping *Places* assemble these articles, and in the conferences that preceded the preparation of this issue, two thoughts came to me. First, there is a need for more of the empirical research that undergirds so many of the projects presented here — Ontario's alternative street guidelines, Portland's cheap and skinny streets project and the guidelines for boulevard design presented in this issue are but three of many examples.

Related to that is the importance of understanding that our experience is our research. Often, maybe too often, designers simply do not record their experiences or the bases of their design conclusions in ways that are held as constituting methodological rigor, at least in terms that are acceptable to academia. But our experience is research, nonetheless, and it is a way of doing professional work that needs recognition. Many, if not most, of the geometric standards and norms associated with street design are, in fact, based upon the professional judgement of those who created them, not on empirical research. The research and experience of urban designers may be as valid, and even better informed. The Appleyard research on street livability was immensely influential. We must look to universities, city agencies, developers and to individual designers to do this research. We must be rigorous about recognizing our experience and recording it.

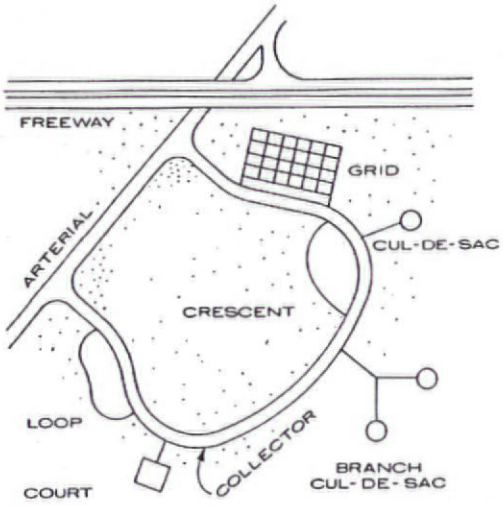
Second, there is a need for communication. The importance of a wide distribution of new research into the professional and lay communities cannot be underestimated. Professional organizations and universities have to do that. *Places* is only one piece of the answer. Articles in other journals are also important. Today, perhaps, the most important people to reach are those most powerful in setting the standards that we all have to live with.

The opportunity to design streets in ways that meet public objectives, including the making of community itself, is as exciting as it is challenging. If we do right by our streets we can in large measure, I believe, do right by the city as a whole, and therefore, and most importantly, do right by its people. The best new streets need not be the same as the old. But the streets we have studied have much to teach. Delightful, purposeful streets and places and cities will surely follow.

Boulevard St. Michel, Paris. The trees cast shade over intricately detailed buildings, creating delightful, constantly changing patterns of light and shadow. Courtesy Allan B. Jacobs.

Keynote: The Street, a Creature of Compromise

Ken Greenberg



For decades, designers envisioned cities as perfectable mechanisms in which each functional need was attended to separately in its own place. From *Architectural Graphic Standards*, seventh edition.

In the 1920s LeCorbusier pronounced the street dead. Like many deaths, it was prematurely announced. But it has taken streets a long time to recover from the sustained attacks that city planners, engineers, architects and landscape architects have been launching for most of this century.

In the early part of the century, designers created a powerful polemic against the street. Modernists declared the street to be inefficient, unhealthy, unsafe and unfit as a fundamental building block of the city. Moreover, generations of designers have been enthralled by a vision of the city as a perfectible mechanical instrument in which every functional need is scientifically attended to separately, each in its proper place. They had no interest in regarding streets as complex urban elements that address many needs (transportation, services and utilities, subdivision of land, social and political interaction, commerce, symbolic representation) through an intricate layering.

There have been many disappointing attempts to disaggregate the street into specialized devices primarily intended for one function or another — arterials, collectors, malls, plazas, skyways and underground tunnels, for example — all in pursuit of such visions. But the empirically observed weaknesses of these oversimplified surrogates and the enduring strength and popularity of real streets — especially as chronicled by noted iconoclasts such as Jane Jacobs, Bernard Rudofsky and William H. Whyte — led to a gradual, persistent rehabilitation of the idea and the fact of the street.[1]

Simultaneously, in many places and with important contributions from many quarters, streets began to win a grudging new respect as one of the most deceptively simple but extraordinarily rich creations of urban civilization.[2] We began to remember that streets are the sine qua non, the core of what makes cities work.

The dismemberment of the street has been so complete and pervasive, however, that despite this newfound intellectual legitimacy, its rehabilitation still requires an enormous collective effort. Contemporary practice is still governed by a powerful invisible hand guided by regulations, manuals and assumptions that no longer have credence. This reductive template contains a debased and distorted vision of streets that is enormously resistant to change.

The stakes are very high. A by-product of the neglect of streets has been the weakening of the public realm, which is symptomatic of a larger societal loss of the commons. As more and more aspects of public life have retreated into private spaces, streets have become dysfunctional and frightening places.

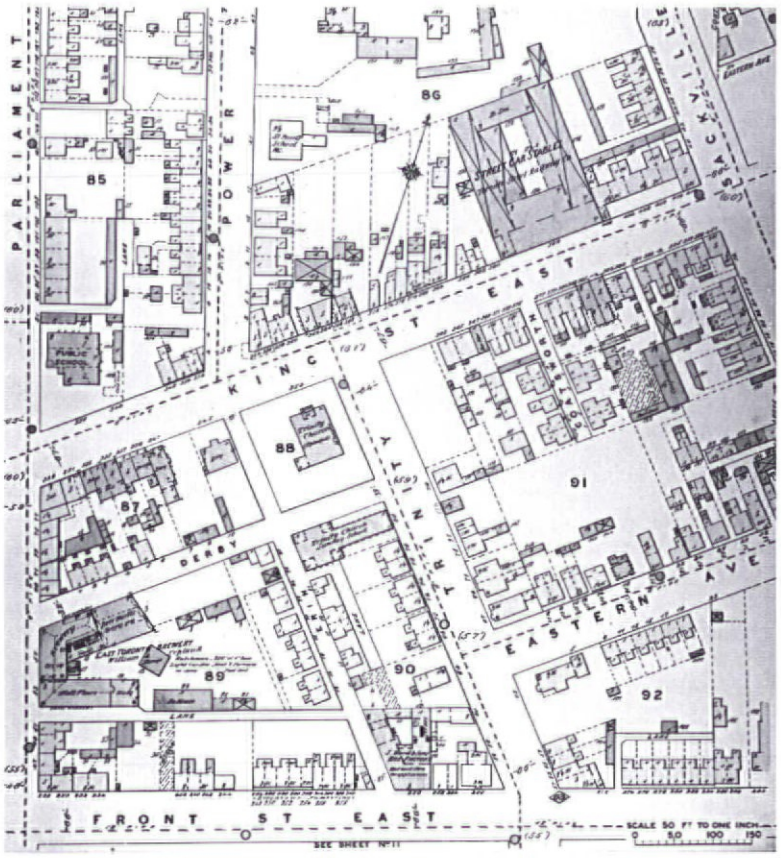
Still, as was evident at the *Places* streets conferences in Berkeley and New York, there has been considerable success in moving from an alternative status for a few isolated experiments to a position of fundamentally modifying mainstream practice in many areas. This process is being tackled simultaneously on many fronts.

Documenting What Works and What Doesn't

Many useful prototypes have been retrieved from the dustbin of rejected ideas. For example, despite skepticism about the ability of North Americans to negotiate them, the roundabout and traffic circle are being reinstated as effective means of distributing traffic in complex situations. They calm traffic in certain instances and can form significant places in the public realm.

Similarly, there is a new appreciation for the urban boulevard. With parallel channels of through

This article is adapted from a keynote speech given at "Streets: Old Paradigm, New Investment," a symposium at Pratt Institute's School of Architecture, April 29, 1996.



Early fire insurance maps included many details about the design of streets and the buildings along them. Courtesy Insurers Advisory Organization, Inc.

and local traffic, landscaped pedestrian medians and generous provisions for on-street parking, the boulevard neatly reconciles what has been regarded as completely incompatible – high volumes of traffic and pedestrian-friendly urban street edges.

The historic narrow urban street and alley combination, which can be observed in the older sections of most major cities, is making a comeback, even in newly developing areas. Alleys offer an effective way of dealing with servicing and parking on narrow lots where there is an intention to promote the pedestrian qualities of the residential or commercial streetscape.

A prime example of a negative practice which is being held up to new scrutiny is the reliance on one way pairs. In many cities, existing one-way networks are being "reverted" to two-way operation. For example, Buffalo reverted one pair of streets downtown in the early 1980s; the business improvements along them were recently described by the director of traffic engineering as "tremendous" and the city is considering reverting even more downtown streets.

We are beginning to look at retrofitting existing streets as well. This might be a simple matter of filling gaps in the streetwall, finding new and active tenancies for existing ground floor spaces, renewing paving, improving lighting or planting street trees. Rarely, however, does a street go back precisely to what it was. There is inevitably a recalibration of the space, a change in use and character, a shift in the balance of traffic, parking, pedestrians, and cyclists.

Many existing streets have been so seriously tilted to the automobile that it is not possible to realistically propose traditional moves that will revive them. New approaches are often necessary to deal with new realities, such as the arrival of big box retail in the city. A new repertory of elements and new ways of defining the street space may lead to new and previously unimagined hybrid forms.

Interdisciplinary Street Design

When the street was orphaned by city planners and architects in the early part of the century, street design was largely given over to the new

and highly specialized profession of traffic engineers. Design issues were reduced to the geometrics of the roadbed and the spacing of services and utilities. All concern for the social dimension of streets, their contribution to the urban landscape and their three-dimensional qualities, space defined by architecture, was lost.

There has been a corresponding loss in the ability to depict the street. We have devolved from the wonderfully comprehensive turn-of-the-century insurance atlases to aphysical engineering graphic conventions with different horizontal and vertical scales and no edges. We are still struggling to get everything back on the same page; it is an enormous challenge to grasp the complex layering that goes into the making of streets, let alone to describe it.

As designers have gained a renewed sense of the importance of street design as placemaking, they have deliberately expanded the range of participants. Now combinations of urban designers, engineers, architects, landscape architects, industrial designers, and artists work on street designs. Critical to this cross-disciplinary approach is the acknowledgement that the street is, a priori, a creature of compromises. No single design parameter, such as the unimpeded flow of traffic, can be given unquestioned priority. Each must be weighed and tested against all others to achieve a balanced and coherent result.

New Street Networks

Under the banner of new (or renewed) urbanism, there is an increasing number of new neighborhoods (mostly suburban but also some urban) that have been laid out along traditional lines with a fine-grained network of local streets. Within these communities, there has been a complete re-engineering of streets – short, interconnected blocks, urban lanes, on-street parking, reduced curb radii, narrowed pavement widths, continuous street tree planting, pedestrian-scale lighting and front porches. While generally successful and well received by consumers, these innovations are still by and large internal; the next challenge is to apply the same logic beyond project boundaries.

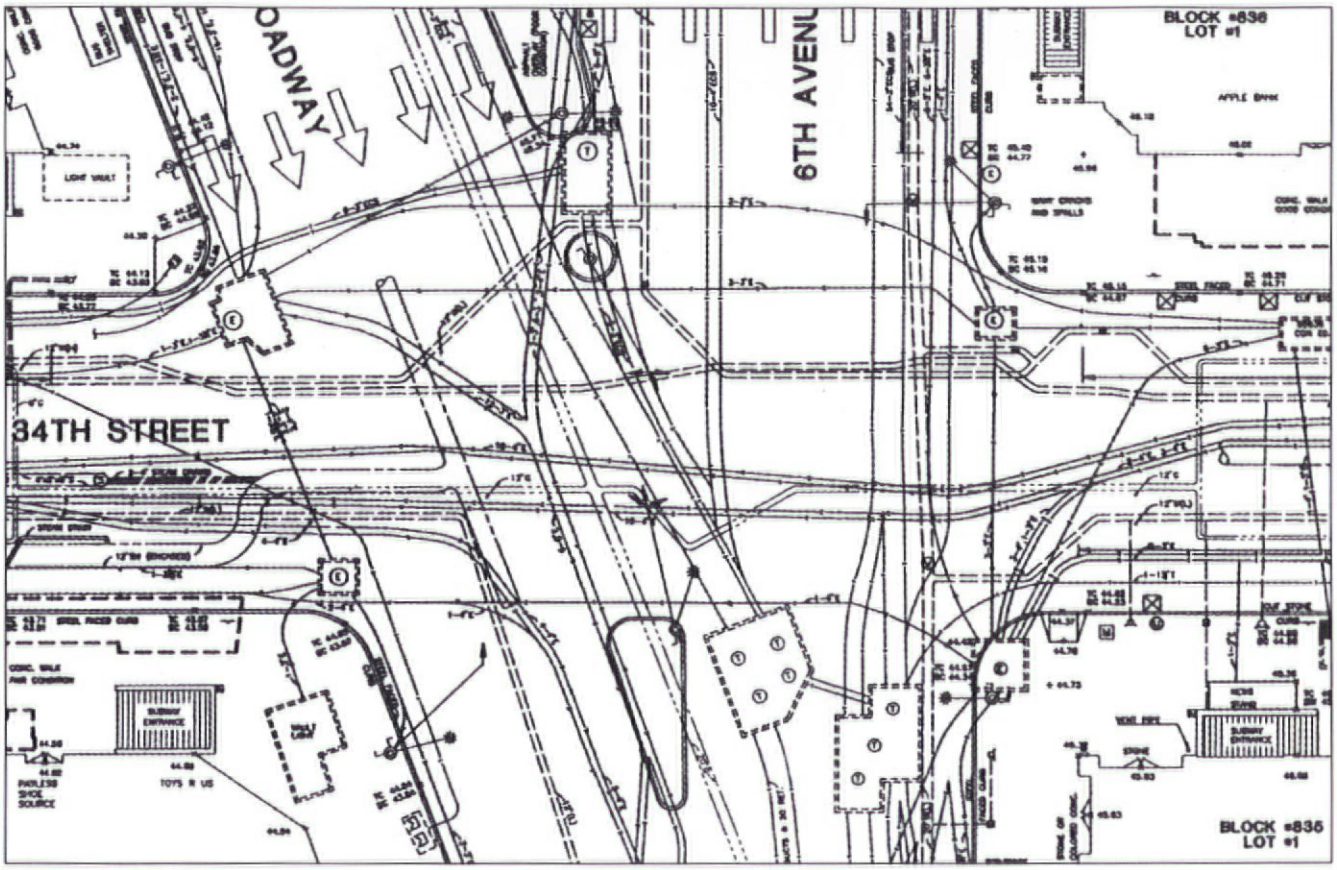
Each successful precedent reduces resistance to the next. But it is prohibitively time consuming and expensive to treat each project as an innovation. Fortunately, a systematic reform of the superstructure that directs street design has begun. The standard hierarchies of street types are being redefined in light of new concerns in a number of jurisdictions. The primary characteristics of these new street types reflect not only traffic operations, but also adjacent land uses, green medians, transit facilities and bicycle lanes. The professional associations of traffic engineers are also deeply involved in a re-examination of the assumptions which have shaped design standards.

The key to all these efforts to reform the system is the need to deal with the whole network, not just an individual street or an isolated set of streets. The most effective way to respond to increasing travel demand, for example, may by altering land-use patterns rather than adding lanes of traffic. When street grids are platted over large areas, they provide greater connectivity and require more frequent crossings and turning movements, thereby allows improving access while reducing road widths and eliminating unmanageable arterials.

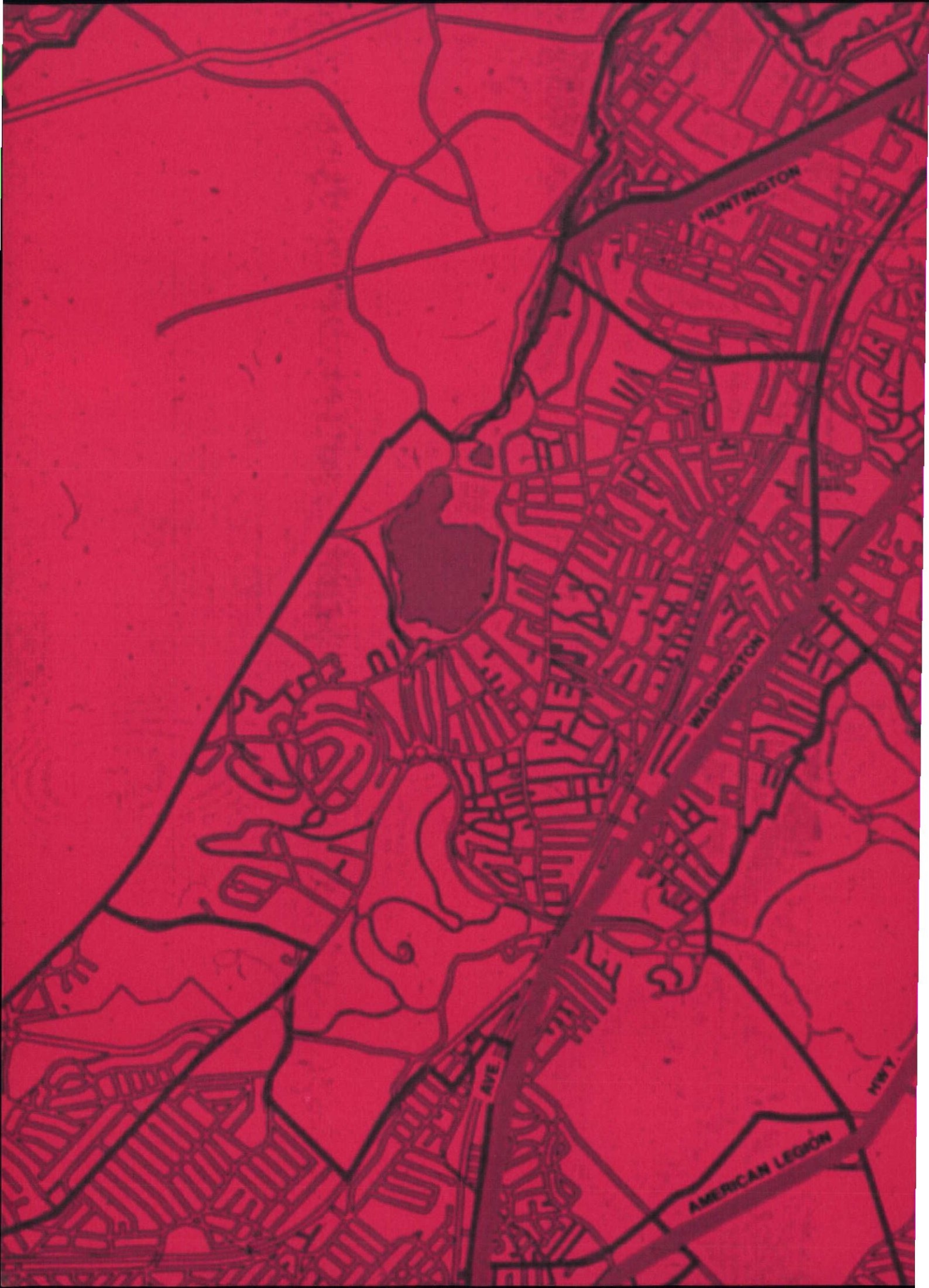
The street is a living organism, the lifeline of the city. Its form and use, which involve fundamental issues of societal choice and urban values, are too important to remain the exclusive purview of technical experts. The re-emergence of street design as an integral component of city design is a positive step toward re-establishing streets as emblems of the civility and pleasure of urban life.

Notes

1. Jane Jacobs, *The Death and Life of Great American Cities* (New York: Vintage, 1961); Bernard Rudofsky, *Streets for People*, A Primer for America (New York: Doubleday, 1969); William H. Whyte, *The Social Life of Small Urban Spaces* (Washington D.C.: *The Conservation Foundation*, 1980).
2. See, for example, Edmund Bacon, *The Design of Cities* (New York: Publisher, 1980) and the work of New York City's Urban Design Group in the late 1960s and early 1970s.



Increasingly, designers are trying to get all the dimensions of the street on one page. This survey of the intersection of 34th Street and Sixth Avenue in Manhattan documents surface and subsurface features, as well as the characteristics of buildings. Courtesy Vollmer Associates.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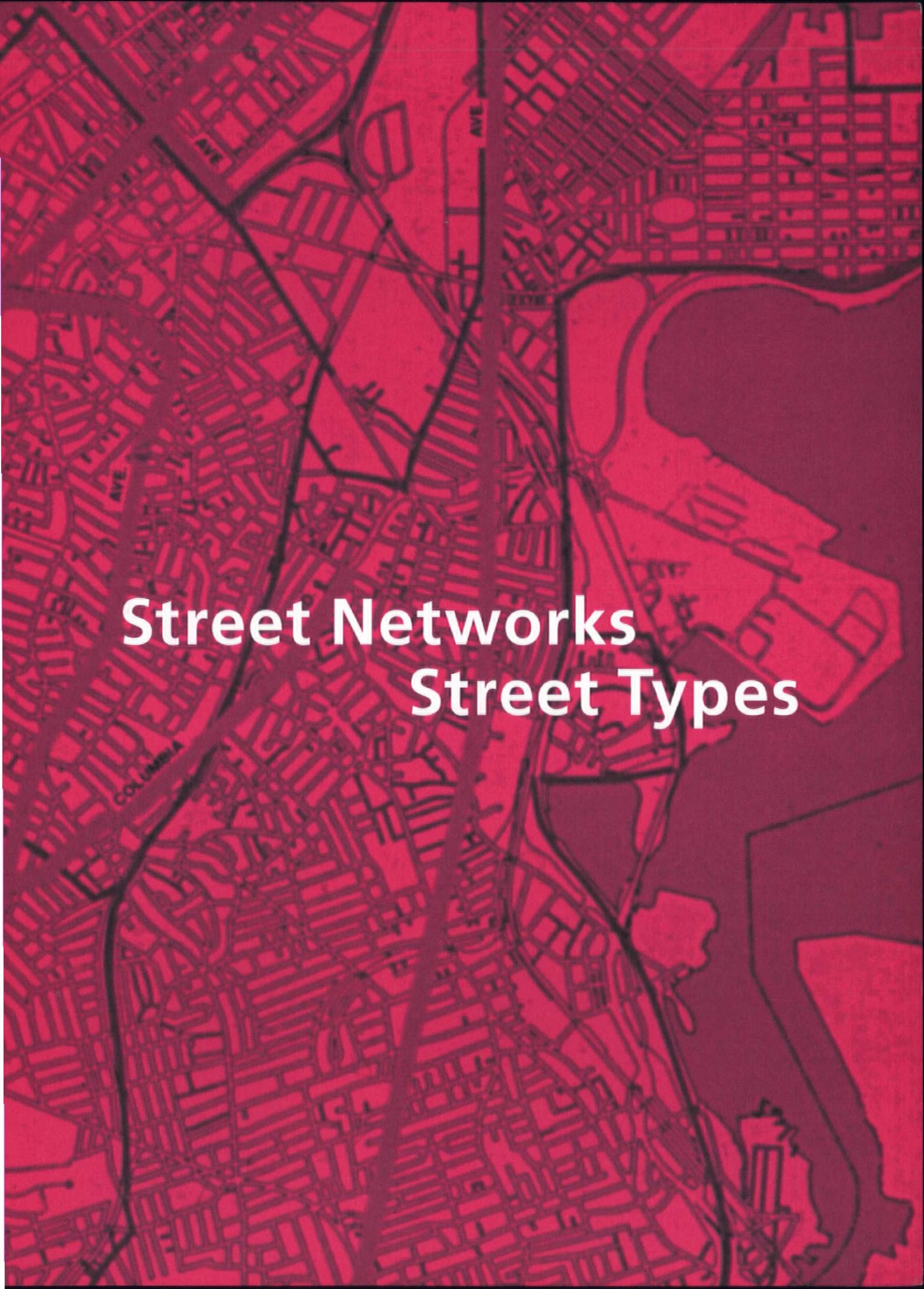

Street Networks
Street Types

Ken Greenberg

Making

In the 1950s and 1960s, a standard approach to building communities emerged across the province of Ontario. This conventional model of suburban development was followed from Thunder Bay to Toronto, as it was elsewhere in North America.

The approach was characterized by the predominance of single-family detached dwellings on large lots, the rigorous separation of land uses, the segregation of different housing forms within residential areas and an increasing reliance on automobiles. There was a corresponding standardization of road layouts, which produced a formulaic hierarchy limited to the expressway, the arterial, the collector and the local street (often a cul de sac).

In recent years, however, a convergence of changing conditions – economic, environmental and demographic – has made it clear that Ontario must depart from this formula.

Choices

The costs of this type of development are an increasing concern in a time when economic growth is slower and public finances are under stress. Builders complained that these standards forced them to charge tens of thousands of dollars more per house, without improving the houses at all. Home ownership in the form of a detached house on a 50-foot lot is out of the question for most households in most communities.

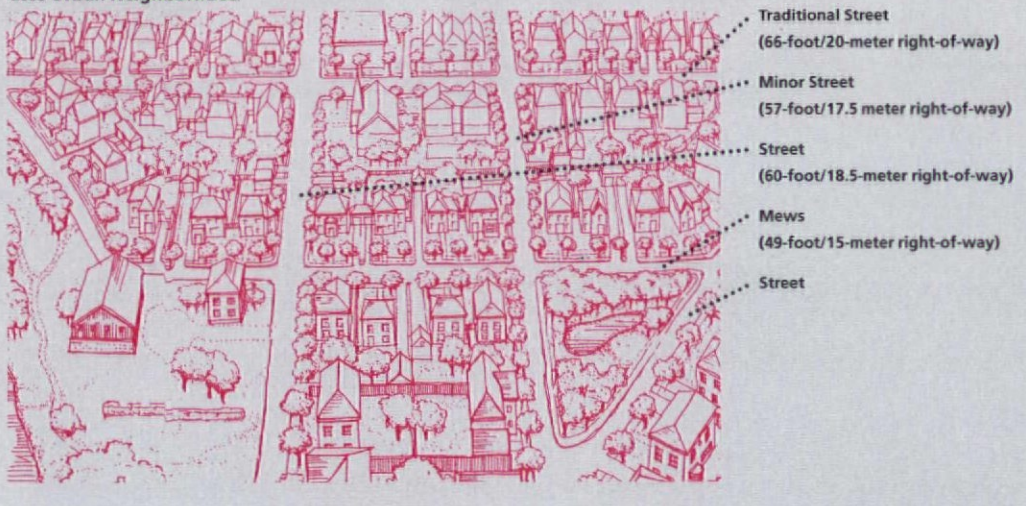
The environmental impacts of conventional suburban patterns have also become more clear. Low-density development consumes substantial quantities of land and means heavy reliance on the private automobile. More cars on the road leads to a demand for more and wider roads and to lower air quality.

Ontario is undergoing social changes that also have implications for conventional suburban development. The traditional

Conventional suburban development pattern. Photos courtesy Berridge, Lewinberg, Greenberg, Dark, Gabor.

More Urban Neighborhood

Less Urban Neighborhood



nuclear family no longer dominates; there are now more empty-nesters and single-parent and single-person households. This, along with the aging of the population, is creating an increased demand for a mix of housing types.

Finally, provincial planners were concluding that the streets we were building were, in fact, uninhabitable. They realized that the streets we loved were illegal: if you were a police officer, you could cite them for dozens of infractions of the current regulations.

There was a sense that this was a collective problem, not the job of individual communities, individual developers or individuals to solve. The province took responsibility, and, four years ago, it commissioned alternative development standards that would permit more livable and more affordable communities.[1]

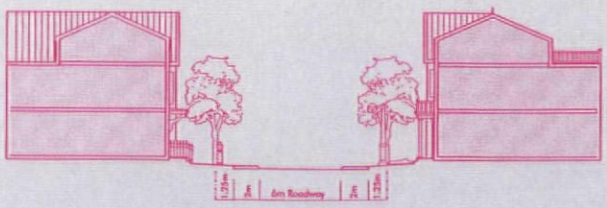
The result was *Making Choices*, a set of advisory guidelines that has several purposes. It is intended to be used as a philosophical introduction to an alternative approach to standards; a source of specific ideas; a guide to creating new kinds of streets and neighborhoods; a tool to review municipal policies; and a basis for the design of individual projects.

While *Making Choices* offers a range of concepts for alternative development standards, it is not a comprehensive treatment of the subject. Its focus is on design and servicing issues related to streets in greenfield development sites (the ideas are also applicable to the redevelopment of existing urban areas). Additional and complementary benefits can also be achieved through innovative lot design, standards for parks and schools that require less land, and facilities that integrate stormwater management and community activities.

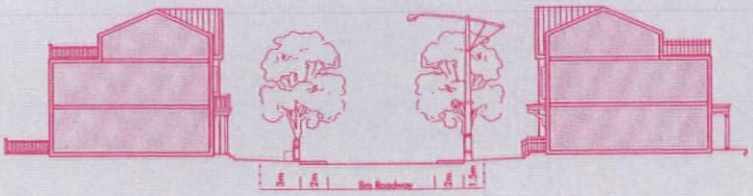
Many Uses, Many Types

Our team began by conducting a survey of devel-

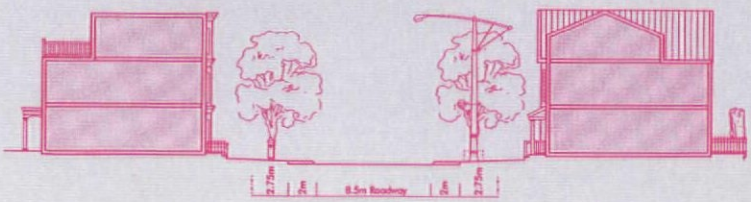
Mews (41-foot/12.5 meter right-of-way) A small-scale street whose primary function is to provide access to the front of individual dwellings rather than to serve through traffic. It would carry minimal traffic.



Minor Street (54-foot/16.5 meter right-of-way). A small-scale, generally short, internal, local street serving a local neighborhood.

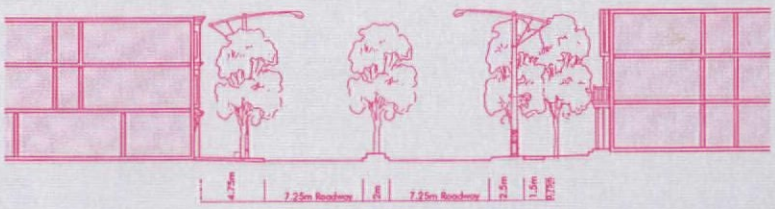


Street (59-foot/18-meter right-of-way). A medium-scale local street linked to the neighborhood network.



Traditional Street/Major Street (66-foot/20-meter right-of-way). A locally oriented street that may play a more important role in traffic distribution than ordinary streets. May be a perimeter road providing access to streets within the neighborhood.

Main Street (85-foot/26-meter right-of-way). A local street with a strong pedestrian orientation, accessible to the surrounding neighborhood, containing a mix of uses (stores, community facilities, apartments, etc.).

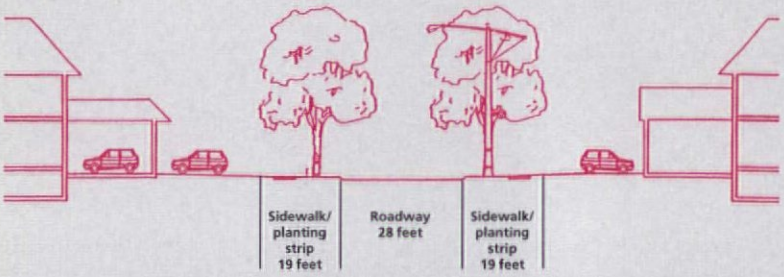


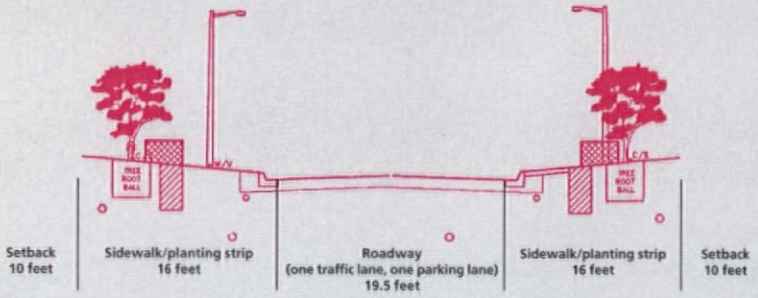
Grand Boulevard (100-foot/30-meter right-of-way). A wider-scale street that can accommodate denser development and mixed uses, with generous sidewalks and other features, such as a landscaped median. Serves as the public focus of a neighborhood center.

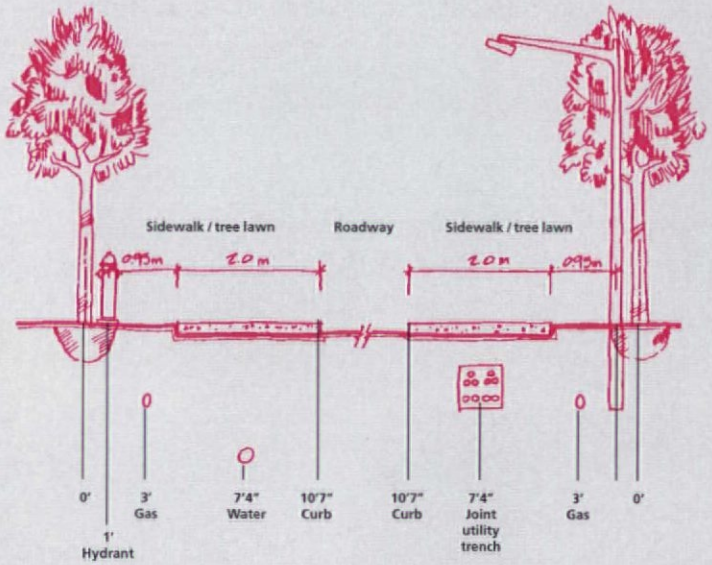
opment standards currently used in Ontario municipalities and by reviewing studies from other provinces and the U.S. We established an advisory committee with a wide range of participants, including municipal officials, planners, engineers, builders, developers, architects, landscape architects, utility companies and environmentalists. The problems were straightforward — standards and practices for utility locations, traffic engineering and storm water management.

We also realized that our primary source of information would be the towns and communities that predated the imposition of the contemporary standards. We would have to look at their characteristics and how they work technically, and see what could be brought forward again and adapted.

Streets perform many functions. They are public spaces that define collective values and







Top: Conventional right-of-way. Center: A one-way local street built in the town of Orangeville. The cartway has one traffic lane and one parking lane; garages are accessed from a rear lane. Bottom: *Making Choices* demonstrates how utilities can be laid in joint trenches or under sidewalks and planting strips instead of the roadway.

civic sensibility; spaces for social interaction; walking environments and play spaces; a framework through which buildings gain an address, access and identity; public infrastructure for vehicular traffic and cycling; places for parking vehicles; locations for underground servicing including sewer, water, gas, electricity, cable television and telephone; and places for storing snow.

This range of uses suggests that there should be many types of streets in each community. But Ontario's conventional street hierarchy for new suburban development included only one standard for local streets — a 66-foot right of way with a 28-foot pavement and 38 feet for sidewalks, utilities and other elements. This single standard was regarded as far too limiting for the creation of diverse new community forms.

We concluded that there should be a more subtle differentiation of local street types based on a broader set of urban design and engineering concerns. *Making Choices* presents an expanded hierarchy of street types that addresses a range of issues, including house-to-house relationships, lot frontages and parking treatment, on-street parking, sidewalks, the use of rear lanes, road pavement design, snow clearing, underground services, street tree planting and lot grading.

We developed two alternative hierarchies, one more urban, the other less urban. The difference is a matter of the context in which a street is designed to fit. "More urban" streets are more appropriate for urban or suburban development or redevelopment in major urban centers. "Less urban" streets are better for small towns, at the edge of urban areas or where a particular pastoral character is appropriate.

Instead of drawing in the typical manner, which represents streets only as two-dimensional spaces, we did all of our work in three dimensions, always relating street type to building type. We made recommendations about appropriate proportional relationships and about how the building types worked in plan and cross-section, in relation to the street itself.

We also considered the placement of utilities and street trees, as well as servicing issues such as stormwater drainage and snow removal. By working out all the technical problems for each of these street types, we could publish a document that says the various ministries would accept anything in the lexicon — not limited to the 24 types. The 24 types have many aspects that can be combined so that

Above: This traditional neighborhood street could not be built under the rules that govern most contemporary street design.
Below: *Making Choices* includes alternative guidelines for geometric characteristics like intersection angles and turning radii.

you have an almost infinite variety of options. Local municipal engineers, along with the planners, urban designers and builders, can pick the most appropriate designs.

Parking and Alleys

There are a number of urban design factors that must be considered when adapting these alternative street types to actual conditions — most importantly, the treatment of parking on narrow lot frontages and the re-introduction of rear lanes.

The way parking is handled is important to the quality of the streetscape, the public realm and, ultimately, community livability. This is particularly critical when dealing with parking in front of houses. As lots become narrower, reflecting increased density, parking spaces, garages, carports and asphalt aprons account for a larger proportion of the frontage. For narrow townhouses, the parking area and pavement can take up virtually the entire front yard. When this pattern is repeated, the public realm is dominated by cars, garages and asphalt.

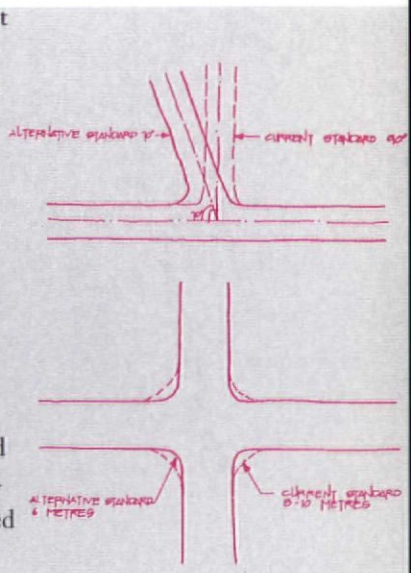
The guideline proposes, as a rule of thumb, that no more than half of the frontage should be taken up by parking. This means that lots with a frontage of 33 feet or more can accommodate a two-car garage or side-by-side parking in front of the house. For lots between 18 and 33 feet wide, a single-car front or back garage is acceptable, but not a two-car garage in front of the house. The guideline illustrates several ways to meet the 50 percent rule on narrow lots, such as a single-car garage and a driveway space in front, a single-car garage with a second space on the street, and rear-lot parking accessed by a private or mutual driveway or from a rear lane.

The re-introduction of the rear lane is a useful adaptation of an old idea. In the prewar period, lanes were commonly used in both residential and commercial areas in Ontario. Today, there is renewed interest in lanes because of the economic, environmental and social benefits they offer.

When garages are removed from the front of the house, lot frontages and building setbacks can be reduced. Frontages as narrow as 18 feet become feasible and functional, and create a high-quality, lively streetscape. This translates into significant land savings, and because most subdivision infrastructure is linear in nature, it also reduces the capital cost per housing unit of pavement, streetlights and underground services. The additional costs of providing a second access to houses with rear lanes are offset, at least in part, by the savings from narrower lots.

Rear lanes also allow for an improved streetscape. Placing garages and parking spaces at the rear of the lot frees the front of the house for community-supporting features like gardens and front porches. The internal layout of houses can also be improved with the front of the house devoted entirely to living space. Security on the street is enhanced with more "eyes on the street" from ground-level windows. And where utilities are placed in the lane, the width of the street and the right-of way can be reduced.

Although there is increasing acceptance and use of rear lanes, our advisory committee raised some concerns about them, particularly in regard to snow removal, security and safety. Like all elements of public space, rear lanes must be designed with those factors in mind. The same design



measures that apply to streets, sidewalks and parks also apply to rear lanes, including providing adequate lighting, avoiding dead spaces and allowing for views from adjacent residences.

Re-engineering the Right-of-Way

From an engineering perspective the right-of-way contains a number of essential systems: road pavement for the conveyance and parking of vehicles, curbs, sidewalks and landscaped areas, sanitary sewer systems and storm drains, water distribution and fire hydrants, linear utilities (electric, gas, telephone and cable television), related aboveground utility installations such as electrical transformers and switchgear, and streetlights and street trees.

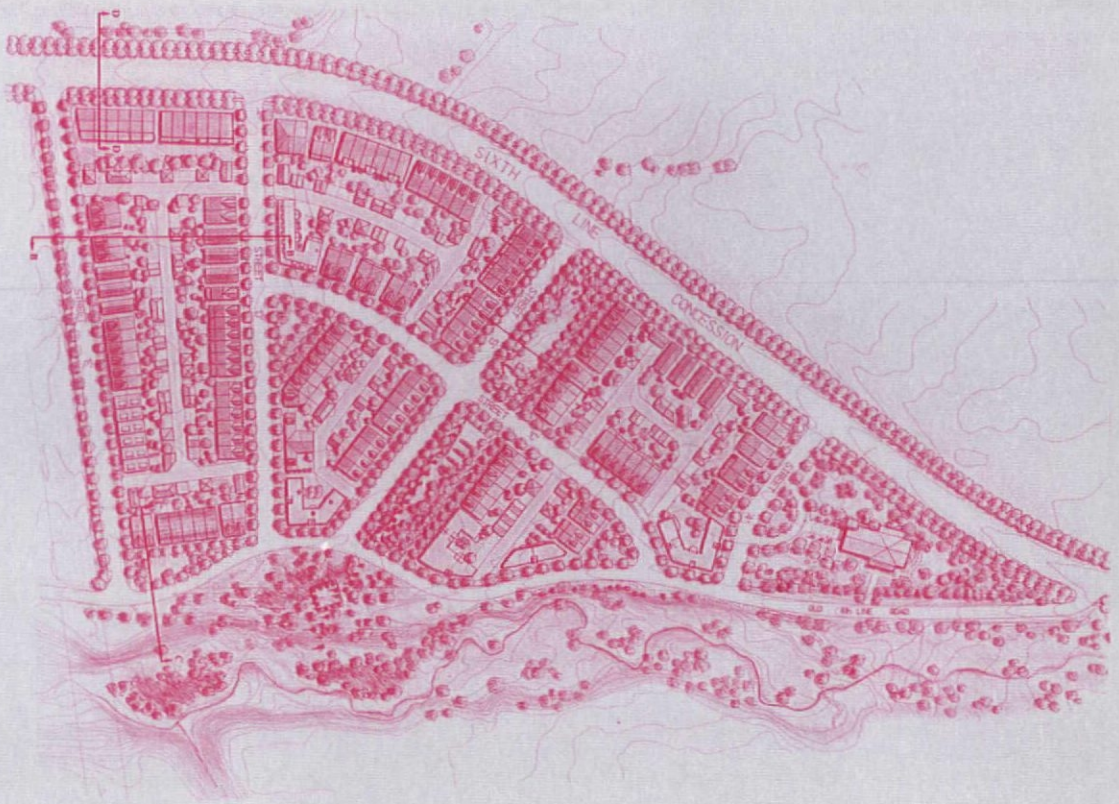
With respect to all of these systems, *Making Choices* reviews current practices and presents alternative technical configurations within the rights-of-way corresponding to each of the types in the proposed street hierarchy. We were able to tighten the minimum right-of-way from 66 feet to 40 feet by squeezing the distances between the various utilities, or by pushing utilities under the sidewalk or road pavement, or by requiring shared utility trenches.

The central feature of the right-of-way is the road pavement. It must be considered in terms of its use, its width and the general layout of the street and adjacent building edges. By far the most common pavement width used for local roads in Ontario has been 28 feet, which is generally understood to comprise two 10-foot driving lanes and one eight-foot parking lane. This standard emerged because it satisfactorily accommodates moving and parked vehicles over a wide range of traffic volumes and conditions with comfortable margins of safety.

Ontario's transportation ministry endorsed this standard and, until recently, set it as the minimum pavement width necessary for a local road to be eligible for maintenance subsidy. After the ministry released these alternative guidelines, it revised that policy so that a minimum pavement width is no longer requried. Instead, "innovative planning designs [that] contribute towards developments which are workable, liveable, environmentally sustainable and cost efficient" will be considered. Municipalities are given greater choice with respect to pavement width, and can make this determination based on place-specific factors, such as the anticipated traffic volume, the provision of on-street parking, whether a street is one way or two way, emergency vehicle access and design philosophy.

For example, from a capacity standpoint, a relatively low-volume local street with occasional parking on one side could consist of two nine-foot driving lanes and one eight-foot parking lane, for a total pavement width of 26 feet. Narrower pavements would likely result in a reduction of the "level of service" for traffic. But after considering the amount of traffic and the extent of parking expected, this may be an acceptable trade-off for other design benefits. Working examples of such streets can be found in many older neighborhoods across the province.

The objective of the standard approach to road design has been to ensure that the pavement is wide and that obstructions such as trees, light poles and sidewalks are set back far from the curbs. The assumption has been that wide building separations and long driver sight lines create



Examples of new projects that incorporate Ontario's alternative development guidelines. Left: Morrison Common. Right: Montgomery Village.

a safe driving environment. Driving speeds have conventionally been controlled by regulation (posted speed limits).

Making Choices is based on a different set of assumptions about driving behavior. The basic idea is to slow traffic, particularly on local streets, by design rather than by regulation. Drivers are made more aware of their driving environment through a number of techniques, including narrowing the street (or appearing to narrow it) and bringing buildings and the aboveground elements of the right-of-way closer to the street. This tightening increases "side friction" or concern about what is happening adjacent to the driving lane, causing drivers to slow down and be ready to stop.

The potential of this approach, known as traffic calming, can be observed in the older urban areas, where such design features have existed for many years. A recent publication, *Traffic Engineering for Neotraditional Neighborhood Design*,[2] reported that some professionals believe that safety can be addressed by designing streets on which it is uncomfortable to drive quickly, thereby encouraging drivers to drive more slowly.

Making a Choice

Alternative development standards are gaining increasing acceptance among developers, communities and policymakers in Ontario. In 1995, the province adopted a new policy statement under the Planning Act that directs municipalities to use cost-efficient residential development standards to reduce the cost of housing.

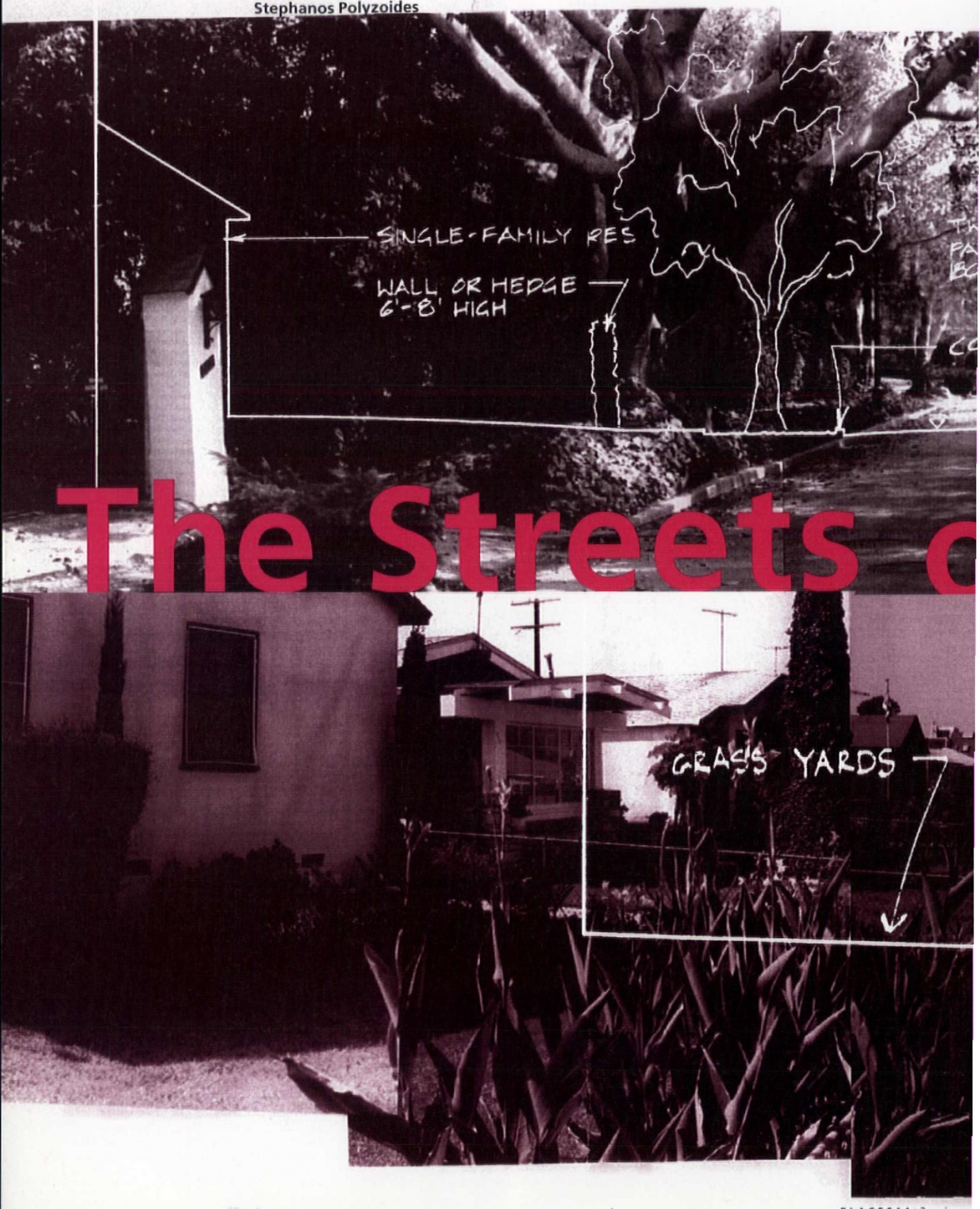
Recently, several municipalities in Ontario, including the regional Municipalities of Ottawa-Carleton and York and the City of Guelph, have undertaken reviews of their development standards and have approved several innovative development projects. Examples include the Cornell community in the Town of Markham northeast of Toronto and Montgomery Village in Orangeville, a town northwest of Toronto.

The Canada Mortgage and Housing Corporation has undertaken research on the comparative advantages of compact development based on alternative development standards. The Ontario Home Builders Association is also promoting the concept by adding a category to its annual "sales and marketing" awards program to recognize projects incorporating the principles of alternative development standards.

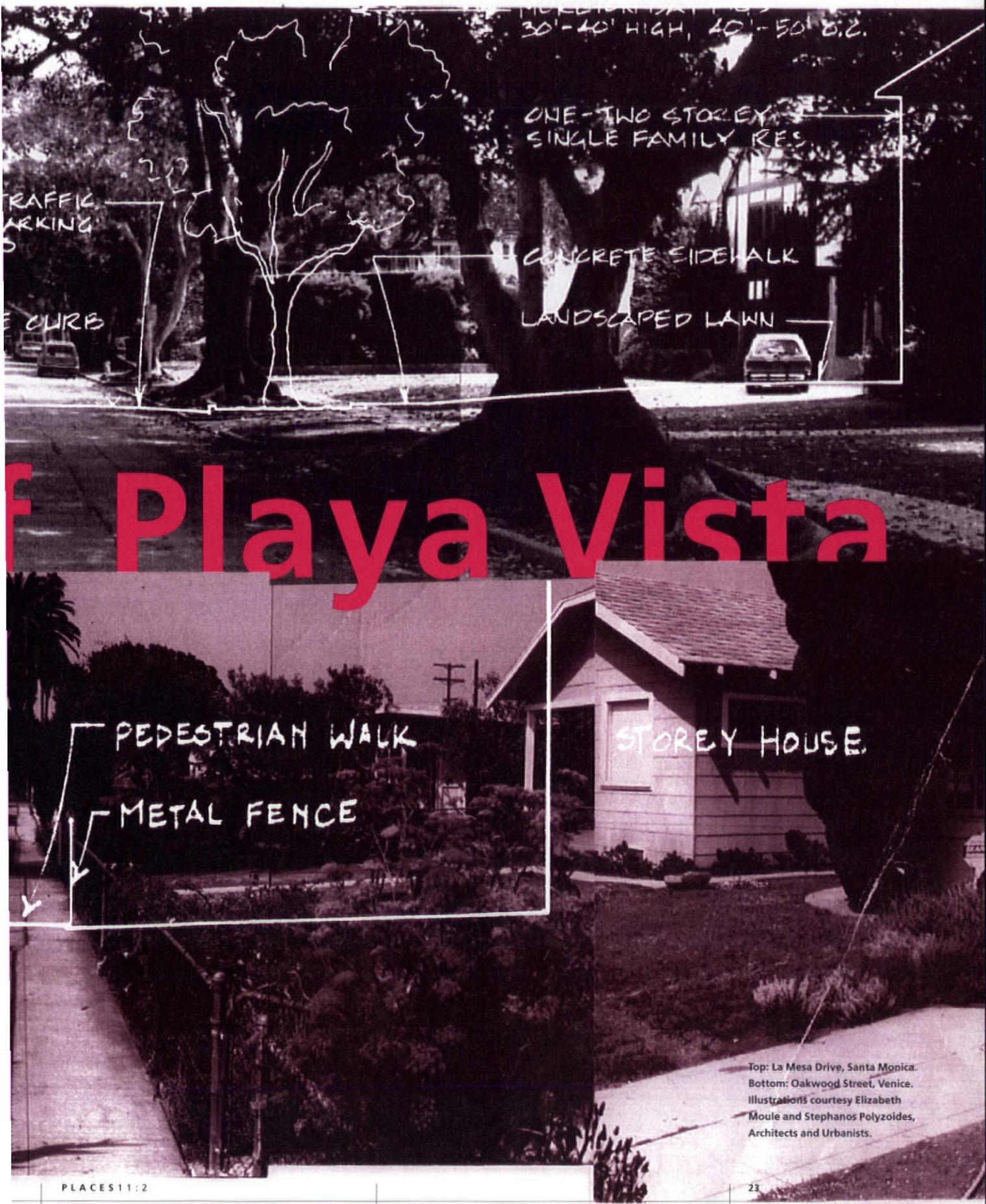
Notes

1. *Making Choices* was prepared for Ontario's Ministry of Housing and its Ministry of Municipal Affairs by a team of engineering and urban design consultants — Berridge Lewinberg Greenberg Dark Gabor, Ltd., Marshall Macklin Monaghan Ltd., and REIC Ltd. — with input from a broad range of groups with an interest in development standards for streets. The guideline was published in 1995.
2. Institute of Transportation Engineers, *Traffic Engineering for Neotraditional Neighborhood Design* (Washington, D.C.: Institute of Transportation Engineers).

Stephanos Polyzoides



The Streets o



f Playa Vista

Top: La Mesa Drive, Santa Monica. Bottom: Oakwood Street, Venice. Illustrations courtesy Elizabeth Moule and Stephanos Polyzoides, Architects and Urbanists.

Regional street types: Left: Pedestrian passage (under 50 feet wide). Walk streets, Manhattan Beach. Right: Pedestrian passage (more than 50 feet wide). Oakwood Street, Venice. Drawings by Trace Wilson.

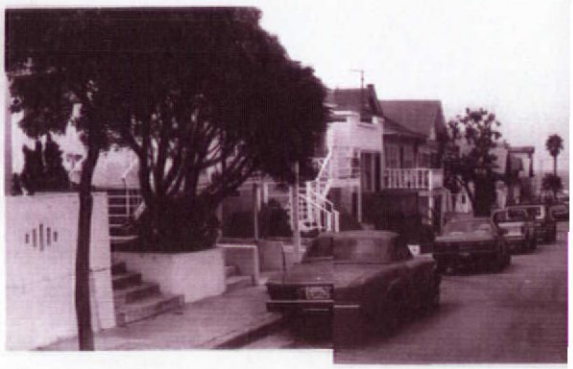
Playa Vista is an urban infill project located on more than 1,000 acres in west Los Angeles, just south of Marina del Rey. When built out, this undeveloped site (Howard Hughes' airport and aircraft plant had been located there) will include a mix of residential, office, retail and cultural uses.

When the design of Playa Vista was launched in 1989, the developers (Maguire Thomas Partners) challenged the design team to model it after Southern California's historical urban and architectural patterns. It did not take long for our team to realize that little useful analytical information existed on the subject. The important physical ingredients crucial to the foundation and early development of Southern California, including types of street grids and sections, parks and squares, housing and civic buildings, had simply never been documented.

Consequently, in order to design a region-specific town, we needed to research region-specific physical standards. The developer urgently authorized a series of precedent studies. Street grids, street plans and street sections are the most important formal determinants of the character of any settlement, so collecting a broad range of Southern California street types became our first research priority.

We measured and photographed one hundred streets. Each had an unusual, distinguishing formal characteristic, such as its parking arrangements, streetscape or configuration of traffic lanes. Our measurements included the distance buildings set back from property lines and the width of pedestrian ways and carriageways within each right-of-way. We documented views along each street with two photo montages, one taken from the center line and the other from center of the sidewalk.

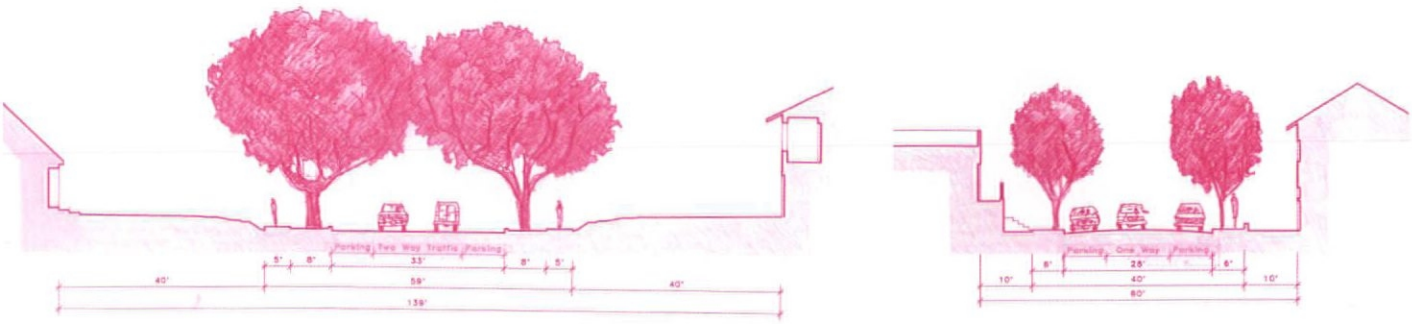
We divided the streets into seven types: pedestrian, one-way, local (under 35 feet wide), collector more than 35 feet wide), divided/parkway, edge and commercial. This relatively imprecise mode of categorization was not set a priori. It evolved as we began to organize the case studies empirically into groups that shared formal characteristics and were similar to the types identified in various transportation manuals.



Hart Avenue, Santa Monica

However elementary the methodological framework, the study rendered very rich results. It confirmed the fact that streets are a crucial element of Southern California urbanism. The region depends on a concise range of very high quality street types both to distribute its traffic and to build up its image as a unique urban place. The study also led to a series of important conclusions that became incorporated into the Playa Vista project.

Curb-to-curb issues. The streets we measured exhibited a surprising variety in the number of



Regional street types:
Left: Local street (under 35 feet wide). Prospect Avenue, Pasadena.
Right: Local street (under 28 feet wide). Hart Avenue, Santa Monica.

traffic and parking lanes and in their dimensions. This inspired us to think of streets as places that could be designed in response to the specific conditions of a project. Moreover, the pre-1940 regional street grid operated smoothly, despite the fact that it was generally undersized by twenty-five percent from current standards.

Curb-to-building issues. The dimensions and sectional profiles of parkways, sidewalks, front yards, side yards and driveways also varied widely. They suggested a regional, combinational language for designing neighborhoods connected by pedestrian friendly streets. By varying and combining these elements, we could create a multitude of rich designs for the public space of the city.

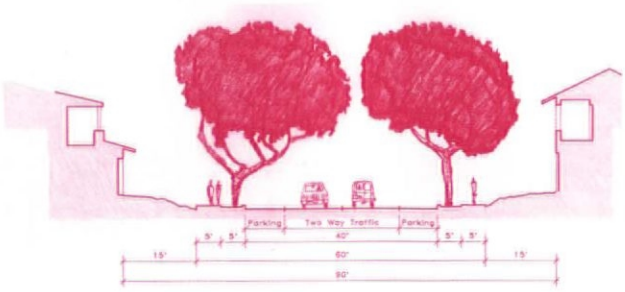
Building to building issues. The sectional definition of streets by buildings illustrated the interdependence between building mass, threshold elements and public space in the design of streets in this climate.

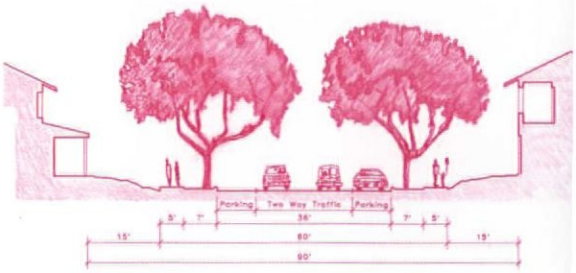
Landscape. Tree types, sizes and spacing directed us to a spatial–sectional architectural understanding of streets. When linked to particular street plan dimensions, trees became the key ingredients for establishing the architectural character of a street and, therefore, of street hierarchies. A street defined by California Fan Palms is as dramatically columnar as an Egyptian temple. A street defined by the expansive canopies of Camphor trees equals the naves of Christian basilicas.

Cloverfield Avenue, Santa Monica

The most surprising finding relative to landscape concerned the effects of street trees on the perception of various right-of-way dimensions. Tree-induced light and shade patterns, along with the perspectival diminution of streets due to the planting rhythm of tree trunks, reduced the apparent width of carriageways by up to 20 percent.

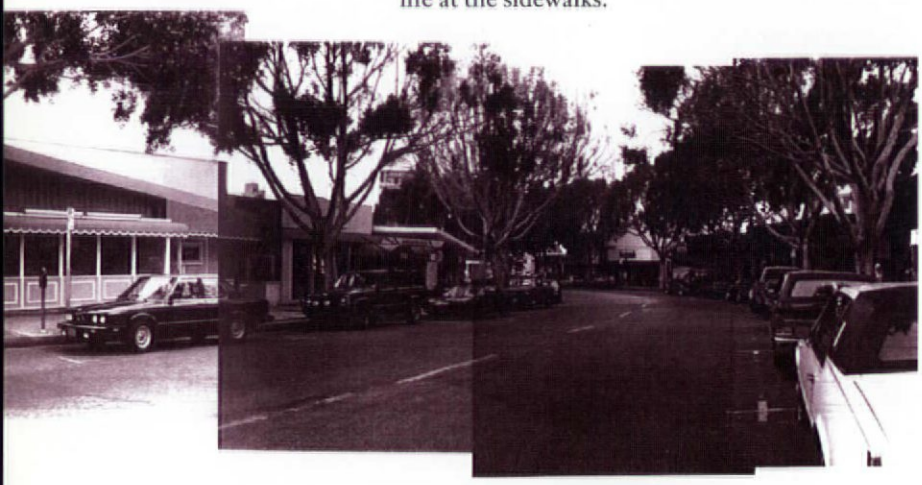
In clear understanding of this concise catalog of regional street precedents, we designed the Playa Vista grid to balance traffic, parking, pedestrian and infrastructure issues. The grid was composed of four principal street types:





Above left: Los Angeles Department of Transportation standard residential street, with a 40-foot carriageway. Above right: Playa Vista standard residential street, with a 36-foot carriageway. Drawings by Trace Wilson.

There are two *regional highways*, Jefferson and Lincoln Boulevards, which are under state control. Their traffic load was so high that the dimensions and geometries of their carriageways could not be challenged. Our intervention was limited to landscaping the right-of-way in a superior manner and encouraging transit, both buses and light rail, to enhance the quality of pedestrian life at the sidewalks.



Swarthmore Avenue, Pacific Palisades

There are three *regional connectors*, Bay, Teal and Centinela Avenues, all under the control of the city's transportation department. The traffic counts here were very high as well and the carriageways of these streets could not be modified. To the landscape and traffic improvements of the first type, we added the design of medians, appropriate setbacks to better architecturally define the streets and pedestrian crossings at all points.

The principal *internal collector* is Runway Avenue, which was conceived as Playa Vista's main street. It was designed to service buildings with housing densities of up to 60 units/acre, retail and commercial ground floors and parking, to connect with significant neighborhood parks and to accommodate bus transit through the town.

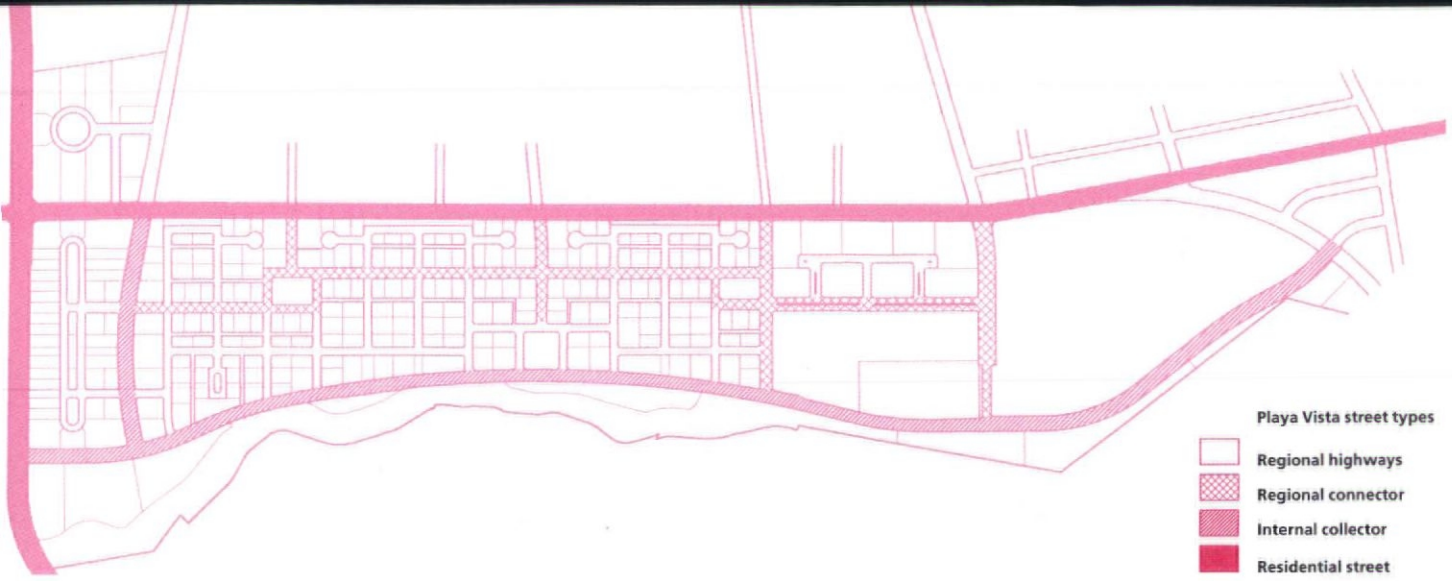
The *residential street* is the most common type, utilized locally within neighborhoods. For this type, we initially preferred a 30-foot street with a single-lane, 14-foot carriageway, two parking lanes and turning radii of 15 feet. Such streets are in use throughout Southern California and are associated with high levels of service.

But as the project planning advanced, it became clear that typical Playa Vista streets would have to service housing densities between 15 units/acre (fourplexes) and 40 units/acre (courtyard housing). Therefore, it was decided that the typical local street should be 36 feet wide, with room for two traffic lanes, and have turning radii of 25 feet. Building setbacks were defined at 15 feet each.

Maguire Thomas, the developer, faced a dilemma: Challenge the city on all deviations from its standards across all four types and thus precipitate a political crisis, or fight the city on the dimensions of residential streets only? (The city's standard calls for an even wider carriageway, 40 feet).

A positive outcome of the latter strategy would clearly result in the most planning benefit for the project, namely the realization of the street character envisioned by the design team for most of the project's streets. Maguire Thomas sensed it could win this argument and opted to challenge Los Angeles' local street standard.

This negotiation was no small matter. Los Angeles is the mother of sprawl – the oldest and the vastest in the country. Its bureaucracy is not



used to negotiating away its standards. But the city eventually relented; in part because of the importance of intimate streets to the success of Playa Vista, in part because it could not support its "standard. Still, the fire department disagreed and dragged the developer through the planning commission and all the way to a city council hearing. The council finally granted Maguire Thomas its wish to have local streets smaller than required.

This is not to say, of course, that the war was won. Many other significant dimensional differences remain to be resolved. For example, city standards on residential parking require 2.5 cars per dwelling, independent of location or project type. The city further claims that the number of cars to be parked per unit affects the flow of traffic throughout the project, thus inflating the design of carriageways.

At Playa Vista, all streets other than the local ones are being built to standards other than those desired by the design team. And subsequent phases of the project will open up for discussion issues of dimensional discrepancy for all the remaining streets. Most ominously, as Playa Vista is about to break ground, the Los Angeles Fire Department is making noises in writing that it will challenge the council's decision directly or indirectly by withholding further cooperation.

Since we began this project we have learned a great deal about the importance of well-designed streets:

Streets must be as narrow as possible to establish a balance between the requirements of cars and the human needs of pedestrians.

Streets must be formed by buildings rich in threshold elements, which bridge interior and exterior space. The public realm of the city can thus become the vehicle for a variety of social interactions.

Streets must be paved as little as possible in order to allow for maximum water percolation and minimum maintenance.

Streets dimensions must be varied in plan and section to establish a hierarchical and readable quality of place within the public realm.

Streets must be designed with a more rural or more urban character by the degree of design uniformity and materials, signage and lighting endowed to them.

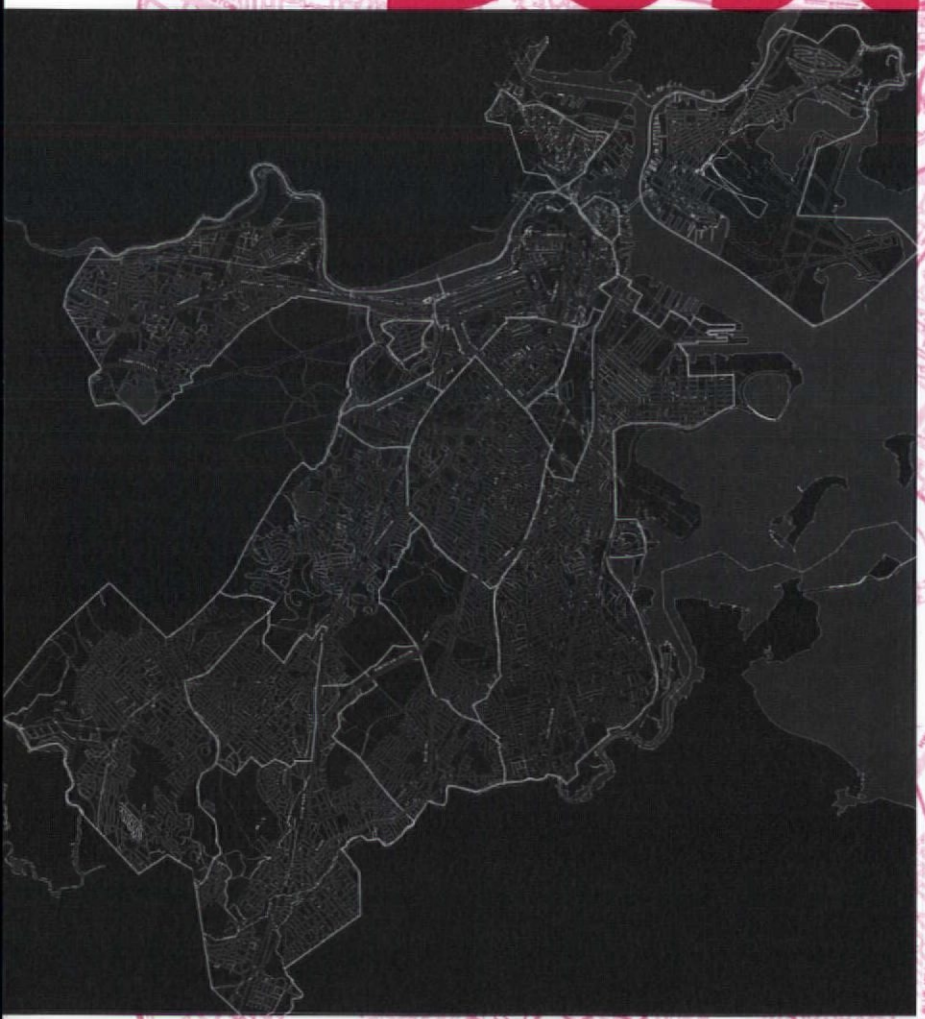
Streets must respond to the climatic conditions of their setting. The landscape should be native and its presence lasting.

This sense of what role streets can play in an evolving American urbanism is now shared by a widening circle of architects and urbanists and has been incorporated into the theory of the New Urbanism. What is missing and often not understood is the importance of designing based on precise information about the cultural setting in which design occurs.

The absence of regional design standards regarding street grids, street sections, appropriate landscape, square and park types, housing types and civic building types is shocking, but not surprising, considering the fact that our country is currently awakening from an ideological design slumber. Modernist urbanism glorified the universal over the local and eliminated from the rule books all references to cultural specificity of the kind that is hard won through historical practice. We should embark on a national crusade to recover regional design standards and fight for their incorporation into codes and ordinances.

Nathalie Beauvais

Boston's



The network of arterials that Boston is redesigning in its boulevard project. Courtesy BRA/EDIC.

Over the next three years, a significant amount of federal, state and city money will be allocated to the reconstruction of arterial roadways in Boston. The city has grouped the reconstruction projects under one umbrella, the Boston Boulevard Project, to maximize the opportunity this presents to enhance the public realm.

The fundamental purpose of the project is to bring the streets to current state standards for vehicular traffic, pedestrian safety and bicycle access; this is necessary for the city to remain eligible for the Massachusetts Highway Department (MHD) funding.

The city's goal, however, is broader: to create a network of public ways that will connect neighborhoods, cultural districts and downtown locations; function as roadways, civic spaces and destinations themselves; and emerge as an easily understandable element of the city's structure. Therefore, we want to design the streets in relationship to abutting land uses and to improve the aesthetic quality of the urban environment.

Coordination among city agencies has been essential. The Boston Public Works Department (BPWD), Boston Transportation Department (BTD) and Boston Redevelopment Authority (BRA), the city's planning agency, are involved. The BTD is responsible for traffic improvements and the BPWD and the BRA assure coordination among city agencies and consultation with key community groups. The BPWD manages the

Boulevard Project

design contract and oversees the construction for the city. The projects will be built by MHD.

The streets in the project are major thoroughfares, averaging 30,000 vehicles a day. They pass through dense areas where multiple uses of the roadway must be accommodated: parking, loading, buses, bicycles and peak traffic flow. Their rights-of-way cannot be enlarged because they are constrained by a tightly built environment. Any gain for one use must be made by reducing the space available to another, or by overlapping.

The design process for each street begins with an exercise that looks at alternatives and evaluates the pros and cons of each. These are debated internally and developed at workshops with task forces composed of residents, business owners and institutions. Once the design reaches a critical phase, such as 25 percent, the preferred alternative and the design process that led to it are discussed at a public meeting. If there is disagreement, the city may meet again with the task force and those in opposition to reevaluate the design.

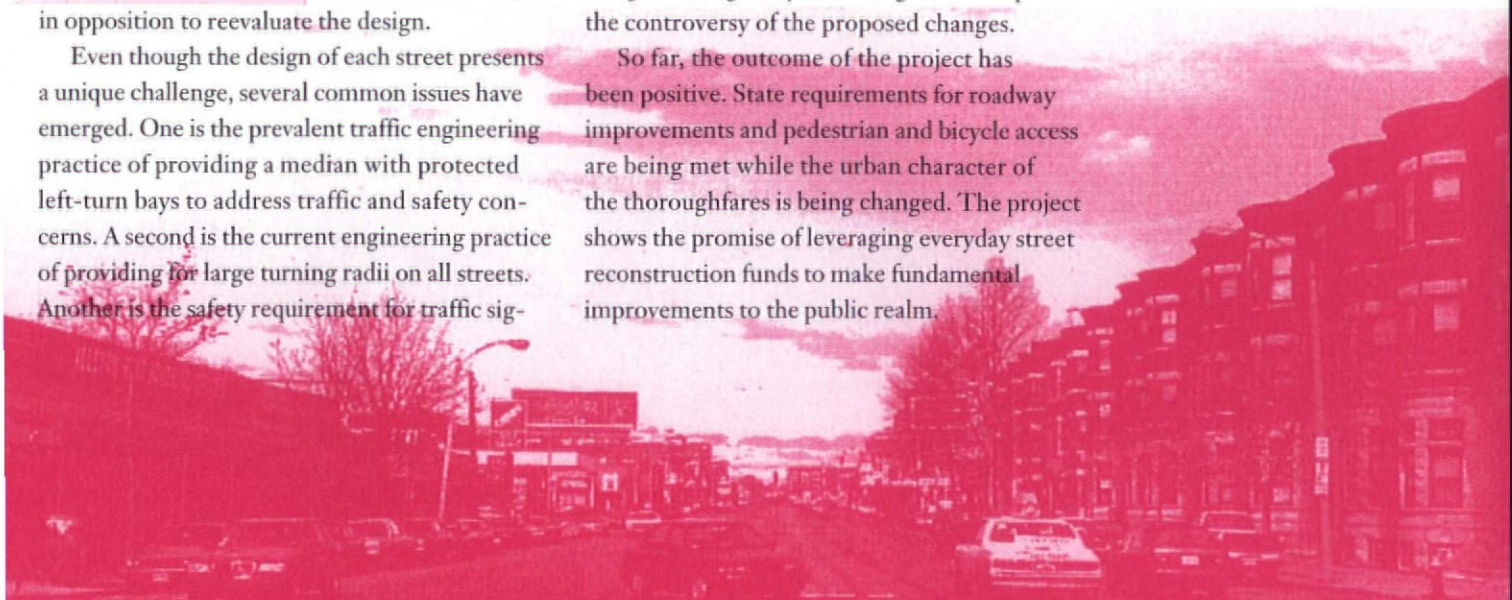
Even though the design of each street presents a unique challenge, several common issues have emerged. One is the prevalent traffic engineering practice of providing a median with protected left-turn bays to address traffic and safety concerns. A second is the current engineering practice of providing for large turning radii on all streets. Another is the safety requirement for traffic signalization with mast arms, which, some people feel, creates a highway character at intersections with local streets. The most significant issue is the custom of planning for peak hours and exceptional events, which results in allocating more of the street right-of-way to vehicular movement than required to accommodate typical daily volumes.

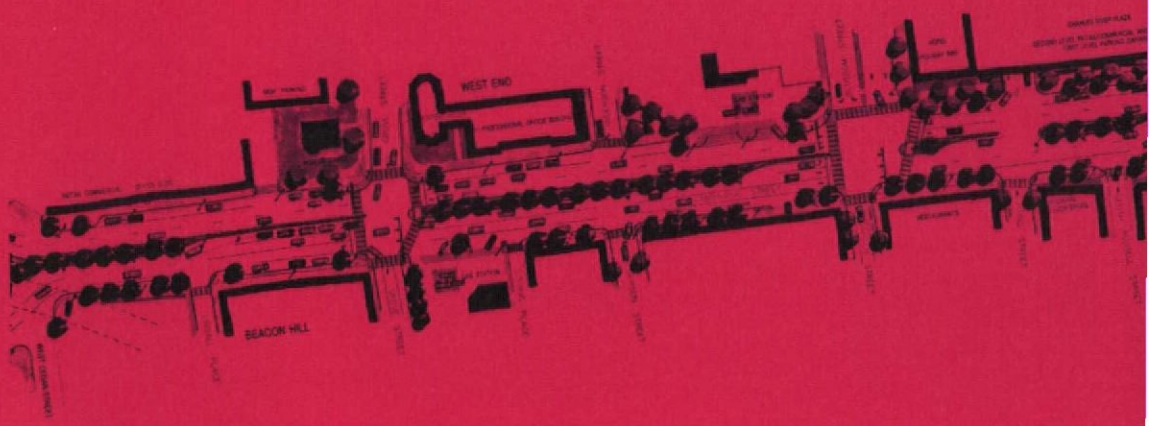
Through the public process, it became evident that despite the easy availability of public transportation, a large segment of the community favored facilitating vehicular traffic flow, since most people rely heavily on cars in their daily routines. Another common issue that arose was the community preference for street furniture and lights with historic references over more contemporary designs.

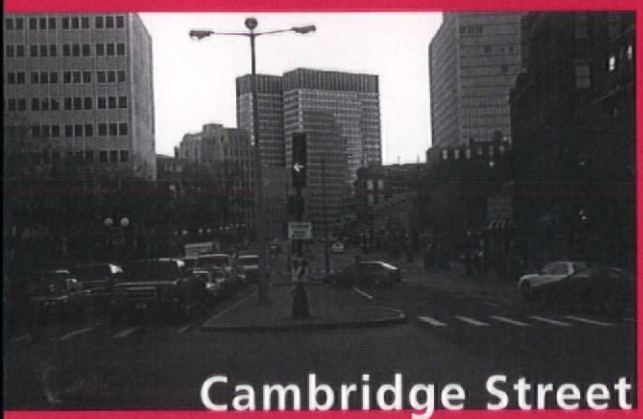
The streets included in the Boulevard Project are at different levels of design; some have reached only 25 percent while others are close to implementation. The time required to develop the design varies greatly according to the scope and the controversy of the proposed changes.

So far, the outcome of the project has been positive. State requirements for roadway improvements and pedestrian and bicycle access are being met while the urban character of the thoroughfares is being changed. The project shows the promise of leveraging everyday street reconstruction funds to make fundamental improvements to the public realm.

Brighton Avenue, before (below) and after (above) reconstruction project.







Cambridge Street

Cambridge Street runs between historic Beacon Hill and a superblock-style redevelopment area. Plan and section drawings by the Halverson Co., landscape architects.

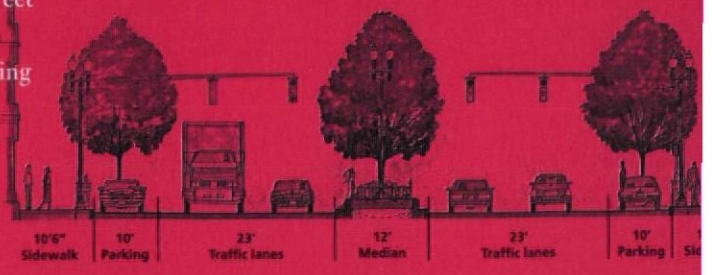
Cambridge Street runs between the Beacon Hill historic district and the West End, one of the country's best known urban renewal sites. It serves as one of Boston's main gateways, funneling traffic from northern and western suburbs to downtown.

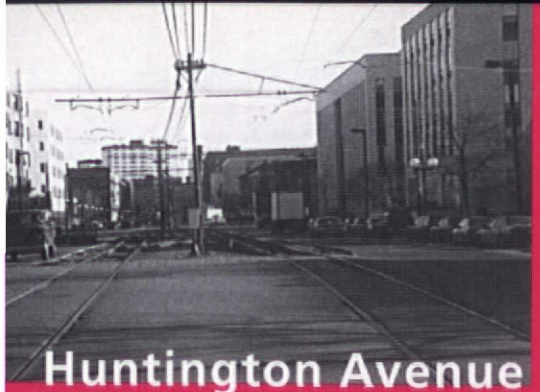
The architecture and block patterns along each side of the street are dramatically different and will remain different because of zoning and historical protection laws. In Beacon Hill, a nineteenth-century urban grid has been preserved and points of access are well distributed. In the West End, the character is that of superblocks with self-contained high-rise developments and very few vehicular and pedestrian access points.

One of the main goals of the reconstruction project, for both the community and the city, was to link the two sides of the street and transcend its edge condition. Two schemes were presented: one eliminating the existing median, the other enhancing it. The second alternative was chosen for safety reasons and because it reduces the perceived width of the roadway, keeping it in scale with Beacon Hill's low-rise buildings.

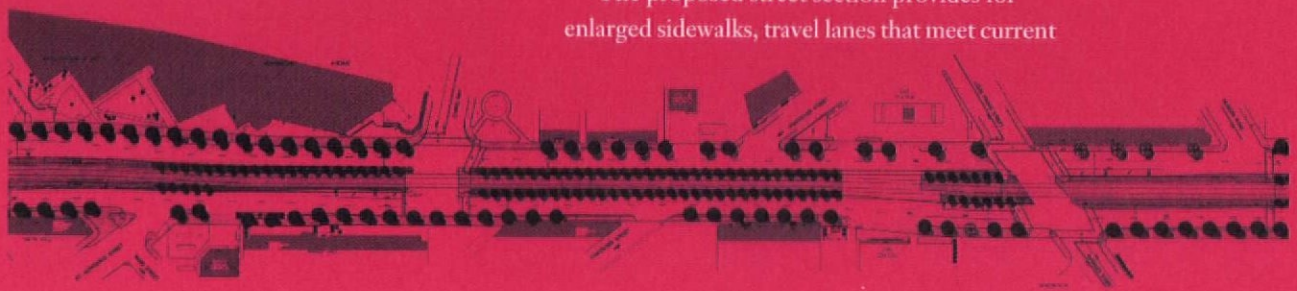
The existing eight-foot-wide median will be replaced by an attractive median at least 10 feet wide. The median will be as continuous as possible: the number of places for left turns will be reduced and the median will be planted with trees. Specific requirements, such as provisions for bicyclists, were met while parking on both sides of the street was maintained. The realignment of curblines and traffic lanes allowed for larger sidewalks of 12 to 20 feet on the Beacon Hill side, where most retail stores are located. Several businesses hope to have outdoor uses, such as cafes.

The 25 percent design phase is almost complete. In the next phase, the landscaping scheme will be developed further to help unify a street that is inconsistent in its scale and architecture.





Huntington Avenue



Huntington Avenue is located at the western edge of Boston's major business district. The street is home to many major cultural, educational and medical institutions, such as the Museum of Fine Arts, Northeastern University and Brigham and Women's Hospital. The street has very few streetscape amenities and barely enough room for all of its uses, including the trolley line that runs down the middle of the street.

One of the main concerns is to improve the pedestrian environment. Trolley stations are located in the center of the street and concrete barriers separate the platforms from the roadway. There are safety concerns for commuters, who must wait for trains near moving vehicles, and for pedestrians, who get caught between the trolley right-of-way and traffic lanes when crossing the street. In addition, the existing sidewalks are extremely narrow.

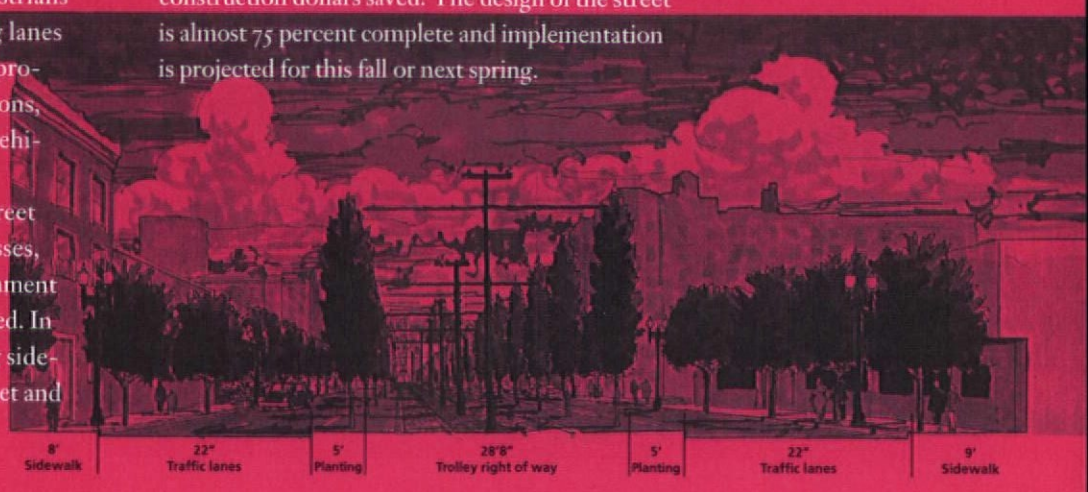
Traffic studies demonstrated that roadway capacity could not be reduced and, therefore, the only way to create space for pedestrians and bicycles was to eliminate parking lanes on both sides. That also allowed for protected left-turn bays at key intersections, reducing conflicts between turning vehicles and trolley cars.

The city generally supports on-street parking because it helps local businesses, provides a protected sidewalk environment for pedestrians and reduces traffic speed. In this case, it was judged that enlarging sidewalks to a minimum width of eight feet and providing wider trolley platforms would justify the removal of parking lanes. Meters that provided inexpensive short-term parking on Huntington Avenue will be replaced with new meters located on adjacent streets. The fact that many institutions along the street have their own parking facilities also makes the scheme feasible.

The proposed street section provides for enlarged sidewalks, travel lanes that meet current standards (11 to 13 feet), space for bicyclists and continuous tree planting on both sides of the MBTA reservation (except at a few narrow platforms and where protected left-turn bays must be provided). All MBTA shelters will be replaced, and the new shelters might include art panels that advertise special events at the institutions.

For visual enhancement, the intent is to create a continuous tree canopy from sidewalk to reservation to sidewalk and to provide for consistent street lighting on sidewalks and at the edge of the MBTA reservation. These elements will help engage the trolley reservation in the streetscape and overcome the dividing impact it has today.

The roadway reconstruction project is being combined with a transit modernization project being undertaken to meet the Americans with Disabilities Act requirements. The joint project has required great cooperation between MHD, the MBTA and the city. Consequently, the entire roadway can be redesigned at once and significant construction dollars saved. The design of the street is almost 75 percent complete and implementation is projected for this fall or next spring.



A major goal for reconstructing Huntington Avenue is to enhance the visual character and better mark the presence of the civic and cultural institutions along it. Plan and section drawings by Pressley Associates, landscape architects.

Terrence L. Bray, Victor F. Rhodes

In Search of Cheap

Portland has about 1,200 miles of local service streets, most of which serve either commercial–industrial districts or residential neighborhoods.

Most of these streets, about 1,120 miles, are maintained by the city. In residential neighborhoods, these streets are usually 28 or 32 feet wide, and they usually have curbs, sidewalks and storm drainage systems.

But the rest of these streets, about 80 miles, have dirt or gravel surfaces and no drainage facilities, and they are not maintained by the city. These streets are generally found in neighborhoods zoned for single family dwelling lots of five thousand or seven thousand square feet.

Since the early 1900s, Portland has relied upon the "local improvement district" (LID) process to fund local residential street construction. When requested by neighborhood property owners, the city designs and manages construction (by a private contractor) of the street and drainage system, and all costs are assessed to the benefitting property owners.[1]

If you lived in a neighborhood with unimproved streets and you requested an LID, the city would design your street to its standards. The public complained that our standards were too costly, wide and invasive, and that streets built to these standards encouraged shortcut, high-speed traffic through their neighborhoods.

Of course, our response was to say our standards are our standards. We couldn't understand why they called us uncompromising, inflexible, extravagant and unresponsive.

It is interesting to note that while we were building three to four miles of local street improvements each year to our city standards, others city agencies were spending about a million dollars annually on a neighborhood traffic management program whose purpose is to retrofit existing streets (using diverters, chicanes, slow points, speed bumps and traffic circles, among others) to reduce shortcut traffic and speeding in residential neighborhoods.

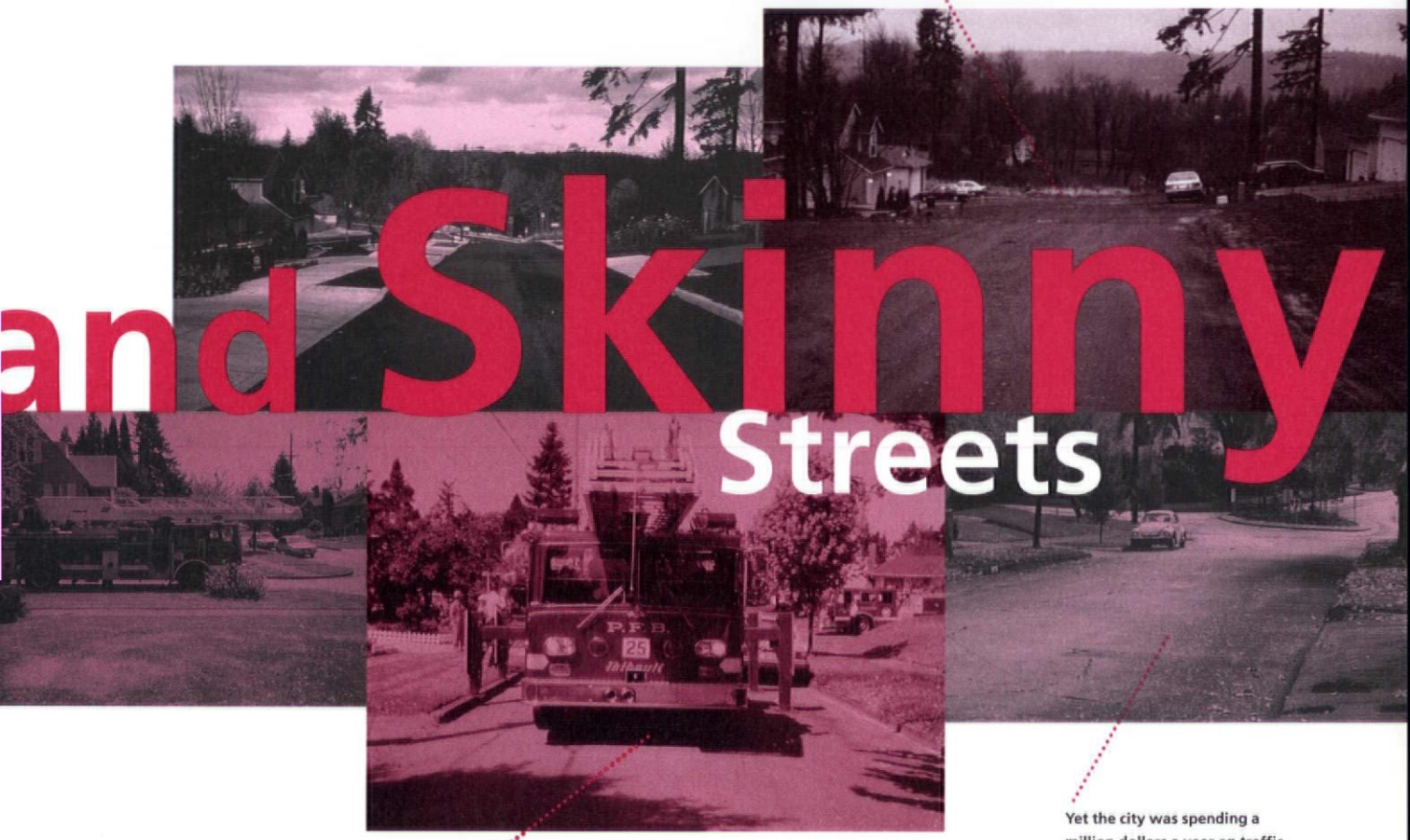
Residents understood that they had to pay to get their streets improved, but they objected to what we were building, and they demanded that we come up with something better. Finally, we agreed to establish a citizens committee to work with us to revisit our standards.

Queuing Streets

Quite candidly, we really didn't expect to see much change. How could we improve on perfection?

Our standards at the time were already what most communities would consider rather lean. We permitted a 32-foot-wide street, which allowed

and Skinny Streets



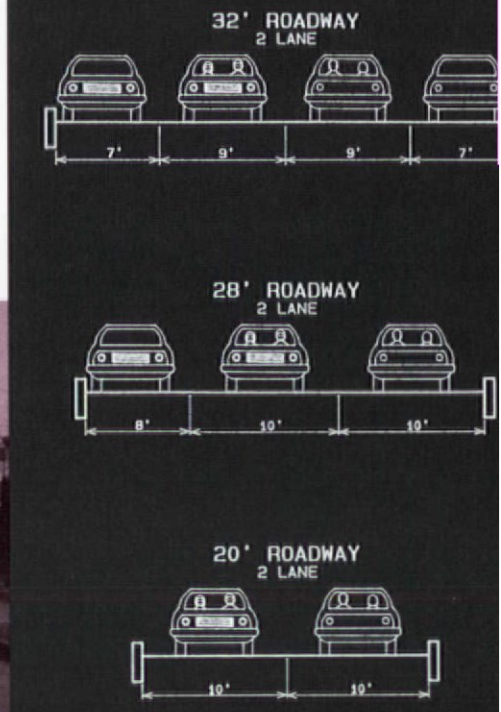
Portland's street improvement program seeks to improve some 80 miles of unpaved streets in residential neighborhoods.

Until recently, new residential streets in Portland were built as wide as 32 feet. A major reason for this standard was a concern for emergency vehicle access. But communities resisted these streets because they were expensive to build and encouraged fast traffic.

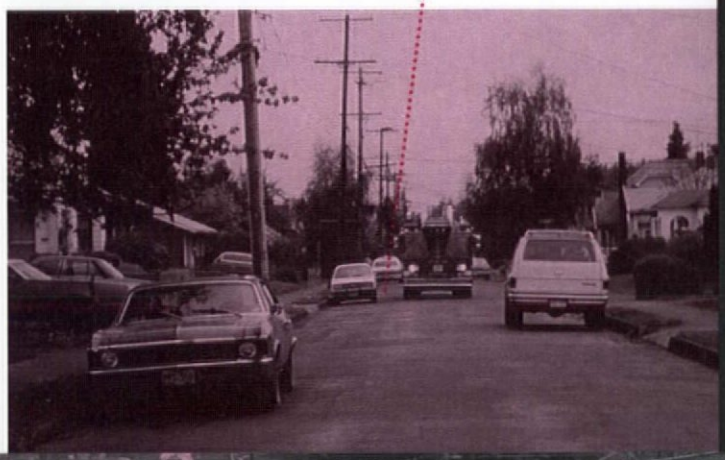
Yet the city was spending a million dollars a year on traffic calming devices, such as this traffic circle, on existing streets.

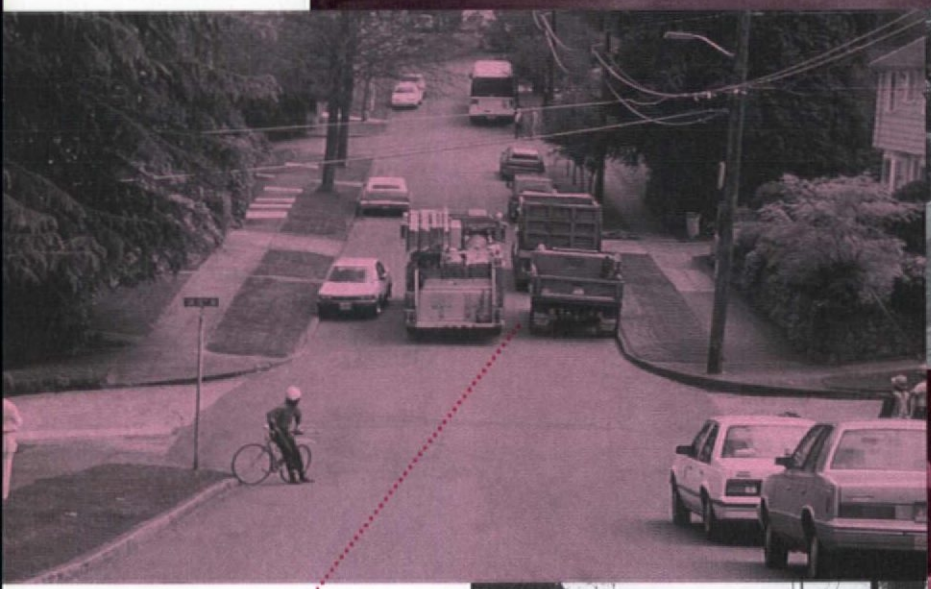
Images courtesy Terrence L. Bray and Victor F. Rhodes.

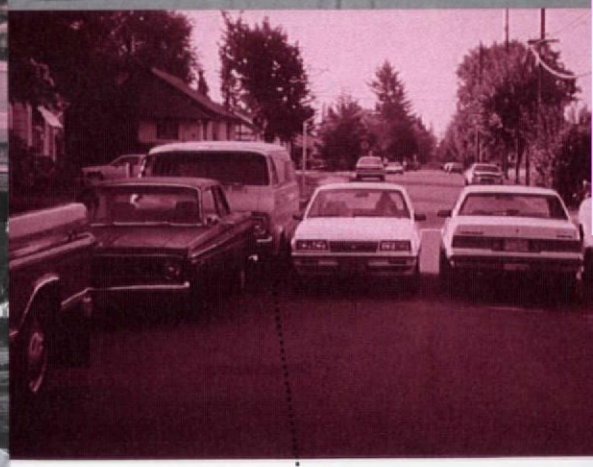
Previous city standards



Fire trucks can get through 24-foot streets, even if cars are parked on each side.



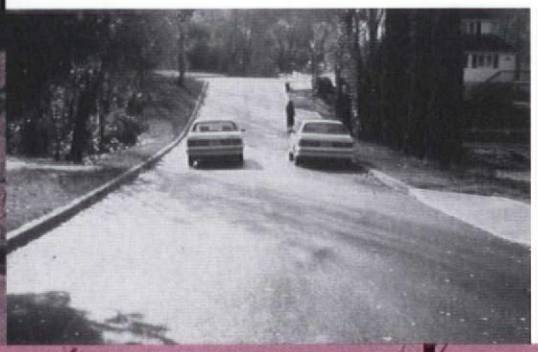


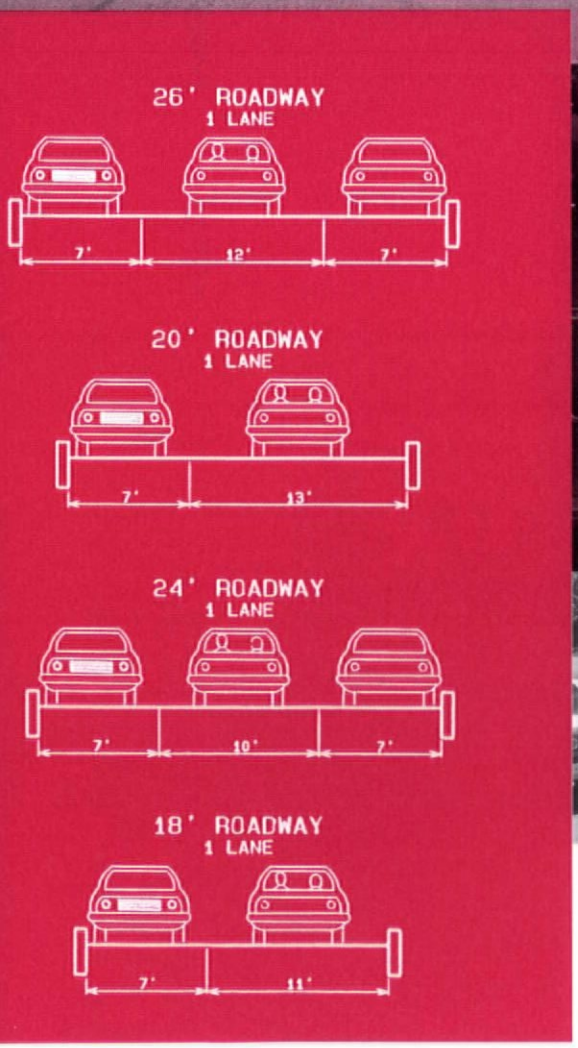


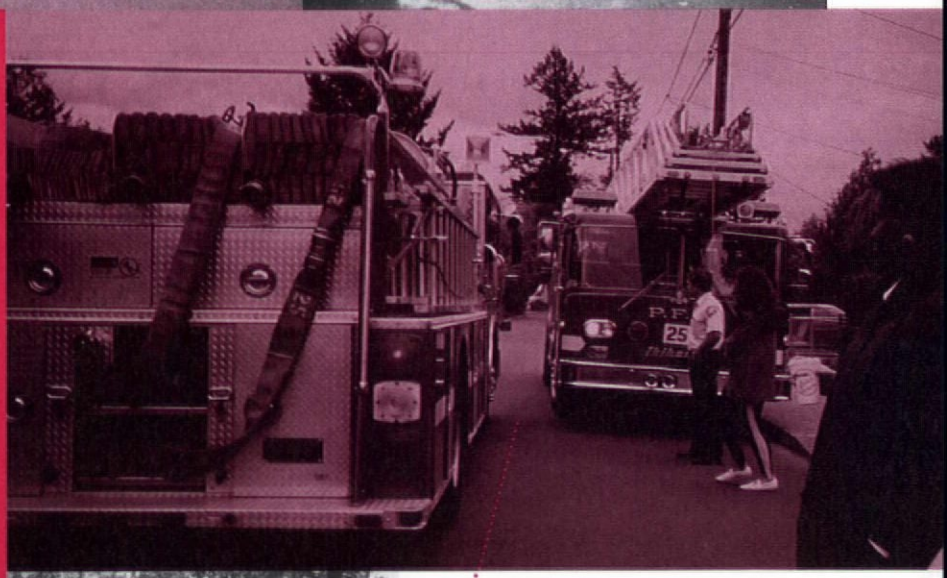
A 26-foot street requires opposing traffic to queue, or wait before it can pass. But it allows plenty of room for emergency vehicles—even if there are trucks or buses parked there.

A 28-foot street is only wide enough for two parking lanes and one traffic lane.

Twenty-foot streets easily accommodate a lane of parked cars and traffic—autos, trucks and fire equipment. Outriggers could be positioned between parked cars or on driveways.

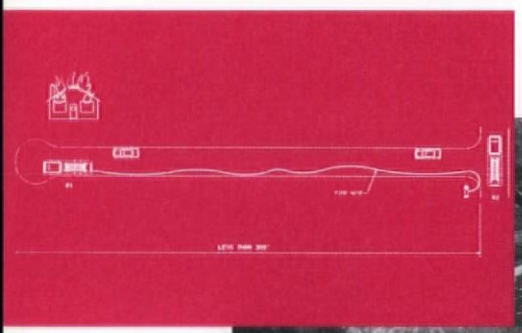


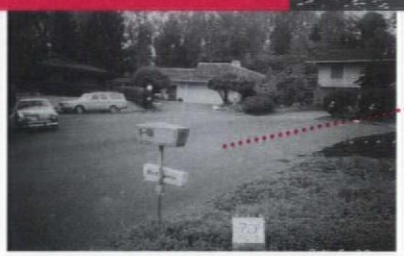




The narrowest practical street for fire equipment was 18 feet. Two trucks could pass each other if their occupants pulled back the trucks' mirrors.

parking on both sides and two travel lanes. We permitted a 28-foot-wide roadway, which allowed two travel lanes and parking on one side. And we permitted, in certain circumstances, a 20-foot-wide roadway, which allowed two travel lanes but no parking. These streets are first and foremost traffic streets and, secondly, they provide an unobstructed fire lane.





Culs-de-sac typically have been designed so fire trucks can turn around in them. But once a fire is extinguished, the emergency is over, and trucks can back out.

In working with our citizens committee, and at the suggestion of our consultant, we came across *Residential Streets*, a book co-published in 1990 by the American Society of Civil Engineers, the National Association of Home Builders, and the Urban Land Institute. The book discusses a more balanced, common sense approach to residential street design issues.

One of the more intriguing ideas involves building two-way streets with only a single travel lane. If a street is built with a single travel lane, requiring one opposing vehicle to pull over while the other passes by, then you have a queuing street (which we subsequently dubbed a "skinny street"). It was easy to see how, as *Residential Streets* suggests, "designs that encourage this kind of cautious driver behavior result in reduced speed, greater attention on the part of drivers to conflict, and, thus, safer streets."

We were intrigued by the idea of queuing, but how could we move in that direction? We decided to look for clues on existing streets in Portland. We looked at streets built to our current standards – 32, 28 and 20 feet wide.

A 32-foot street allows parking on both sides and two narrow travel lanes. But what would happen if parking were permitted on both sides of a 28-foot street? You cannot reasonably drive two cars past each other comfortably. It occurred to us that 28 feet is essentially the pinch point at which a street with parking on both sides becomes a queuing street.

We looked more closely. If a 28-foot street has parking on both sides, the travel lane would be 14 feet – wider than many freeway travel lanes. So if we were to build queuing streets, why would we need a travel lane that wide? Perhaps we could save a little money by shrinking that travel lane to 12 feet, or even 10 feet, and still have a viable street. We also surmised that dropping one parking lane from the 26- or 24-foot street might still yield a functional two-way street with parking on one side.

We toured many of Portland's older neighborhoods and found mile after mile of 26- and 24-foot streets accommodating parking on both sides. We drove a city car and a bicycle past each other to prove to ourselves that they can coexist. We drove a dump truck down the street to verify ample lateral clearance from parked vehicles on such streets.

Although we did considerable hand wringing, our traffic engineers could point to no significant accident history relating to these narrow street widths. It was obvious that skinny streets work in Portland. We have several hundred miles of older streets where queuing is a fact of life.

We concluded that queuing works well in low-density (single-dwelling) residential neighborhoods with driveway openings along the curb, and where there is sufficient off street parking and low ordinary demand for on street parking. In Portland, these criteria are satisfied in neighborhoods zoned for densities of up to almost nine units per acre.

Where's the Fire?

Remember that there were two functional considerations that skinny streets would have to satisfy. They not only serve as traffic carrying facilities but also provide access for fire emergency vehicles. To find out whether these streets would work with Portland's current fire apparatus, we decided to run more tests.

When we tested our street standards in the late 70s, we set up a course, using cones in a large parking lot, and proved to ourselves that we needed wide streets. The problem with that approach is that it focuses entirely on geometry and doesn't take into account potentially competing interests.

This time, we decided to go to established, thriving neighborhoods with narrow streets, and asked the fire bureau to demonstrate to us how those streets don't work. We wanted to find out for ourselves and our critics what the narrowest permissible street width should be, based not on some ideal standard but on common sense.

The fire bureau had historically required an unobstructed, 20-foot-wide fire lane everywhere. Ladder trucks, it explained, are designed to allow the aerial ladders on the top to swing laterally, and in order to prevent the truck from overturning, they need to extend outriggers to provide stability. The truck is about eight feet wide, the outriggers extend about three feet on either side, and they have to have space to get around these outriggers – not to mention occasionally needing to get one apparatus past another. That's why they needed 20 feet of unobstructed fire lanes.

At our request, the fire bureau brought an engine and a ladder truck to a neighborhood with 26-foot streets. The trucks had no trouble making their way through the streets. We parked a dump truck along the curb, even a bus. Nevertheless, the fire apparatus drove through.

We then went over to a neighborhood with 24-foot-wide streets and asked the fire bureau to bring its apparatus in again. Again, the apparatus got through.

Next we went to a neighborhood with 20-foot-wide streets. We parked a car at a corner so we could see what would happen if a fire truck turned from one narrow (18-foot) street to another narrow (20-foot) street. The apparatus was able to make the turn at slow speed.

What about the problem with the outriggers? "Well," the firefighter said, "it's not really an issue here. You've got overhead utilities in this neighborhood, and you've got a lot of trees, so we wouldn't use the overhead ladder to fight a fire here."

Then we asked a hypothetical question. Even if the fire bureau did use the ladder truck on these 20-foot-wide streets, wouldn't it be possible to set up the outriggers in gaps between parked cars or in some other clear area? It was possible, the firefighters explained, but not ideal, since it could take more time to position the apparatus.

We hit the minimum width at 18 feet. The lateral clearances between adjacent vehicles really began to get small. We asked the driver of one apparatus to park against the curb and another to drive by it. The engine got by, although a passenger had to reach out and pull the mirror back to make sure there was no contact. We were satisfied that we could argue for, and defend, no less than an 18-foot width for a queuing street.

Keep in mind that, at the time, the perception of unreasonably wide street standards was causing many neighborhoods to shy away from asking that their streets be improved, leaving the fire bureau with the burden of continuing to have to provide fire – emergency response to neighborhoods with roads in extremely poor condition.

The fire bureau could have taken a rigid stance in an attempt to halt further discussions of narrower streets. But Portland was blessed with a fire chief who understood that problem and recognized that some compromise would benefit the community without severely impairing his bureau's objectives. When we asked him to support skinny streets, he agreed, but with some give and take.

The majority of Portland's blocks are short; predominantly 200 by 200 feet and in some places 200 by 400 feet, or a maximum of 400 feet from

intersection to intersection. In a fire emergency, the first apparatus, presumably an engine, would show up, hook a hose to a hydrant, go on down the street, snake the hose out and charge it. Then the firefighters in that truck would start to work on the fire. The second responding vehicle can come in from the other end of the block; these guys talk to each other on the radio, and they know which are through streets and which streets are not.

On culs-de-sac, though, after the first apparatus goes in, snakes a line and charges it, you do not want vehicles driving over this charged hose. If it were a queuing street with parked cars, the street could be blocked to a second responding vehicle.

"No problem," the chief said. On culs-de-sac less than 300 feet long, if the fire is at the far end, and both the parking and travel lanes are blocked by a truck and a hose, then firefighters can simply get out and carry the equipment they need to knock the fire down. So, he said, a skinny street would be acceptable for a cul-de-sac less than about three hundred feet long. For a longer cul-de-sac, the fire bureau may veto a skinny street.

A street in Portland's Brentwood–Darlington neighborhood, before and after improvements.

Until 1991, we required 90-foot diameter culs-de-sac to be built in residential neighborhoods. The purpose of a cul-de-sac is to provide space for turning a vehicle around. But when we asked firefighters about this, they told us the emergency is getting there, not getting out, and if necessary, they can back out. We ultimately recommended designing 70-foot diameter culs-de-sac to serve vehicles that regularly use the street, with no objection from the fire bureau.

In 1991, the city council authorized us to implement skinny streets. The new standards for local residential streets (in areas zoned low-density residential) are either 26 or 20 feet wide, depending on neighborhood parking needs. As a result, Portland has gone from the aircraft runway standard to what we and our neighborhood customers believe are much more people friendly streets.

Skinny Streets and Growth Management

The Portland metropolitan region is expecting upwards of 500,000 new residents over the next twenty years. This will put extreme pressure on our urban growth boundary and ability to deliver municipal services.

The city has responded by setting an aggressive goal of housing at least 20 percent of these newcomers. Where will these people go? Proposals have ranged from unpopular "granny flats" to whole new "sustainable neighborhoods" on brownfields adjacent to the downtown area.

We simply cannot accommodate 100,000 new residents in the central city alone. There is also a need to have a geographic sense of equity in the city's public investment strategy. So we began looking more closely at our existing outlying neighborhoods with an eye toward creating opportunities for affordable infill housing.

Some of these outlying neighborhoods are low- to moderate-income areas with a significant potential for infill of single family residences. They are characterized by unimproved streets and varying degrees of substandard housing. Because these neighborhoods were developed years ago, before sewers were available, the homes sit on multiple or extremely large lots. More than 30 percent of the available land is vacant.

We decided to focus on an area known as Brentwood Darlington, which has the capacity to absorb 1,200 new residents and generate an assessed value growth in the range of $32 million. The area was already served by utilities, transit and a collector road system. What was missing was the local residential street.

This area was annexed to the city over residents' objections and was later forced to install sanitary sewers against its will. For these reasons this is a community where government is distrusted and not welcome. Our challenge was

twofold: to develop a street product which was affordable to the residents, and to devise a marketing program to overcome the residents' distrust.

Having decided to take a business- and market-based approach, we hired a former sales manager from Weyerhauser to lead the effort. We already had skinny streets, we just needed to make them affordable. We researched the demographics of the area so we could establish a target price for street improvements that was affordable.

We found that 70 percent of the residents had lived in the neighborhood more than ten years and that owner occupancy was above the city average. This told us there was a lot of equity already established in homes that were selling in the affordable range of $56,000. Incomes in the majority of cases were found to be below median but the residents paid their bills.

We began to put a program together by looking for partnerships to leverage limited transportation dollars. We learned that the area was scheduled to have sewers installed in the near future, and realized that when the Bureau of Environmental Services finishes installing a sewer it paves the street. It lays a few inches of asphalt simply to get out of the neighborhood with their shirts on their backs. We suggested that they could put that same investment toward a full street improvement that would be maintained by the city. They agreed.

In addition, the neighborhood qualified for assistance from Housing and Community Development Block Grant funds. The Bureau of Community Development agreed to put up $1 million in block grant funds to subsidize street construction in order to make the vacant land available to development by not-for-profit housing providers.

We labeled our product "Cheap and Skinny Streets" and rolled it out to the neighborhood. For $1,700 the owner of a 5,000 -square-foot lot could get a skinny street, 20 feet wide, with parking on one side, curbs, trees, sidewalks on both sides and street lighting. People who owned four lots would pay four times that, an incentive to sell their lots for infill development.

When we say "Cheap and Skinny Streets," we're not talking about something substandard, but the word "cheap" means a lot more to the folks than "affordable." You have to know your customer and we don't think government does very frequently.

We sent 6,000 pieces of mail to this neighborhood in five months. When these people get mail from the city government, they throw it away; we had to send it in red envelopes, orange envelopes or striped envelopes. They didn't like us because they were forced to annex to the city, forced to have sewers and unhappy about police service.

We went on a petition drive and got 60 percent of the people (197 properties) to opt in, and have improved 1.5 miles of street. The project cost about $1.2 million, $870,000 from Housing and Community Development and sewer funds and $363,000 from residents. The assessment for this will cost the average resident $1.42 a day, less than the average price of an on-the-street cafe latte.

We took the program a step further and put together a whole financial package with local banks so people could refinance their mortgages. These people have lived in the neighborhood for more than ten years and most of them are homeowners. Many of them didn't take advantage of the recent low interest rates, so we are putting them back in their house with a home rehabilitation loan, maybe some equity taken out for a recreational vehicle or a boat – while lowering their cash flow requirements.

We're not doing this simply because we like paved streets. When we undertook a similar project in the St. John's neighborhood in the 1970s, we found that when we improved the streets, people cleaned up the front yards, removed refrigerators from the porches, fixed up their houses and got rid of junked cars.

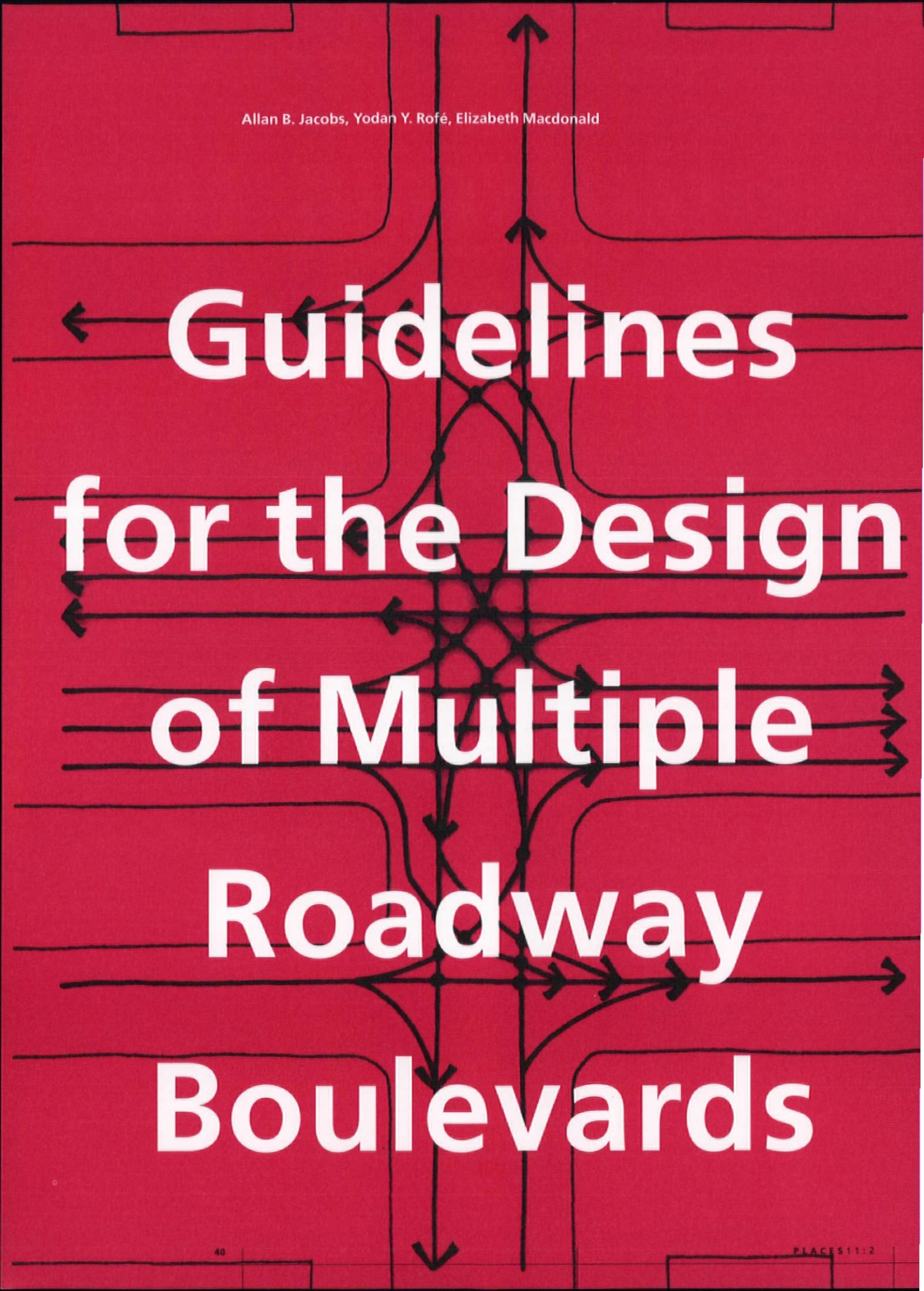
We're doing this because it helps manage growth, creates opportunities for affordable housing created by nonprofit developers, and strengthens community pride. Building "Cheap and Skinny Streets" is about more than just laying asphalt.

Note

1. Portland uses tax revenues to construct arterial streets and maintain all city streets, but not to build local residential streets.

Allan B. Jacobs, Yodan Y. Rofé, Elizabeth Macdonald

Guidelines for the Design of Multiple Roadway Boulevards



The focus of our concern is a specific type of boulevard, the multiple roadway boulevard, which is designed to separate through traffic from local traffic. It consists of a central roadway, generally at least four lanes wide and used for fast and non-local traffic, and tree-lined medians, access lanes and walkways on either side.

During the 1980s and the early 1990s, several proposals to design multiple roadway boulevards in U.S. cities have fallen victim to objections that they would be unsafe. In particular, the concerns were that traffic and parking lanes would be too narrow and that complicated intersections would be dangerous.

During field research for the book *Great Streets*, we spent considerable time on a variety of boulevards, mostly in Paris and Barcelona. We spent hours at intersections, observing them and the nature of driver and pedestrian movements. To us, the boulevards did not appear to be particularly dangerous. Rather, our overwhelming impression was that people adapted to what was there and did so safely. Most important, these streets were delightful places to be. Pedestrians, local motorists and through traffic all seemed to get along together.

To investigate the safety question further, we studied a number of existing boulevards in the U.S. and Europe: The Esplanade in Chico, Calif.; K Street, in Washington, D.C.; the Grand Concourse and Ocean Parkway in New York City; Southern Parkway in Louisville, Ky.; Avenue Montaigne and Boulevard Courcelles in Paris; and the Paseo de Gracia and the Diagonal in Barcelona.

Our studies included statistical analyses of traffic and accident data on these streets and nearby control streets. We also conducted extensive behavior observations at intersections, counted traffic and turning movements, measured the physical environments and reviewed hours of time-lapse photography.[1]

A central finding of our research was that multiple roadway boulevards are not less safe than other major arterials; in fact, they can be safer when they are well designed. To be sure, not all boulevards are safe, and design has a lot to do with that, but the same can be said of any street type.

An essential point about boulevards is that they provide for all uses of the street — access to property, through and local traffic, crossing movements, pedestrian and motorist activity, public transit — in a balanced way. The best boulevards accomplish this by establishing an extended pedestrian realm that includes tree-lined medians, access roads and sidewalks that all function at the pace of pedestrians.

Two other findings are especially significant. If today's engineering standards and norms are followed in matters like lane widths, reductions in conflict points, sight lines at intersections (leading to tree removal) and intersection design, then we can by and large kiss these gracious streets good-bye. Engineering standards have been damaging to existing boulevards and have inhibited the development of new ones.

Second, boulevards do not fit neatly into the prevailing list of functional categories of streets — collector streets, local streets and so on — a doctrine that precisely rules out what boulevards can do so well, mix traffic types. All of this bodes terribly for the Esplanades, Ocean and Eastern Parkways and Avenue Montaignes of the world.

We followed that study with a second, "Multiple Roadway Boulevards: Case Studies and Design Guidelines."[2] The guidelines, a synopsis of which follow, establish in precise terms what we mean by well-designed boulevards, the essential qualities that make them work well. Our purpose is to advance boulevards as part of an alternative paradigm for the design of city transportation systems, one that maintains access and multi-functionality at all levels of scale and all modes of movement.

Our research involved detailed study and design (or redesign) of six case-study streets, some currently boulevards, others not, that exemplify different contexts appropriate for boulevard design (such as Geary Boulevard in San Francisco for transit and the presently problematic Grand Concourse and Queens Boulevard). We showed alternative designs to local professional officials to hear their concerns and responses and to bring out central issues.

Finally, we formulated 16 guidelines, all of which follow in abbreviated form. They are informed by conclusions from the first study as well as insights gained through the design process itself.

There is an elusiveness to wholeness, particularly in regard to multiple-roadway boulevards. No one or two specific qualities are what make the best boulevards work well or are singularly responsible for increasing or decreasing safety. Rather, it is a combination of characteristics, most having to do with design and some with regulations, working together, that account for the best boulevards.

On narrow side access roads with slow speeds, vehicles approach intersections slowly and carefully, which makes the multiple and complex turning movements at intersections safer. When drivers know that the intersections are complex, they travel more slowly and carefully on side streets and access roads. Slow vehicle movement on access roads encourages pedestrians to stroll along them or jaywalk, which, in turn, causes drivers to proceed more cautiously.

The parts are all interrelated. Isolating individual elements of a boulevard design — such as little or no provision for double parking or delivery vehicles, or trees coming right up to an intersection — as being unsafe and proposing modifications that would presumably make them work better just doesn't work. Mostly, these proposals are likely to be counterproductive in terms of what has been observed as qualities of the best boulevards. A holistic view is difficult, but essential.

Boulevards are great streets when they are well designed, well built and well maintained. They capture the imagination because they are grand and worldly. They are optimistic statements about the potential and the magic of urban places. Though initially built by strong and unified city governments partly as symbols of power and the establishment of the order of cities over land, they have since evolved beyond their authoritarian origins.

Streets like the Esplanade in Chico, the Paseo de Gracia in Barcelona and Ocean Parkway in Brooklyn also speak of the ordinary day-to-day life of the people inhabiting them. It is the unique balance between the needs of through travel, which reflects the needs of the city as a whole, and the needs of automobile and pedestrian access, which reflects the needs of the local community, that has enabled these boulevards to become pleasant settings for everyday life.

The key to making boulevards happen and overcoming the possible conflicts with user groups, professionals, fire marshals, public works directors and many others, is in excellence of design and in understanding and communicating to all involved that the special thing about boulevards is that they cater to many needs and purposes and that they do so in a balanced way. Although boulevards may not meet everyone's expectations all of the time, well designed ones are usually a vast improvement over today's arterial roads, where only the fast-moving automobile's needs are acknowledged and met.

Notes

1. For a complete account of our research and findings, see Allan B. Jacobs, Yodan Y. Rofé and Elizabeth Macdonald, "Boulevards: A Study of Safety, Behavior and Usefulness," *IURD Working Paper 625* (Berkeley: University of California, Berkeley, Institute for Urban and Regional Development, 1994). See also Jacobs, Rofé and Macdonald, "Another Look at Boulevards," *Places* 10:1 (Summer 1995).
2. Jacobs, Rofé and Macdonald, "Multiple Roadway Boulevards: Case Studies and Design Guidelines," *IURD Working Paper 652* (Berkeley: University of California, Berkeley, Institute for Urban and Regional Development, 1995). This paper is excerpted from that study.

Both studies cited in this article can be obtained by contacting the Institute for Urban and Regional Development, (510) 642-4874.

Guidelines

2 Boulevard Courcelles, Paris

1

Location, context and uses of multiple-roadway boulevards

- Where there is a need to carry both through traffic and local traffic.
- Streets that, by virtue of size and/or location, are or can become significant elements in the city.
- Where there is a significant amount of traffic (an ADT of about 10,000 seems a reasonable minimum).
- Where abutting uses face the street with direct pedestrian access from the street, or where there is a potential to do so.
- Where there is either a significant number of pedestrians that need to cross the street or a potential to do so.

2

Boulevards do not make sense where buildings do not face the street.

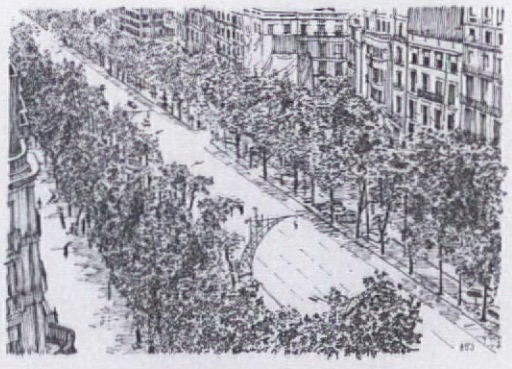
- Wherever possible, buildings on boulevards should face the street and have direct pedestrian access from the sidewalk. A boulevard configuration can help abate the negative impacts of traffic on uses that face a busy traffic artery. On existing arterials, where buildings face away from the street, permitting new buildings to face the street may open new opportunities for conversion of parking lots to more useful development.
- Special opportunities exist where boulevards border on parks or if only one side of a street has street-facing buildings.

3

Boulevard realms and overall size

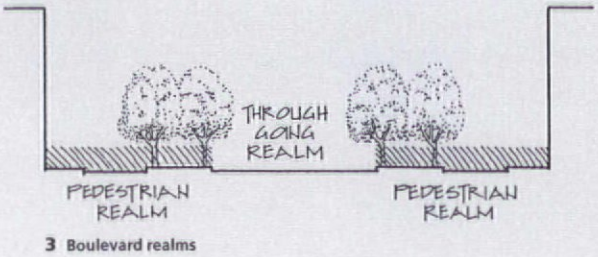
- Boulevards are made up of two realms: the through-going realm and the pedestrian realm.
- A minimum of 40 feet is needed for the through lanes.
- A right-of-way of 100 feet is the feasible minimum for boulevard design, allowing a central roadway that is 40 feet wide, flanked by 30-foot pedestrian realms on either side.
- Right-of-way dimensions of between 125 feet and 210 feet allow more flexibility in the design of a boulevard, especially more generous pedestrian realms.
- The establishment of a strong pedestrian realm is of primary importance to the creation of a well-functioning and safe boulevard. On the best boulevards, the total area given to the pedestrian realm is never less than fifty percent of the total width of the right-of-way.

Sketches by Allan B. Jacobs.
Diagrams by Elizabeth Macdonald.



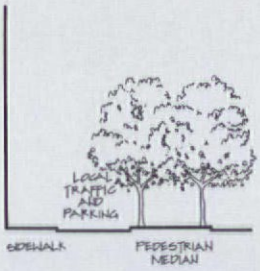
1 Paseo de Gracia, Barcelona

The Esplanade, Chico, Calif.



3 Boulevard realms

5 Avenue Montaigne, Paris



Elements of the pedestrian realm

4

The through-going central realm

- A minimum of two lanes in each direction is needed to serve substantial amounts of traffic.
- Parking along the median should be discouraged.
- Left-turn lanes can be accommodated in an alternating lane in the center.
- If necessary and possible, devote the lane next to the median to public transit. Public transit is best accommodated in the center, to facilitate speed and to accommodate the large vehicle size.
- It is advisable to provide a refuge for pedestrians in the center of the boulevard. This can be as little as a wide bollard.

5

The pedestrian realm

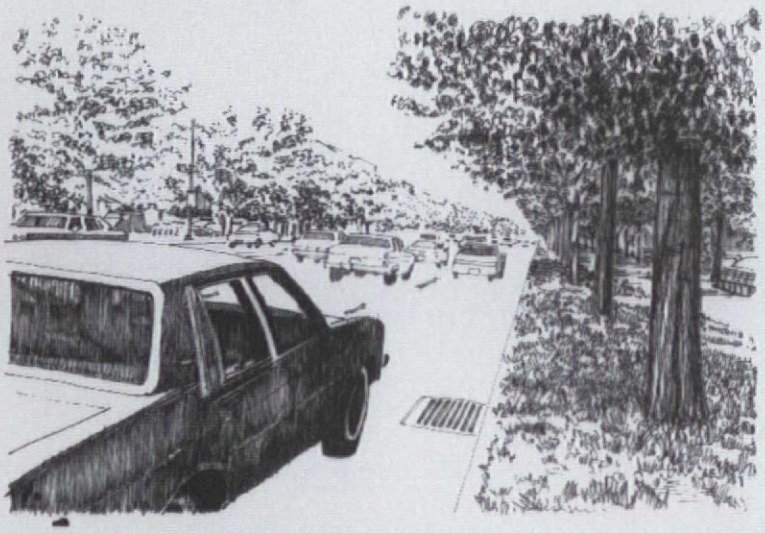
- Sidewalks can be relatively narrow. The access roadway can serve as a spillover area when pedestrian traffic is heavy.
- Lighting scaled for pedestrians can be provided on medians or sidewalks and should be frequent, low in height and warm in color.
- Medians can accommodate many amenities, such as transit stops, subway entrances, kiosks, benches, flowers and fountains, all of which encourage crossings between the sidewalk and median.
- A slight rise of the access road from the center realm can help define the pedestrian realm.

6

Continuous tree-lined medians

- The median can be a minimum of five feet up to a maximum of 40 to 50 feet. It must be wide enough to accommodate a lane of closely spaced, fairly large trees.
- The most important element in the median is the line of trees: one or two rows, closely spaced, uninterrupted and reading all the way to the intersection.
- Bus or streetcar stops should be on the median.
- Many elements can enliven medians.
- Medians can be paved or not paved.
- Regularly spaced and frequent benches are important.

6 Ocean Parkway, Brooklyn



4 Ocean Parkway, Brooklyn

7 Cours Mirabeau, Aix-en-Provence

9

7

Rows of trees and tree spacing

- It is important that the trees be closely spaced and that they continue all the way to the intersection, with a maximum preferred spacing of 25 feet. A minimum spacing of 12 feet is possible.
- Deciduous trees are preferable; they give shade in the summer yet allow sun into the street in the winter.
- Trees with dense foliage below eye level should not be used.
- The arrangement of trees depends largely on the width of the median. Many patterns are possible, but the continuous line is necessary.

8

Public transport

- The lane next to the median is the best location and may be considered as a dedicated public transport lane where there is strong usage.
- Light rail can run in the curb lane of the center roadway or on the median.
- Stops on the medians will encourage pedestrian use of the medians and will encourage other useful amenities on it.
- If a subway system exists, medians are good locations for entrances.

9

Parking

- Access roads can include one or two rows of parallel parking.
- Parking lanes should be narrow; six or seven feet is possible and eight or nine feet is the maximum.
- An angled parking lane can be incorporated into a wide median.
- If more parking is needed, it can be provided by lineal underground parking garages beneath the central roadway, with entry and egress from the access road.

10

Lane widths

- It is more difficult to achieve the definition of the pedestrian realm when lanes are wide (12 feet and 13 feet) on the access roads.

Access Roadway	MIN	MAX
Parking Lane	6′	9′
Inside Lane	7′	11′

Center Throughway	MIN	MAX
Curb Lane	9′	13′
Inside Lane	8′	12′
Left-turn Lane	8′	12′

8 Public transit in center lanes

11 Ocean Parkway, Brooklyn

11

Bicycle lanes

- Local bike traffic can easily be incorporated on the access lanes within the pedestrian realm.
- Cyclists will use the realm much like pedestrians, with disregard to the direction of movement, and will do so safely.
- Designated bicycle lanes for faster-moving cyclists can be incorporated into a wide median on a designated path, or as the first lane in the center roadway next to the median.

12

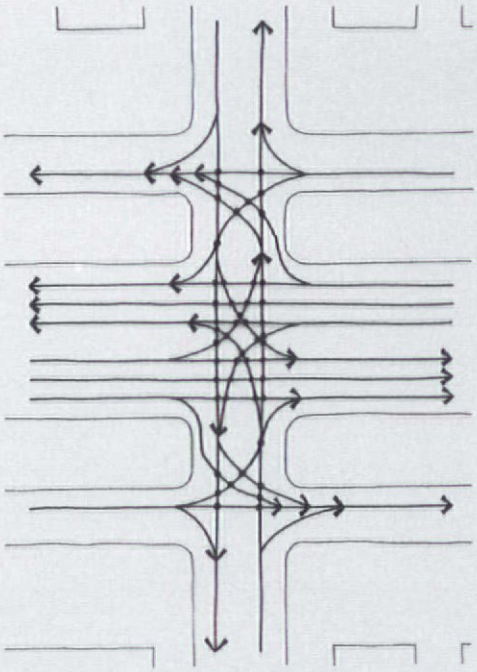
Distribution of pedestrian space between sidewalk and median

- It is better for sidewalks to be slightly congested with pedestrian traffic to appear empty.
- If space is limited, consider making the sidewalk narrow and the median wide, making it function more as a linear park while keeping the sidewalks alive with people.
- A closely spaced line of trees on the sidewalk can reinforce the difference between the center and the sides by creating a canopy enclosure above the access roadway.

13

Intersection design

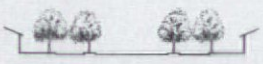
- All turning and weaving movements can be allowed at intersections unless there is a compelling reason to do otherwise.
- Priority is given first to center through traffic, then to crossing traffic, then to movement on the access road.
- Turning radii are determined primarily to allow pedestrians ease in crossing intersections.
- The most straightforward intersection arrangement is straight medians that extend more or less as far into the intersection as the edge of the sidewalk.
- Access roads may be designed to return to the central roadway immediately before and after the intersection.



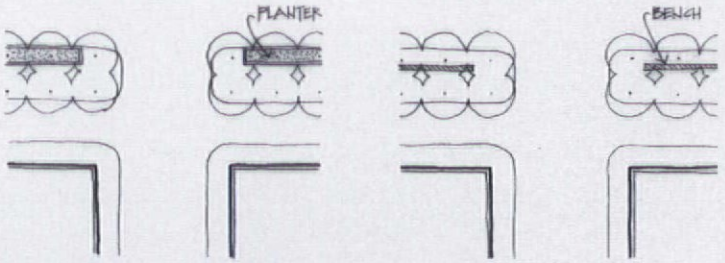
13 Turning movements and conflict points at a boulevard intersection

12

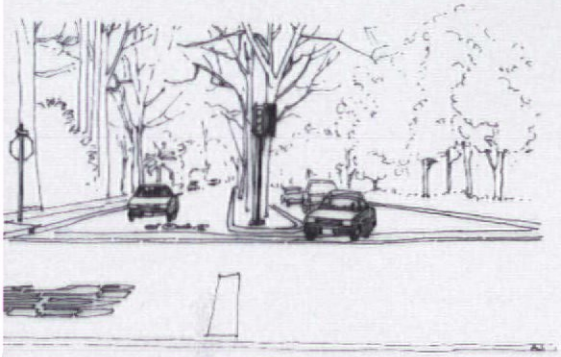
Narrow access road, wide median.



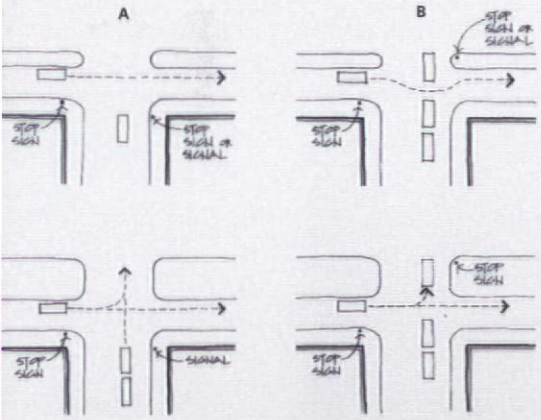
Wide access road, narrow median.



15 Locations for planters and benches in the median



Traffic on signalled through-going lanes has priority over traffic on signed access lanes.



14 Sign or signal controls for traffic on cross-streets can be located on the sidewalk where it intersects the median (A), or on the medians themselves (B). If they are on the medians, traffic on the access lanes must be sure the route is clear before proceeding, as shown in the lower diagrams.

14

Traffic controls

- As a rule, through traffic on the center roadway is given first priority. Through traffic is uncontrolled or controlled with traffic lights.
- At unsignaled intersections, both the cross-street and accessway will be controlled by stop signs, so that while traffic coming from the center roadway can proceed without stopping, traffic on cross streets and accessways must be sure the route is clear before proceeding.
- On boulevards with narrow medians, the stop sign or signal controlling the cross-street may be located at the sidewalk or at the median. When control is at the sidewalk, the accessway will remain clear of waiting cars.

15

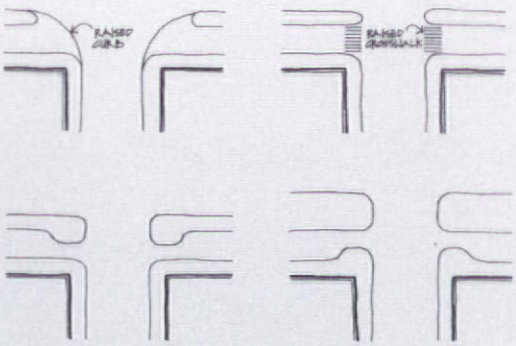
Benches and planters on the median discourage mid-block crossings

- If blocks are long, run benches or planters without interruption between intersections on the side of the median closer to the central roadway.
- Plants must be tall enough and dense enough to discourage walking through them.
- When raised planting beds are used, their walls can double as seating spaces.

16

Differentiating the roadways

- Methods employ the basic principle of establishing a strong boundary to the pedestrian realm by requiring cars to move slowly as they move into it.
- A slight rise (about one inch) at the entrance to the accessway increases the definition of the pedestrian realm, as can a change in paving.
- Raising crosswalks marks them more strongly.

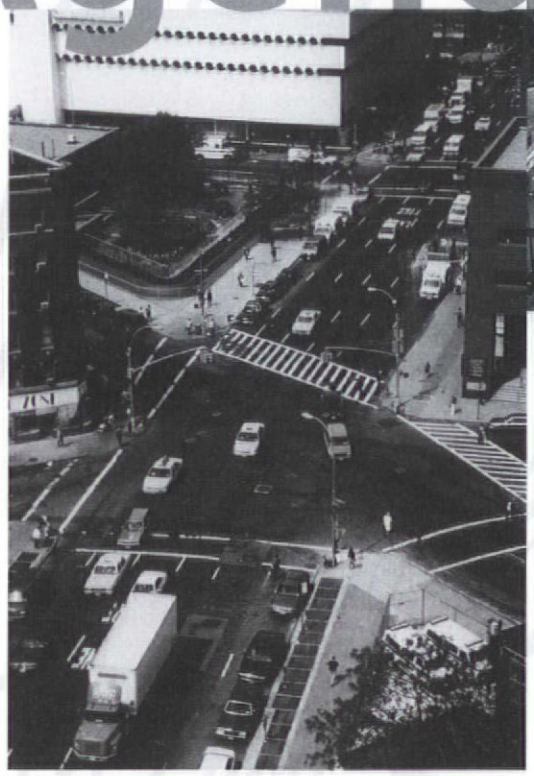


16 Strategies for differentiating the pedestrian realm

Design Research
Design Process

Glynis Berry

A Pedestrian Agenda



In the U.S. more people walk to work than use buses, rail lines or bicycles — and most people are pedestrians for part of their daily journeys in cars or transit. Yet walking as a transportation mode is often ignored or trivialized.

So while not revolutionary, refocusing attention on pedestrian issues is mandatory for places striving to create a livable balance between community and mobility. But how does one convince city agencies, even in a pedestrian-oriented place like New York, that walking is a transportation mode worthy of attention?

In New York, the Department of Transportation is responsible for designing and maintaining streets (transit is the responsibility of a regional agency). Like its counterparts in other cities, it has long focussed on moving vehicles.

In 1994, several DOT staff organized a conference on traffic calming, and the department created its Pedestrian Projects Group shortly afterwards. The conference gave voice to both cautious and

enthusiastic viewpoints about traffic calming and gave community advocates, engineers and urban designers a chance to debate design options for specific sites throughout the city. The assurance and successes presented by the guest speakers convinced Commissioner Lou Riccio that traffic calming and pedestrian issues were worth addressing.

Once our program was launched, we had to be opportunistic in advancing our agenda. For example, pedestrian projects have to compete for funds with the needs of aging bridges and highways, education and the battle against crime. Fortunately, the federal Intermodal Surface Transportation Efficiency Act promotes similar philosophies.

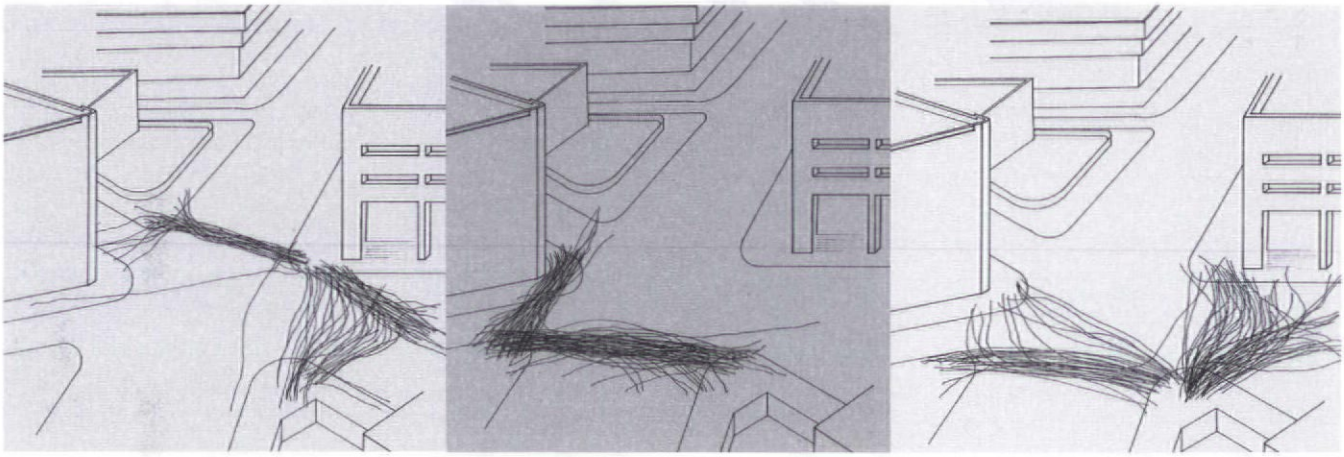
We have had to overcome the misconception that pedestrian improvements are simply beautification projects, which are considered a luxury in a time of austerity. So we argued that the real issues were safety and the efficiency of movement for all transportation modes, as well as a sense of place. In 1995, for example, 236 people died while walking in New York, and an average of forty pedestrians are hit by vehicles every day.

Traffic engineers are accustomed to viewing pedestrian movement as a hindrance to traffic flow, so we learned to evaluate pedestrian movement in terms traffic engineers could understand (such as levels of service and delay). We introduced objective and qualitative approaches for expressing and evaluating pedestrian conditions, comfort and behavior. We used new graphic techniques to help educate people about pedestrian dynamics.

As we began to consider what a program of pedestrian improvements might be, we realized that it would be useful to put site specific issues into a broader planning context. We interviewed staff at every community planning board and every police precinct, collecting information about locations with high pedestrian volumes, important pedestrian links, pleasant walking streets and pedestrian problems. Although the responses were perceptual, they helped us prioritize sites and issues. For example, three of the five boroughs said pedestrian lighting was a top priority, so we initiated a demonstration project in East New York.

When we mapped the responses and superimposed additional information, such as land use and accident data, other opportunities and conflicts became evident. For example, the location of accidents involving children could be compared to school and playground sites and locations with recorded complaints of speeding to identify schools that would benefit most from traffic calming.

Once we identified problems, sites and opportunities, we had to develop tools to address them. Traffic calming offers devices such as speed humps, traffic circles, diverters, sidewalk widening and pinch points as self-enforced methods of



Field research and testing are important elements of pedestrian projects in complicated settings. At Mulry Square in Greenwich Village (opposite page, left) multiple traffic and pedestrian movements are possible. Consultants tracked pedestrian crossing patterns then designed new crossings. DOT crews used green paint and heavy plastic bollards to indicate the areas that would eventually be sidewalk (opposite page, right). Graphics and photos courtesy Project for Public Spaces and New York City Department of Transportation.

slowing down traffic. But these represent a challenge to conventional traffic management approaches, which stress improving the flow of traffic. And some engineers fear that litigation may arise: is a city creating potentially hazardous traffic conditions in the course of taming traffic?

We addressed this by developing specific criteria for the use and design of traffic calming devices. These criteria were established after a great deal of research into practices elsewhere, and they were developed by teams that included personnel from various disciplines. These criteria make it easier to integrate pedestrian projects with existing operations and give institutional support to professional decisions.

For example, DOT recently installed 24 speed humps, after years of hesitancy. Months of research and meetings finally resulted in design guidelines and criteria for their placement.

An unexpected source of resistance to speed humps was that a successful trial might result in a flood of requests that DOT might not be able to respond to quickly. The firm commitment of a new commissioner (Christopher Lynn) to test the humps helped us move forward.

Nevertheless, the installation placed extra demands on already busy resurfacing crews. It was a masonry crew, headed by Patsy Carafano, an Italian mason from a line of proud craftsmen, who built a test hump in order to reassure skeptics of its safety and develop experience in its construction. His energy, curiosity and joy of experimentation created a positive atmosphere that was passed on to the asphalt crews. (He even built a hump that boasted marble chips, placed in the best terrazzo fashion.)

Clearly, it helps if other DOT units take ownership of projects. At the intersection of Midland and Mason avenues, on Staten Island, commuter traffic and trucks conflict with children on their way to school. Midland Avenue is a 50-foot wide collector with volumes as high as 1,000 vehicles per hour in each direction and typical speeds ranging from 40-44 m.p.h. in a 30 m.p.h. zone. The Mason Avenue crossing is particularly dangerous for pedestrians, as evidenced by the number and severity of accidents there.

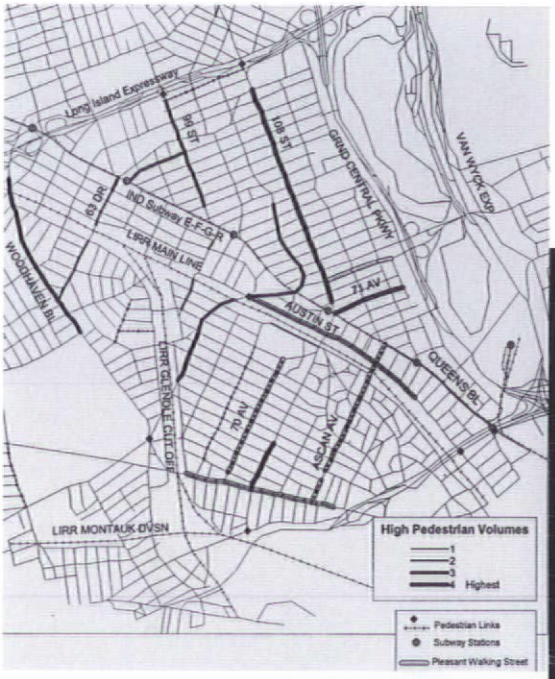
No conventional or traffic calming method seemed appropriate here. Engineers from DOT's safety and traffic units, instead of dismissing traffic calming altogether, designed an alternative that would be more accommodating to all users. They placed large oval islands in the approaches to the intersection, forcing traffic to adjust as it entered.

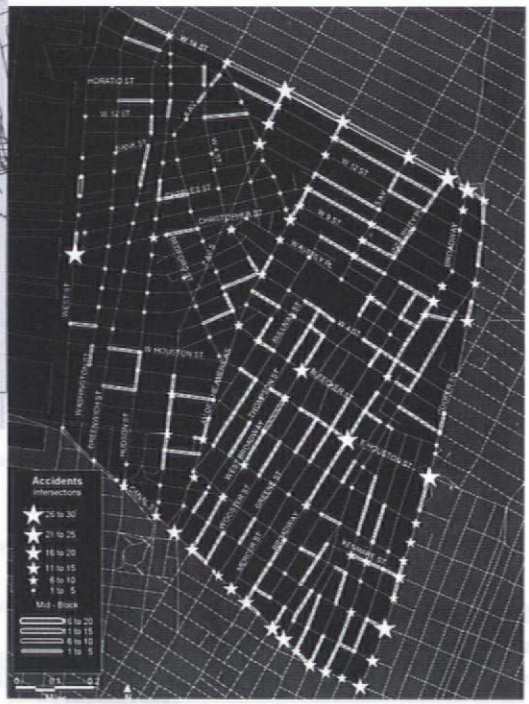
Speeds dropped by 3.8 m.p.h., but after a year they returned to previous levels. Yet the islands are considered an improvement because they provide refuge for pedestrians, especially children, crossing the street. And the process can be viewed as a success since several DOT units participated in a design process protecting pedestrians.

Cooperation among programs can lead to unexpected success. For example, communities often request traffic signals to improve pedestrian safety at dangerous intersections. In some cases, DOT's Intersection Control Unit can verify the problem but cannot install signals because of federal standards. Now it forwards those projects to the Pedestrian Projects Group.

A case in point is Francis Lewis Boulevard, which snakes through the Cambria Heights neighborhood, in Queens. The street is more than seventy feet wide but has a peak volume of only 400 vehicles per hour in the busier direction, and typical speeds are 47 m.p.h. At one intersection there is a gentle merge, and at the next there is a wide-angled right turn ramp — features that tempt drivers to violate existing stop signs. We proposed constructing a wide median and redesigning the merges as right-angled intersections that would force traffic to slow, if not stop; the project is now being advanced as a construction project.

Sometimes tests are useful, if not necessary, for winning departmental and public support for complicated or experimental projects. At Mulry Square, a busy and confusing intersection in Greenwich Village, we joined with Project for





The Pedestrian Projects Group has developed analytical approaches and graphic techniques that resemble those used by traffic engineers. Left: Classification of streets in Forest Hills, Queens, according to pedestrian characteristics. Right: Pedestrian–vehicle accident frequencies in Greenwich Village.
Courtesy New York City Department of Transportation.

Public Spaces to propose reconfiguring the crosswalks to accommodate the paths pedestrians really took through the intersection. This required building sidewalk extensions (or "neckdowns") at the corners and reversing the direction of traffic on one block of West 11th Street.

First DOT painted the changes in the roadway. Several weeks later, crews added green paint and heavy plastic bollards to further distinguish the areas that would eventually be sidewalk. (Unfortunately, tests are often uglier than carefully designed construction projects, so the full benefit of a project may not be apparent.) After nine months of testing, most people favored reversing 11th Street back to its original operation but supported the alignment changes.

The test design was incorporated, with slight adjustment, into a capital reconstruction project. Had it originally been presented to the community as a construction project, instead of a test, it probably would have been rejected due to uncertainty about the impacts.

Although pedestrian projects are often modest in scope, they relate operations to capital planning, land use to street activity, and aesthetics to safety. This interdisciplinary nature is both the beauty and the challenge of pedestrian projects, and it means that opportunity may lie in unexpected places.

Our office now has fourteen staff members and is managing programs worth $17 million. We need to continue to learn about pedestrians through research and outreach, to communicate effectively with both engineers and the public, and to integrate pedestrian issues with every discipline and administrative process possible — from roadway projects to zoning issues. Our proudest moments are not when a project is completed with great fanfare, but when others take our agenda in order to see accident rates and speeds drop, complaints diminish and communities thrive.

Dennis Sellin

Making Streets That Work

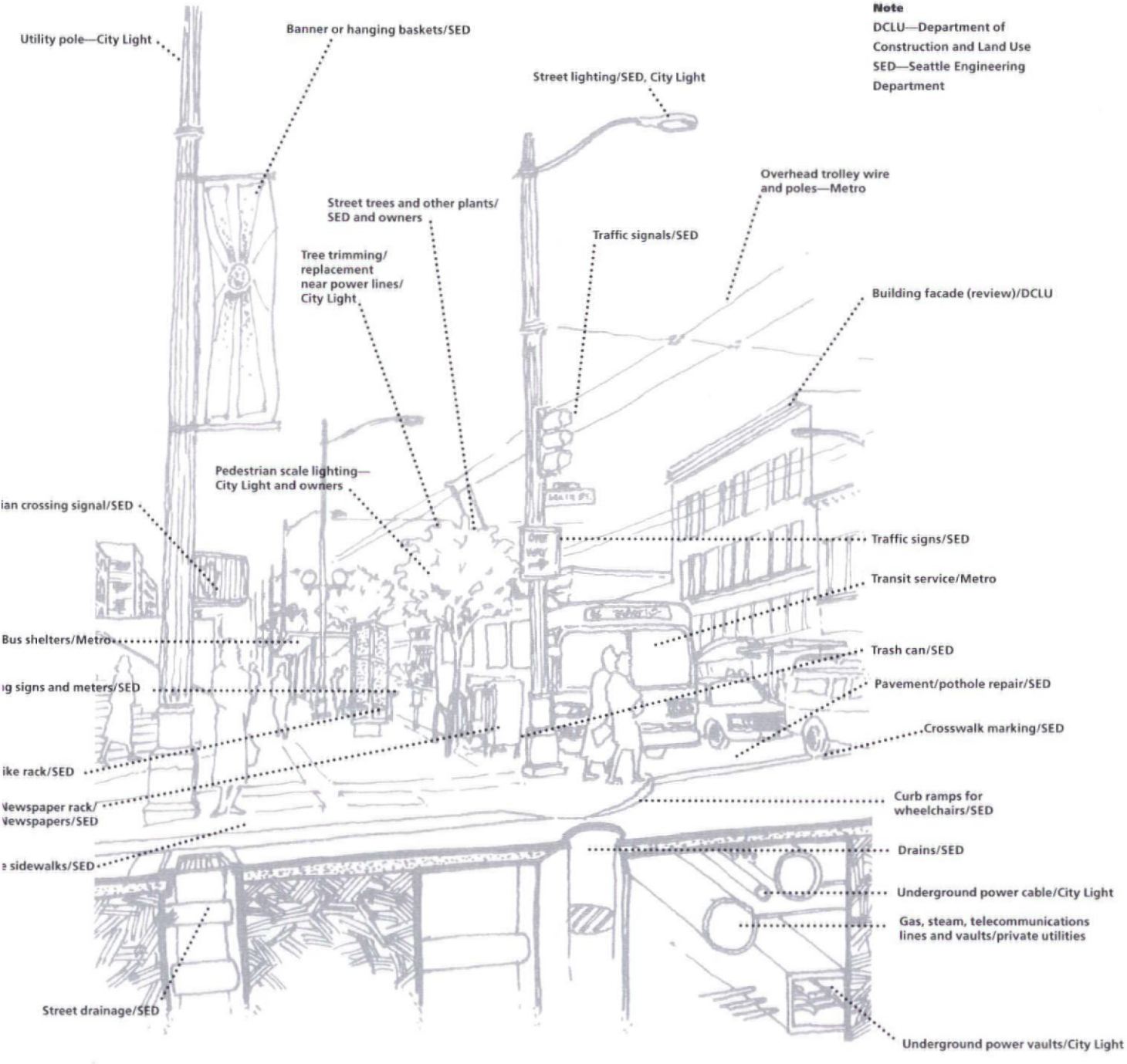
The care and maintenance of the various elements of a street are not the responsibility of a single person or agency. This shows the variety of jurisdictions that are responsible for each part of the street; by one count, 48 entities have some role in designing or maintaining Seattle's streets. Graphics courtesy Seattle Design Commission and Dennis Sellin.

What is your favorite street?

In spring, 1994, Seattle residents had a chance to answer that question. The Seattle Design Commission sponsored a unusual design awards program, seeking nominations for "Streets that Work" – streets that have a good balance among various transportation modes and that enhance the character and vitality of the communities they serve. Hundreds of posters went up throughout the city, even in its famous coffee bars.

The awards were a continuation of the commission's "Designs That Work" project, which recognizes both quality design in the everyday environment and the efforts of individuals and organizations to improve their neighborhoods. Our goal for these awards was to show how streets can be tools in planning neighborhoods and building communities; in previous years, award programs focused on housing, neighborhood commercial projects and downtown buildings.

The commission convened a workshop to help identify the criteria that make "streets that work,"


Note
DCLU—Department of Construction and Land Use
SED—Seattle Engineering Department
Utility pole—City Light
Banner or hanging baskets/SED
Street lighting/SED, City Light
Overhead trolley wire and poles—Metro
Street trees and other plants/ SED and owners
Traffic signals/SED
Tree trimming/ replacement near power lines/ City Light
Building facade (review)/DCLU
Pedestrian scale lighting— City Light and owners
ian crossing signal/SED
Traffic signs/SED
Transit service/Metro
Bus shelters/Metro
Trash can/SED
g signs and meters/SED
Pavement/pothole repair/SED
Crosswalk marking/SED
ike rack/SED
Curb ramps for wheelchairs/SED
Newspaper rack/ Newspapers/SED
Drains/SED
e sidewalks/SED
Underground power cable/City Light
Gas, steam, telecommunications lines and vaults/private utilities
Street drainage/SED
Underground power vaults/City Light

Ravenna Alley
This alley is linked to the wonderful pedestrian ambiance of the Ravenna Park Ravine and the surrounding neighborhood. A great place to be—neighbors really live in the alley—they plant flowers, play basketball, receive their mail and enter their houses through the alley. It is a sociable space where neighbors can congregate.

involving people from public agencies, designers and neighborhood advocates. We brainstormed characteristics of good streets (vegetation, comfortable for residents and users, low traffic speeds, variation in streetscape materials, mixed uses were mentioned most). And we thought of categories we might seek out, such as "best play street," "best alley," "best sociable street," "best community involvement in street design." Ultimately the commission gave awards to 15 streets that represented a cross-section of types and uses; profiles of some of those streets accompany this article.

Streets and Neighborhood Planning

Seattle's comprehensive plan predicts solid population and employment growth for the city and directs it to urban villages and centers. This plan is linked to a neighborhood planning initiative, which gives neighborhood residents some power to chart their own future. In 1995, the city established a Neighborhood Planning Office, providing neighborhoods with staff assistance and a toolbox of background material, covering hundreds of topics from economic development to zoning. Already, several dozen neighborhoods have begun planning work.

But when the neighborhood planning program began, the toolbox did not include material about streets or street design. The design commission, following on the interest generated by the awards program, developed a workbook and video as a primer on streets. The city's engineering department (now Department of Transportation), its Office of Management and Planning and its Pedestrian Advisory Board collaborated on the project.

The workbook and video, both called Making Streets that Work, seek to demystify streets without obscuring their complexity. They help the public recognize the value streets have in commu-

Olmsted Boulevards
Frederick Law Olmsted believed that urban residents deserved a little country in the city. For Seattle, a city possessing "extraordinary landscape advantages," the Olmsted brothers envisioned a system of green pathways, boulevards linking parks and bodies of water. That vision became reality between 1903 to 1936. Today, Seattle has one of the largest and best preserved Olmsted boulevard systems in the United States, a legacy of beautiful and elegant boulevards.

Fairview Avenue
in the Eastlake neighborhood is surprisingly casual and personal, accommodating floating homes and small marine businesses as well as informal parking and strolling places.

nities and provide useful information on ways to improve neighborhood streets.

The workbook begins by explaining the role of local streets in the regional transportation network, the role streets play in urban form and the relationship between transportation and land use. It also includes a section drawing of a street, showing components as varied as street lights, trash cans and underground sewer mains. The entities responsible for each component are listed on the drawing; by one count, some 48 agencies and organizations have a hand in designing or maintaining Seattle streets.

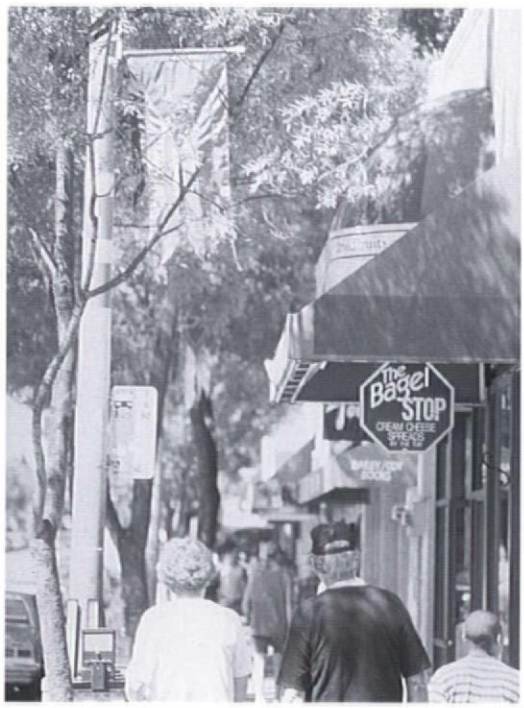
The workbook also gives residents tools they can use to get involved with the design of their local streets. It shows them how to profile their streets by identifying problems and opportunities. It offers 55 strategies for improving streets and helps residents determine which might be most appropriate for their neighborhoods. Then it presents information on how to implement projects and case studies of completed street improvement projects in Seattle (including budgets),

Making Streets That Work has been successful because it is accessible to a general audience and because it is comprehensive – a single source of reference for information on streets and strategies for making them better. Appendixes include a list of commonly asked questions ("How do I drive around a traffic circle?") and a glossary, bibliography and contact list.

Just as important, both the awards, book and video offer a perspective on streets that people aren't used to hearing. These projects treat streets as significant public open spaces, not just transportation corridors or utility conduits. This emphasis reinforces the point that streets are places; recognizing that is the first step towards making streets great places to be.

For more information on these programs, please contact Marcia Wagoner, Executive Director, Seattle Design Commission, 710 Second Avenue, Suite 200, Seattle WA 98104. Telephone (206) 684-0434. Email:Marcia.Wagoner@ci.seattle.wa.us

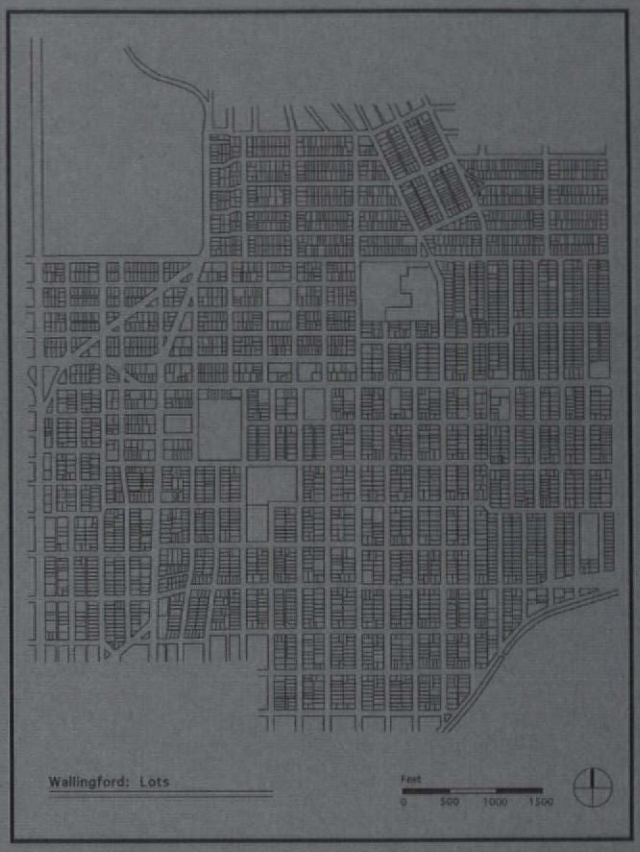
"Making Streets That Work" is available from the Local Government Commission, 1414 K Street, Suite 250, Sacramento, CA 95814-3929. Fax: (916) 448-8246. Web site: http://www.lgc.org/clc/street.html

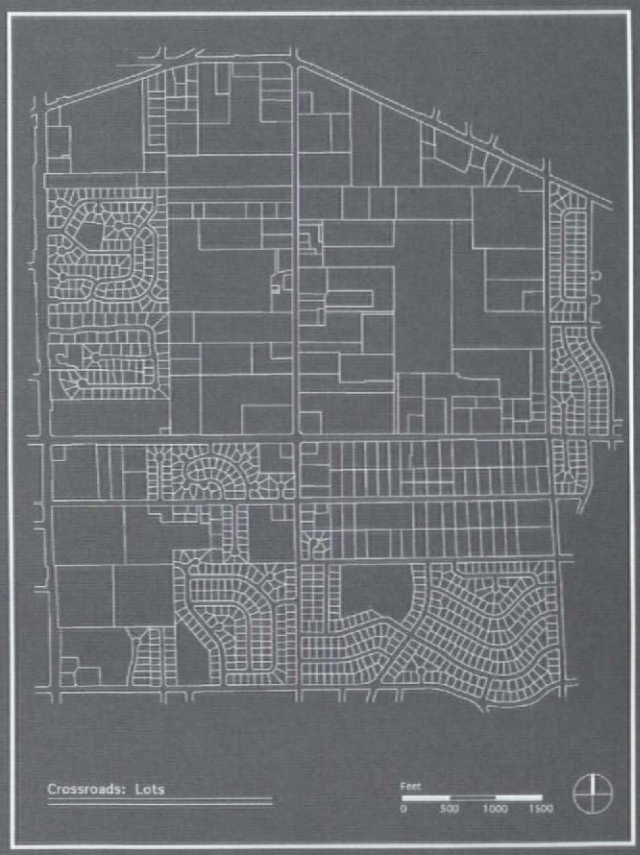


Broadway
This is one of Seattle's best-known and -loved streets. The people are what make it special; the sidewalks are filled with all types of people, day and night, making Broadway a safe place to be. The street balances all modes of transportation—bikes, cars, buses and pedestrians. And it is a vital shopping street, with plenty of storefronts and entries lining the street. Sidewalk tiles, art and banners are distinctive markers.

Paul M. Hess

Measures





American suburbs are maturing, with apartments, offices and retail stores being built in close proximity to each other. Both the mix of activities and the density of development is beginning to approximate that of more established urban neighborhoods.

These places should support walking, but many of them do not. We studied six urban and six suburban neighborhoods matched in terms of their population densities, land-use mix and household income, and found that urban neighborhoods still average more than three times the number of pedestrians walking to retail districts.

The character of streets and pedestrian networks affects both pedestrian activity and the quality of life in these neighborhoods. The suburban neighborhoods have few through streets and even fewer sidewalks. Buildings are linked to streets via parking lots and driveways; sidewalk systems are fragmented; pedestrian routes are indirect. As a result, most walking in these places is limited to short trips to and from parked automobiles.

To describe how the character of streets in urban and suburban areas differs, this article compares Wallingford, a neighborhood in Seattle, with Crossroads, a neighborhood in the nearby suburb of Bellevue. Within a half mile of each neighborhood's central business district (an area reachable by a 10- or 15-minute walk), are

	Crossroads	Wallingford
TOTAL AREA (ACRES)	812	807
GROSS POPULATION DENSITY (WITHIN 1/2 MILE OF CENTER)	12.3 people/ac	15.7 people/ac
GROSS HOUSING UNIT DENSITY (WITHIN 1/2 MILE OF CENTER)	6.6 du/ac	7.0 du/ac
COMMERCIAL SPACE	795,000 s.f.	750,000 s.f.
NUMBER OF STORES	85	82

similar amounts of housing and commercial space, and similar numbers and types of stores. These similarities help isolate the contrasts in the pedestrian environments of these places.

Basic Development Patterns

Wallingford was originally developed as a suburban neighborhood with access to and from downtown by streetcar, but it is now firmly considered part of the city of Seattle. The neighborhood was platted largely before 1900, with small grids laid out so they connected with each other. The grids established a framework of small blocks and modest, rectilinear building lots. This pattern created an integrated pedestrian-vehicle circulation system, small buildings and finely mixed land-use patterns.

Development was substantially complete before 1930. The neighborhood filled up with small bungalows, a scattering of apartment buildings and a central retail street with narrow stores oriented toward public sidewalks. Although the area has seen continued development, this original fabric largely remains.

In Crossroads, development began with single-family housing in the late 1950s, a shopping mall in the mid-1960s and substantial amounts of multifamily housing in the late 1960s. Like Wallingford, Crossroads was developed piecemeal with individual landowners subdividing or developing their lots. But in contrast to Wallingford, development did not establish a network of streets.

Each new project connected to existing development via streets located on the section or quarter-section lines of the public land survey system. The resulting pattern is one of single-family subdivisions that rely on curvelinear, loop and cul-de-sac streets that have few connections to arterials. In areas with multifamily housing and commercial development, most buildings connect to arterials via private road and parking lot systems that do not otherwise add to the public network.

Rights-of-way and Walking Environments

Public streets in Wallingford are good for walking. The platting of the neighborhood devoted a third of the land to public rights-of-way, and half that space is devoted to sidewalks and landscaping, not roadways.

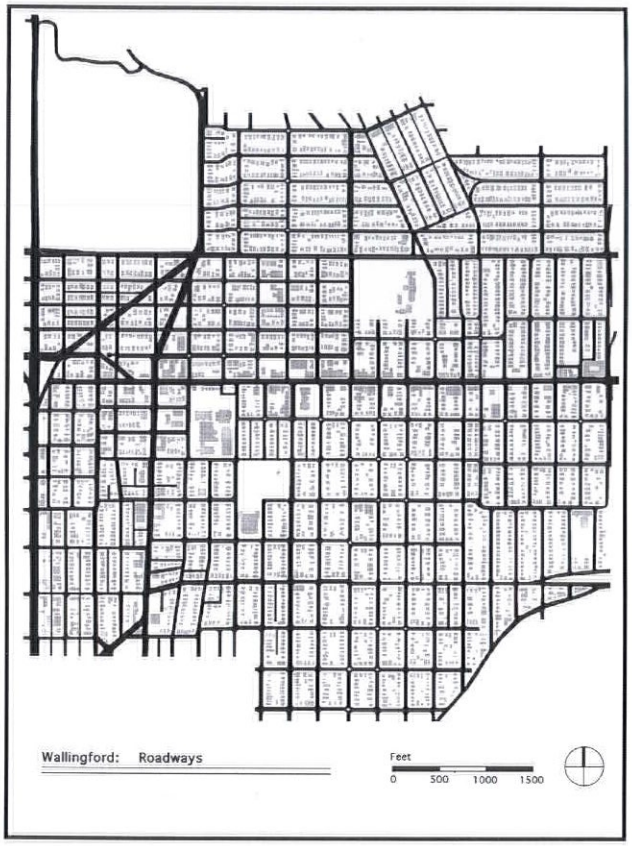
Rights-of-way on residential streets are 60 feet wide but roadways are only 25 feet wide. The sidewalks along both sides of these roadways are separated from traffic by wide planting strips and by a row of parked cars, which also slow down traffic. Commercial rights-of-way are 70 feet wide; with roadways taking up 50 feet. Sidewalks are generous, however, at least 10 feet wide, and they are buffered by signs, parking meters, street trees, planters and parked cars.

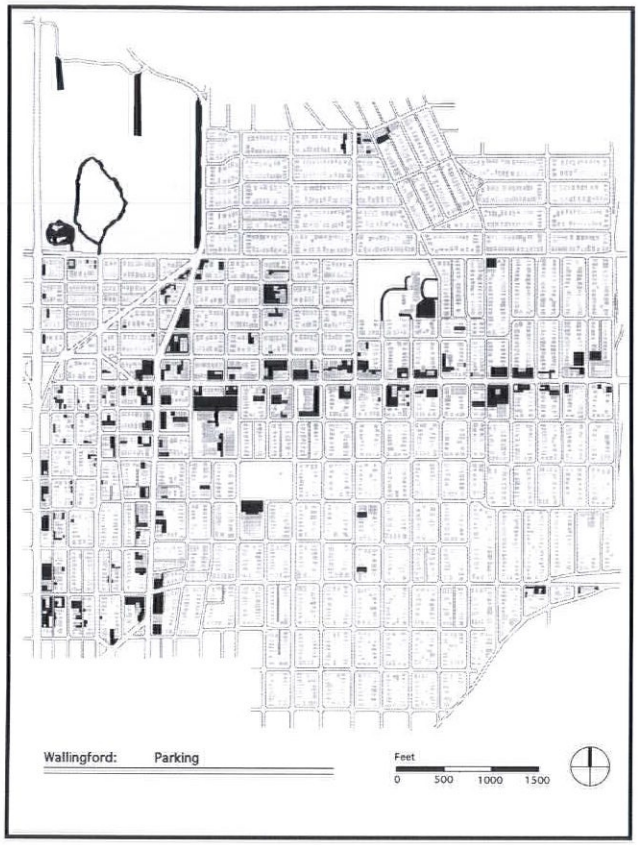
In Crossroads, pedestrians have poor walking environments even where sidewalks exist. rights-of-way account for slightly more than a tenth of the land area, and most of this space is devoted to roadways. Most of the public pedestrian network is along arterial roadways.

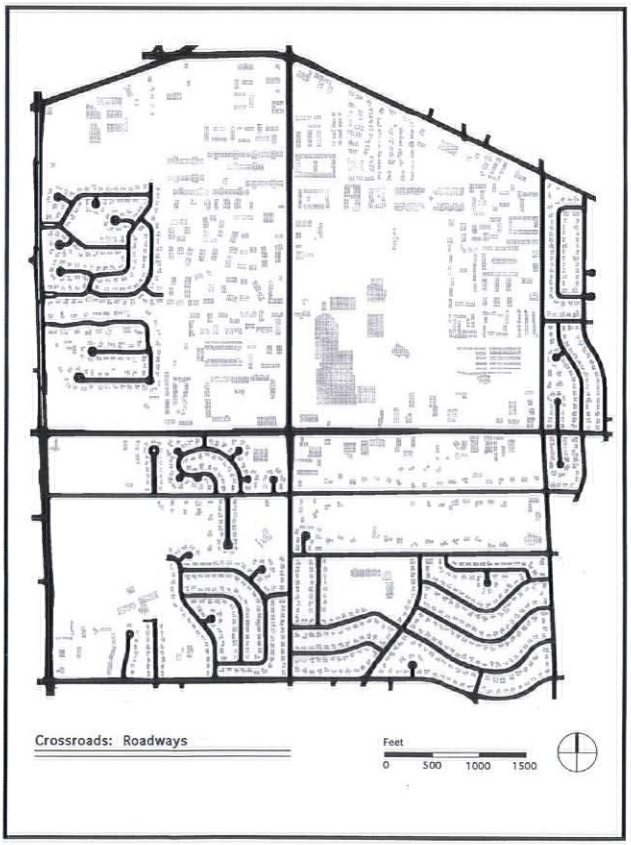
The widths of arterial roadways in Crossroads are comparable to the widths of those in Wallingford, but because parking is not allowed on Crossroads' streets, more of their right-of-way is devoted to moving vehicles. Where sidewalks exist they abut roadways without any buffer between pedestrians and moving traffic. Where landscaping exists, it is usually located between sidewalks and private lots, not between sidewalks and roadways. Fences and walls designed to protect housing from roadways trap pedestrians with traffic, creating walking environments that feel exposed to moving traffic and are devoid of visual interest.

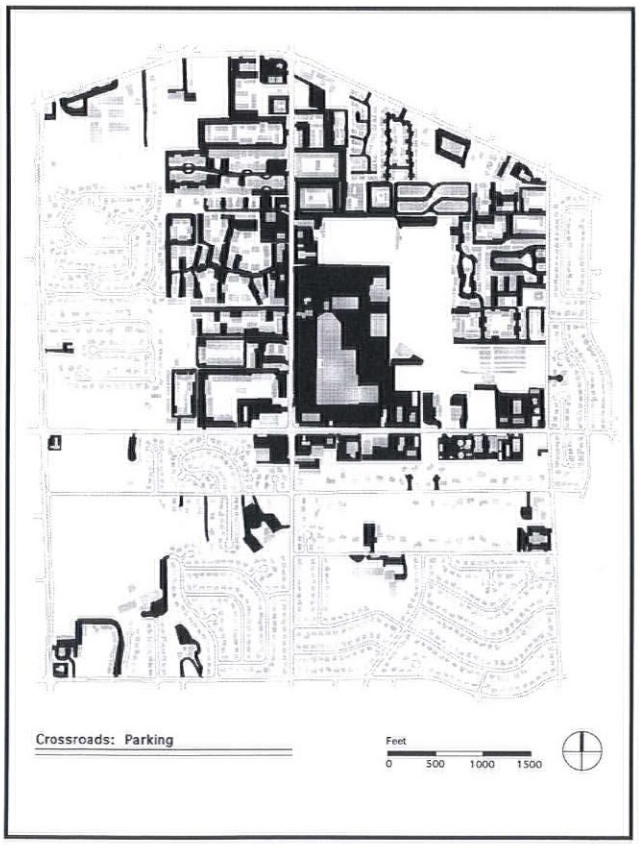
Street Systems

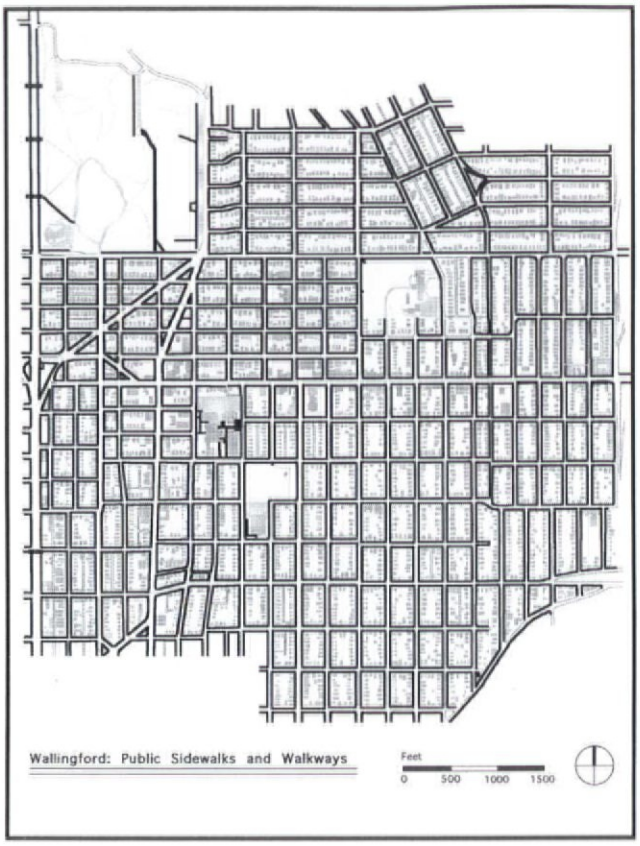
The differences in the amount of land devoted to rights-of-ways in the two neighborhoods indicate differences in the extent and distribution of their street systems. Wallingford has more than 40

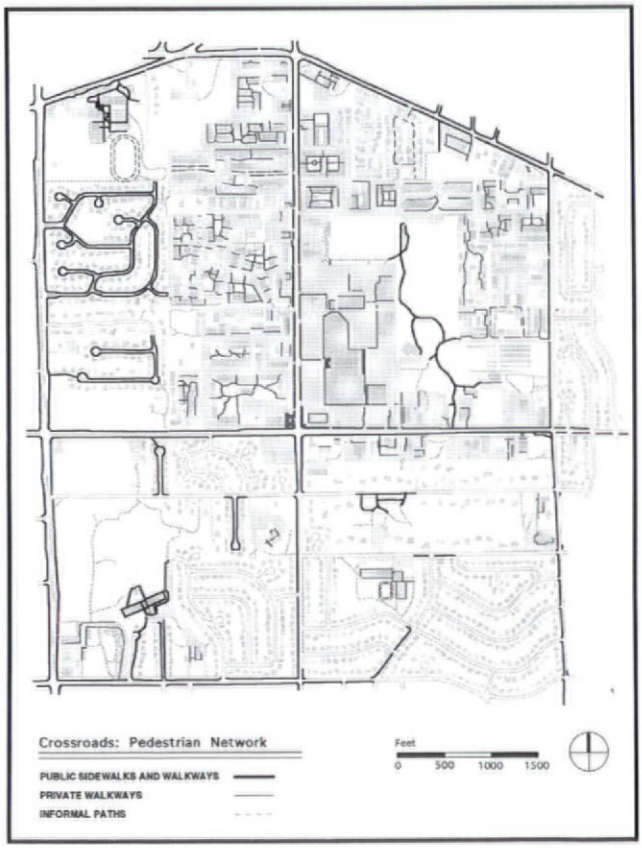

Wallingford: Roadways
Feet
0 500 1000 1500

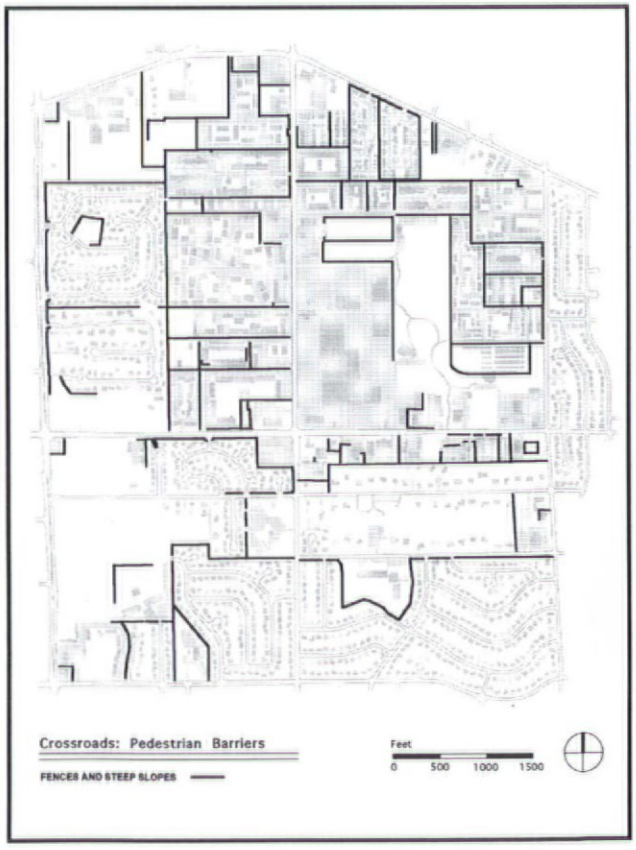

Wallingford: Parking
Feet
0 500 1000 1500


Crossroads: Roadways
Feet
0 500 1000 1500


Crossroads: Parking
Feet
0 500 1000 1500


Wallingford: Public Sidewalks and Walkways
Feet
0 500 1000 1500


Crossroads: Pedestrian Network
PUBLIC SIDEWALKS AND WALKWAYS
PRIVATE WALKWAYS
INFORMAL PATHS
Feet
0 500 1000 1500


Crossroads: Pedestrian Barriers
FENCES AND STEEP SLOPES
Feet
0 500 1000 1500

miles of streets defining 253 blocks, most of which are small, averaging about two acres. This creates a very dispersed street system with many alternate travel routes.

Crossroads has only 16 miles of public roadway, half of which are arterial through streets, and only 28 blocks, averaging more than 25 acres each. Single-family areas have the smallest blocks, but block sizes in areas with multifamily housing and commercial uses are dramatically larger because they rely on private parking and street systems for internal circulation (the block containing Crossroads Mall, for instance, measures a full 193 acres). This lack of streets increases walking distances for pedestrians and congestion for vehicles.

Sidewalk Systems

The differences in the two neighborhoods' sidewalk networks are even more dramatic. Public sidewalks run along both sides of all of Wallingford's streets, creating a public network that is more than 65 miles long. In Crossroads, the total public network measures less than 15 miles; it would have to double in length for sidewalks to run along both sides of all streets.

In Crossroads, an additional 12 miles of private walkways exist in apartment complexes and commercial areas, but these private systems tend to be fragmented and have few connections to the public network. Combined, the private and public systems are still less than half the length of the public system in Wallingford.

A sign of the inadequacy of the existing facilities in Crossroads is the network of informal paths – paths that are clearly visible on the ground but not formally constructed – found there. Many of them skirt around the elaborate system of fences that surround most subdivisions and apartment developments in the neighborhood. In some places these fences have been repeatedly broken down by pedestrians seeking short cuts. Many have also been repeatedly repaired, with "no trespassing signs" added for emphasis.

Pedestrian Route Directness

Another way to compare Wallingford and Crossroads is by examining the directness of pedestrian routes. To measure this, we selected points that were one-eighth, one-quarter, three-eighths and one-half mile from the center of each neighborhood. We then mapped and measured the most direct formal pedestrian route to the center, and compared it to the distance between these origins and each center measured as the crow flies.

In Wallingford routes are quite direct – on average, about 1.2 times as long as straight-line distances. Routes in Crossroads are indirect, averaging almost 1.7 times as long as straight-line distances.

A walking distance contour, or "walking shed," is a similar measure. It delineates the area from which a place is reachable by a half-mile walk.

The walking shed around Wallingford's retail center is quite regular in shape, reflecting the grid street pattern. It covers 67 percent of the area and includes 73 percent of the housing located within a half-mile radius circle centered on the same location. The walking shed in Crossroads is very irregular, reflecting changes in street patterns and pedestrian barriers, such as fences. It covers only 45 percent of the area and includes only 49 percent of the housing in its one-half-mile radius circle.

Dividing the number of housing units in the walking-shed by the area of the half-mile-radius circle provides a measure of the efficiency of the circulation system, given the distribution of land uses, that we call "effective density." Even with similar gross housing densities, the neighborhoods have quite different effective densities – Wallingford's is 5.1 units per acre compared to 3.3 units per acre for Crossroads.

Roadways and Parking

Considering the differences in street and pedestrian networks, the two neighborhoods have surprisingly similar amounts of land devoted to automobiles. Wallingford has a total of 176 acres devoted to roadways and parking, accounting for 22 percent of the land in the neighborhood. In Crossroads, there are 198 acres of land in roadways and parking, or 25 percent of the land in the neighborhood.

This demonstrates that it is possible to create positive pedestrian environments without excluding automobiles. The difference is in how space for automobiles is distributed. About 80 percent of Wallingford's automobile space is in the form of public roadways that are used for both traffic and parking. The rest is in parking lots, most of which are small and scattered along commercial streets, mostly next to or behind stores.

In contrast, only a third of the automotive space in Crossroads is in public roadways. The rest, 131 acres of private roadways and parking, is mostly associated with multifamily housing and commercial development. Parking lots are often the only connections between buildings and streets in these areas, but they make very poor pedestrian environments.

Pedestrian Volumes

Given the lack of streets and sidewalks, indirect pedestrian routes and generally hostile pedestrian environment in Crossroads, it should not be surprising the neighborhood has many fewer pedestrians walking to its commercial district than Wallingford does.

A study by David Saxen measuring pedestrian flows found 288 pedestrians per hour entering Wallingford's commercial district and 112 pedestrians per hour walking to Crossroads mall; counts were made on weekday afternoons in good weather. The surprise in these findings is not that more people walk in Wallingford but that so many people do, in fact, walk in Crossroads.

Conclusions

The most important differences between urban and suburban streets are how comfortable and interesting they are for walking, but the more quantitative comparison in this article helps explain why suburban streets are such hostile places.

Crossroads is one of the better suburban neighborhoods in the Seattle region, but other medium-density, mixed-use neighborhoods exhibit similar patterns: they have very few streets that create very large blocks, small and fragmented public sidewalk systems, indirect walking routes and large areas devoted to parking. Although often overlooked, such suburban neighborhoods are and important and growing part of American metropolitan landscapes.

Retrofitting these existing suburban places is an important challenge, more important, perhaps, than creating new master planned neighborhoods on the urban fringe that finally "get it right" with connected street and pedestrian networks. Simply put, medium-density suburban neighborhoods have a severe infrastructure deficit and need any more streets (and less at-grade parking).

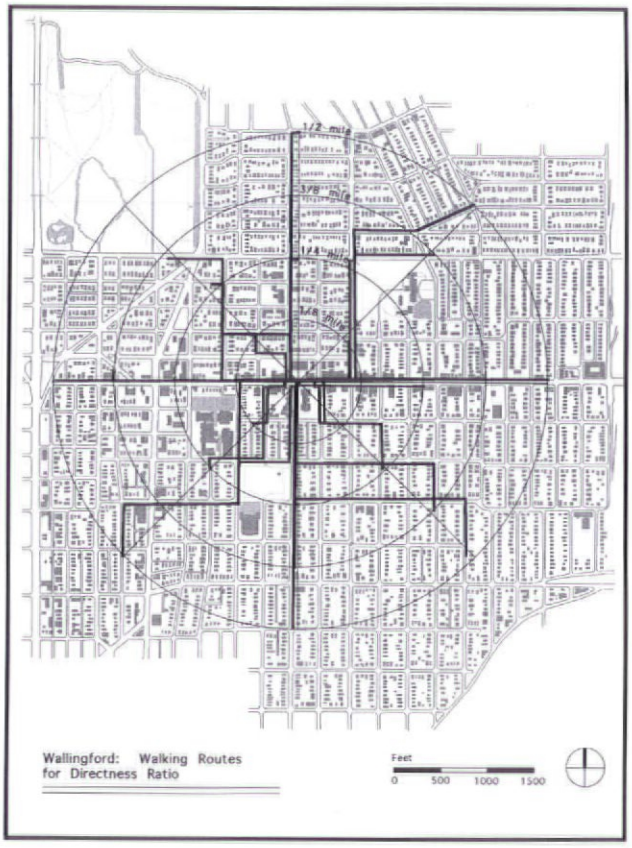
This is a long-run and difficult goal, but even in the short run public sidewalk systems can be completed and improved, and private walkway systems can be built that make direct connections between all building entrances and public sidewalks. We can also work towards pulling down fences and making connections between subdivisions, apartments and commercial developments. This used to be a normal part of the development process and should now be required for all new development.

These efforts will neither turn suburban development patterns into urban ones, nor will they cause people to abandon their cars. They will, however, help make suburban neighborhoods into more functional places where walking to a nearby store is a reasonable thing to do.

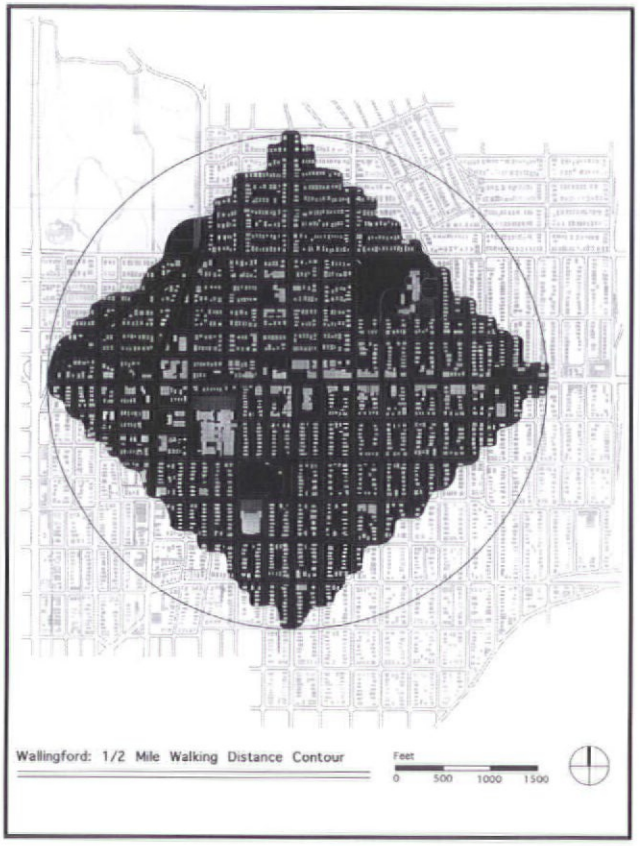
Notes

1. Anne Vernez Moudon, Paul M. Hess, Mary Catherine Snyder and Kiril Stanilov, "Effects of Site Design on Pedestrian Travel in Mixed Use, Medium-Density Environments," *Transportation Research Record* (forthcoming).
2. These are parts of areas first compared by Peter Owens. See "Neighborhood Form and Pedestrian Life: Taking a Closer Look" *Landscape and Urban Planning* 23:1-4 (October, 1993), 115-135.
3. David Bruce Saxen, *Where Will People Walk?: Pedestrian Use and Network Connectivity in Wallingford in Seattle, and Crossroads in Bellevue, Washington* (Seattle: Department of Landscape Architecture, University of Washington, 1994), unpublished master's thesis.

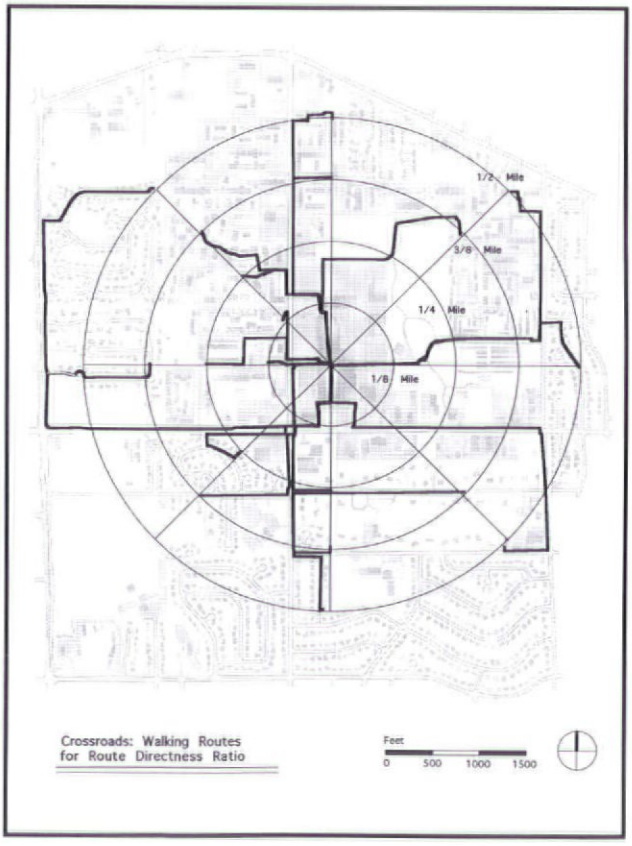
This article is adapted from Paul M. Hess, *Evaluating Pedestrian Environments: Proposals for Urban Form Measures of Network Connectivity, with Case Studies of Wallingford in Seattle and Crossroads in Bellevue, Washington* (Seattle: Department of Urban Design and Planning, University of Washington, 1994), unpublished master's thesis.



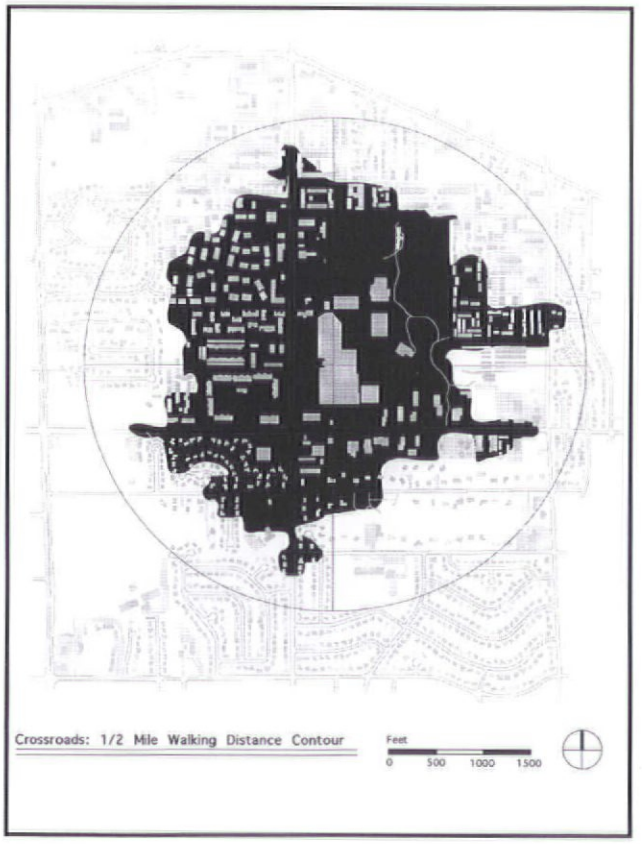
Wallingford: Walking Routes for Directness Ratio



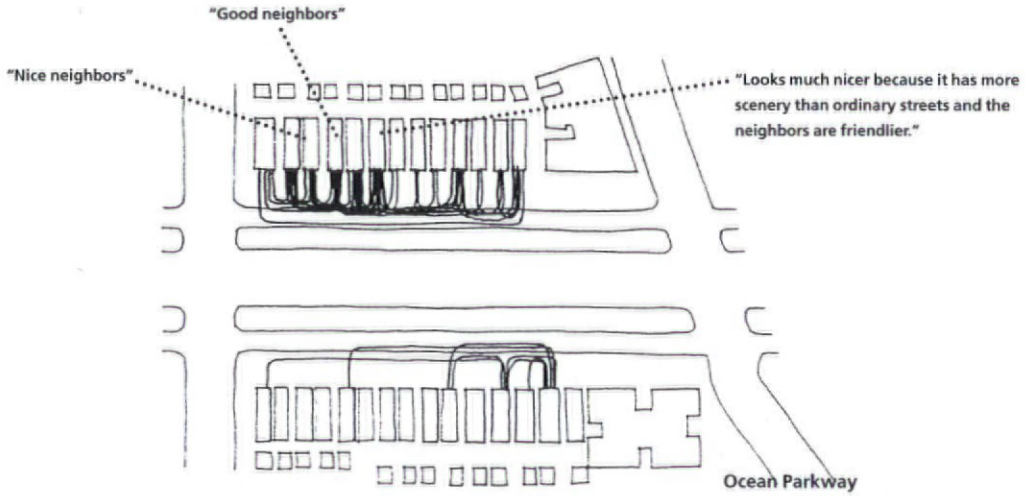
Wallingford: 1/2 Mile Walking Distance Contour

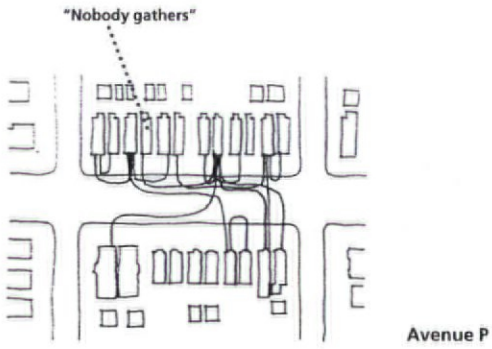


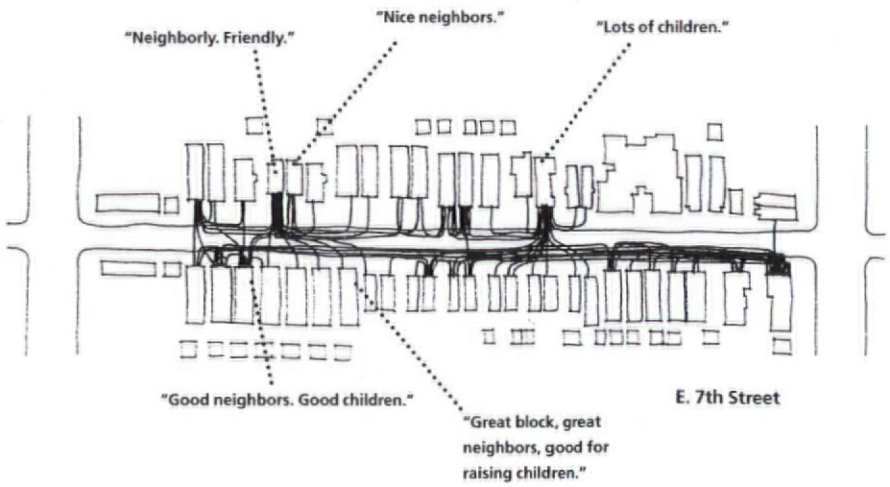
Crossroads: Walking Routes for Route Directness Ratio



Crossroads: 1/2 Mile Walking Distance Contour


"Good neighbors"
"Nice neighbors"
"Looks much nicer because it has more scenery than ordinary streets and the neighbors are friendlier."
Ocean Parkway


"Nobody gathers"
Avenue P


"Neighborly. Friendly."
"Nice neighbors."
"Lots of children."
"Good neighbors. Good children."
"Great block, great neighbors, good for raising children."
E. 7th Street

Boulevard Livability Study

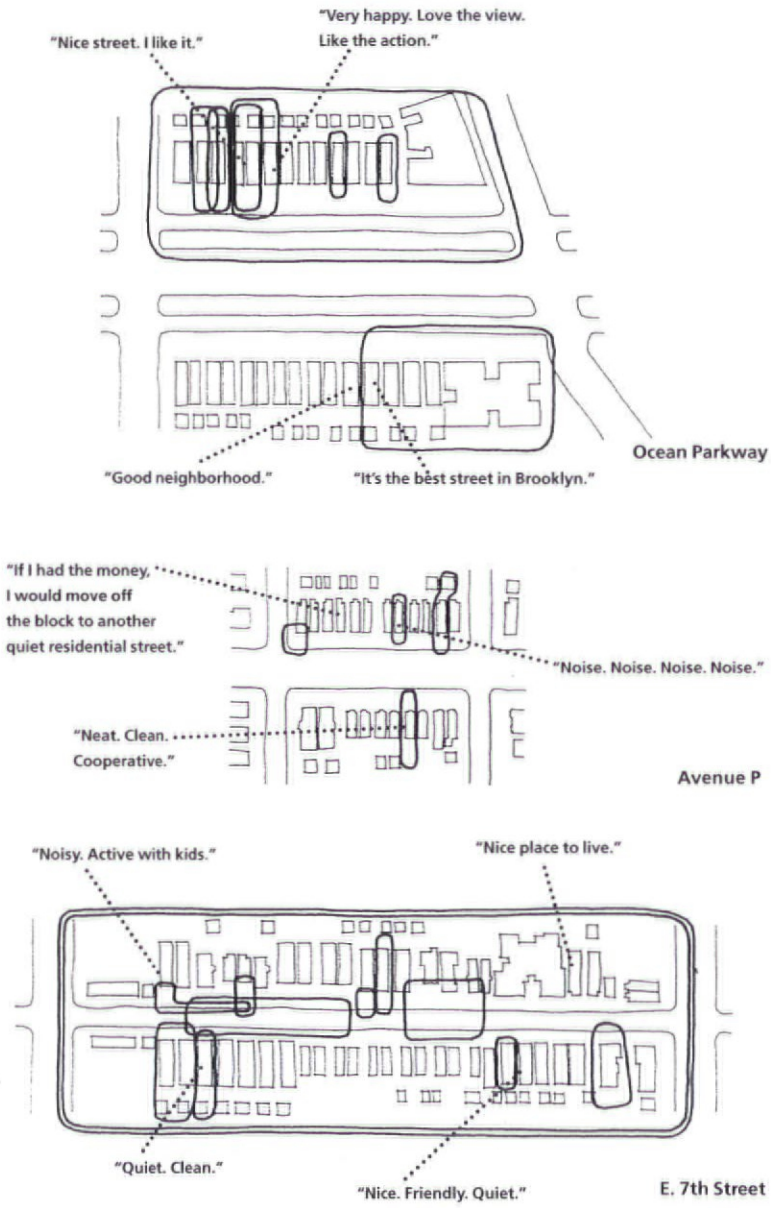
Boulevards are a street type that is being rediscovered. They can be delightful places that serve many functions, for traffic and pedestrians alike, and can be major elements in a city's structure. Recent research has demonstrated the safety of multiple-roadway boulevards, and elsewhere in this issue design guidelines for these unique streets are presented.[1]

But are multiple-roadway boulevards livable places? What is it like to live along one? Do they function well as residential streets? These are the questions we sought to address in a recent study, and the results are promising.

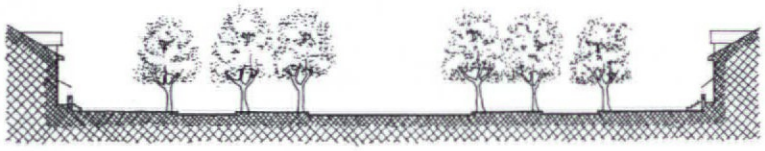
We examined three existing high-traffic residential boulevards — Ocean Parkway and Eastern Parkway in Brooklyn and the Esplanade in Chico, California. These streets were chosen because they have different densities (the Esplanade has single-family houses on it, Ocean Parkway has duplexes and fourplexes, and Eastern Parkway has row houses) and strong pedestrian realms along their edges. This is the feature earlier research showed makes boulevards function well as high-traffic yet pedestrian friendly streets. Each boulevard has narrow, one-way, single-lane access roads and closely planted trees on the medians.

In a manner similar to the well-known street livability study undertaken by Donald Appleyard in the 1970s, we designed a research project that compared each boulevard with two normally configured residential streets in the same neighborhood. These control streets, one carrying a medium amount of traffic and the other a light amount, were as similar as possible to the boulevard in terms of socio-economic characteristics and housing types.

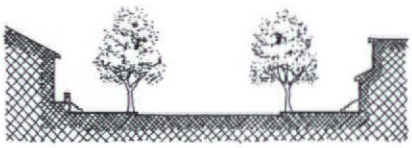
The main characteristics that differed within each group of streets were street width, traffic configuration and traffic volume. Boulevard right-of-ways were 165 feet (the Esplanade) and



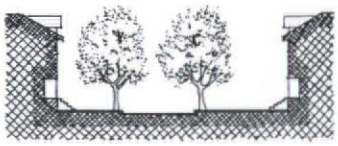
Opposite page: Lines indicate social interactions among families. Above: Bubbles indicate areas that residents consider to be their home territories. Graphics by Elizabeth Macdonald.



Ocean Parkway



Avenue P



E. 7th Street

Case Study Average Daily Traffic

	BOULEVARD	MEDIUM STREET	LIGHT STREET
ESPLANADE	24,000	14,500	80
OCEAN PKWY	42,000	13,500	1,100
EASTERN PKWY	44,000	4,000	1,500

210 feet (the Brooklyn boulevards), whereas the medium and light control streets ranged from 70 feet to 100 feet wide. The boulevards carried two to three lanes of traffic in each direction in the center lanes, whereas the medium streets carried one to two lanes in each direction and the light streets just one lane in each direction.

We collected environmental data such as traffic speed, street noise level and traffic volume through field observations. We also elicited residents' feelings about their street through structured questionnaires.

Appleyard's study showed that residents on high-traffic streets tend to have fewer social interactions then residents on low-traffic streets and tend to withdraw from the environment. It also showed that high-traffic streets tended to have lower levels of homeownership and families with children then low-traffic streets. The hypothesis used for our study was that a boulevard configuration mitigates these negative effects of traffic, making a high-traffic residential street more livable.

Using the same livability indicators that Appleyard used in his study, we found our modified hypothesis to be generally true. Most people living on the boulevards viewed their street very favorably and they were not generally overly bothered by traffic, even though conservative field measurements showed that the boulevards carry very large volumes of traffic. Residents on the boulevards had taken no more steps to block out traffic noise or nuisance then residents on the low-traffic streets, and they had just as many friends and acquaintances on their block, although their friends tended to be concentrated on their own side of the street, as could be expected.

For many livability indicators, the medium-traffic streets were perceived worse by residents then the boulevards. More residents on the two higher-volume medium traffic streets (the control streets for the Esplanade and Ocean Parkway) complained about traffic more often on their street than residents on the counterpart boulevards. More residents said they were more often bothered by traffic as they went about their daily activities.

These findings are supported by observed street noise levels. Noise levels at the curbs of the two higher-volume medium traffic streets were substantially greater then on the boulevards. On the Esplanade the curb noise level was above 65 decibels 45 percent of the time, while on its medium traffic control street it was above 65 decibels 65 percent of the time.[2] On Ocean Parkway and its medium-traffic street, noise exceeded 65 decibels 15 percent and 57 percent of the time. (This extreme difference can be explained in part by that fact that commercial vehicles are restricted from being driven on Ocean Parkway.)

People on the boulevards and low-traffic streets generally felt that their streets were neither "safe nor dangerous," or perhaps "somewhat safe," because of the traffic on them. Residents of the medium-traffic streets, however, generally felt their streets to be less safe, although these differences in perceptions were not found to be statistically significant.

Residents on the boulevards generally perceived the speed of traffic on their streets to be "about right" to "somewhat too fast," although some, especially on the Eastern Parkway, thought it was "much too fast." Significantly, residents along the Esplanade and Ocean Parkway – the

case studies whose medium-traffic control streets had higher volumes – considered the speed of traffic on their streets more favorably than residents on the medium traffic streets did. This is in spite of the fact that field observations showed traffic moving 5 to 10 m.p.h. faster in the center lanes of the Esplanade then on its medium-traffic control street, and 10 to 15 m.p.h faster in the center lanes of Ocean Parkway then on its medium-traffic control street.

Similar correlations held true when residents were asked how they felt about the amount of traffic on their street for a residential street. For all three case studies, residents on the medium traffic streets perceived the amount of traffic on their street to be heavier than residents of the boulevards did, even though the actual volumes on the boulevards were from 2.5 to 11 times greater.

From these findings, we can conclude a boulevard configuration makes residents more comfortable with high traffic volumes and faster speeds on their street than a normal street configuration does. The distance between residences and the fast traffic lanes in the middle of the street, combined with the layered landscaping of sidewalk and median trees, produces a psychological and physiological barrier necessary to create a sense of remoteness from traffic.

It is important to note that for all the case studies the volumes and speeds of traffic on the access roads of the boulevards, the roadways directly in front of peoples' houses, approximated those found on the light street. This seems important, and supports previous research that stressed the importance of narrow, slow-moving access roads on boulevards.

Finally, we found that boulevard residents were generally very enthusiastic about their street and seemed to value living on it. Most residents recognized that their street was special, with unique physical characteristics – "it has trees," "it has a bike path," "it is a boulevard." To open-ended survey questions, boulevard residents mentioned these amenities and special qualities much more often then they mentioned traffic. Conversely, on the medium traffic streets, residents mentioned traffic concerns more frequently than anything else.

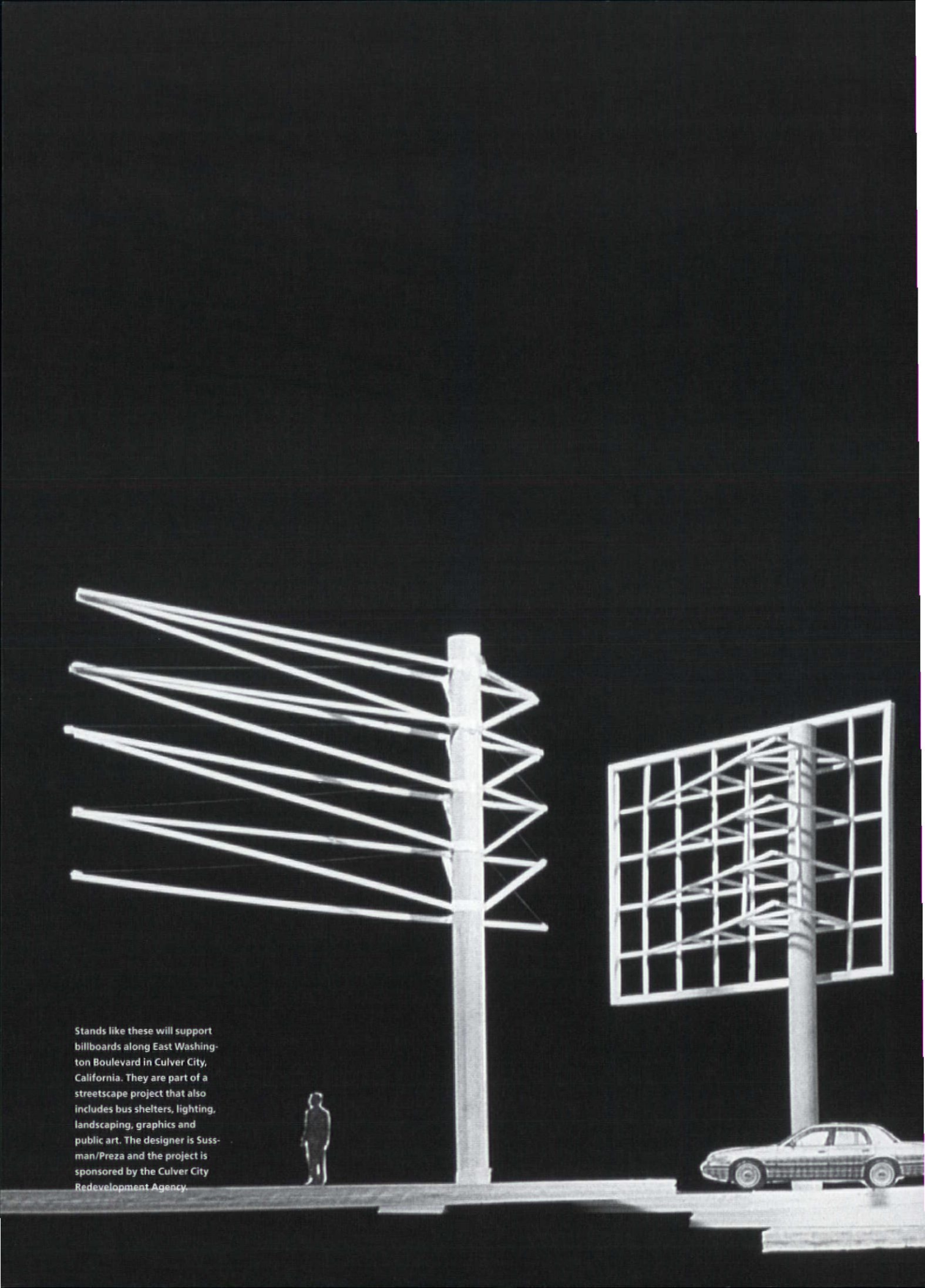
Although additional studies of air quality along boulevards should be undertaken (for example, modeling air-flow patterns along differently configured boulevards to test the role of trees in mitigating pollutant dispersal), this study points to the viability of multiple roadway boulevards as high traffic residential streets in cities. In the overall assessment, there was significant agreement among residents of boulevards that their streets are livable, pleasant and special, and this holds true across a range of residential densities.

Notes

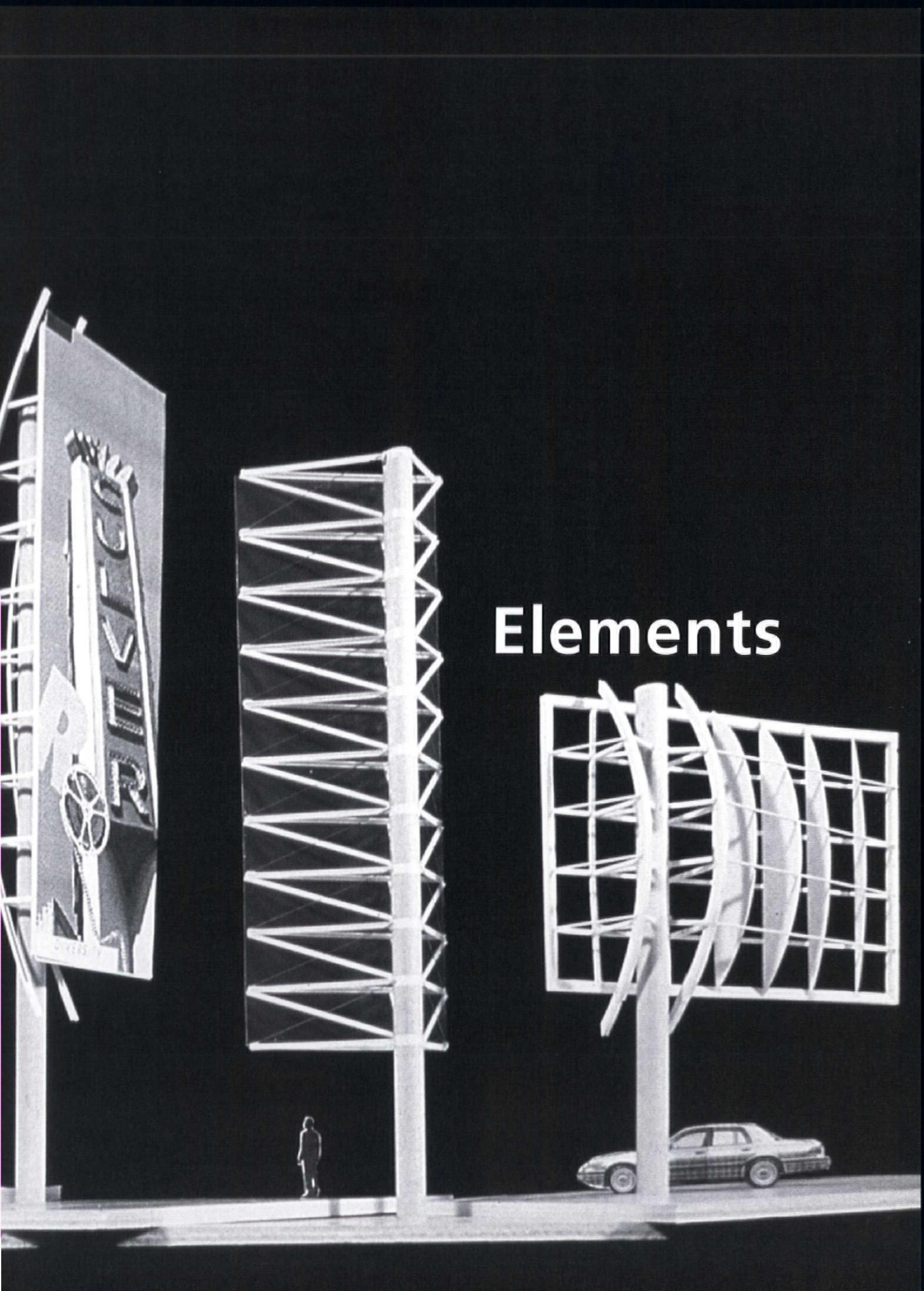
1. By "multiple-roadway boulevard," we mean a boulevard with a wide center roadway for fast-moving through traffic, narrow access roads along each side for slow-moving local traffic, and tree-lined medians that separate the through and local roads.
2. This decibel level is commonly accepted as the point above which noise is perceived as extremely bothersome.

The research for this article was funded by the Transportation Center at the University of California, Berkeley. The monograph by the same authors, *The Environmental Quality of Multiple Roadway Boulevards*, (IURD Monography 53) is available from the Institute of Urban and Regional Development, University of California, Berkeley (510) 642-4874.

Thomas Kronemeyer provided assistance with this research.



Stands like these will support billboards along East Washington Boulevard in Culver City, California. They are part of a streetscape project that also includes bus shelters, lighting, landscaping, graphics and public art. The designer is Sussman/Preza and the project is sponsored by the Culver City Redevelopment Agency.



Elements

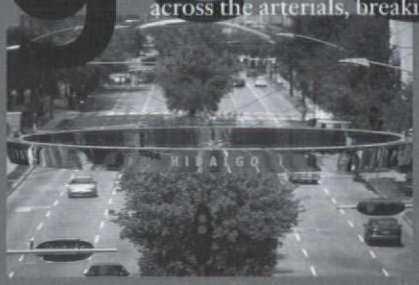
Edge City

Todd W. Bressi

Houston's Galleria district is an edge city without compare. As Joel Garreau described it in *Edge City*, "these hotels and pools and skyscrapers and courts and shopping areas and promenades and multilevel parking and helicopter pads connect intricately, in dense combinations never before achieved in America outside a downtown."

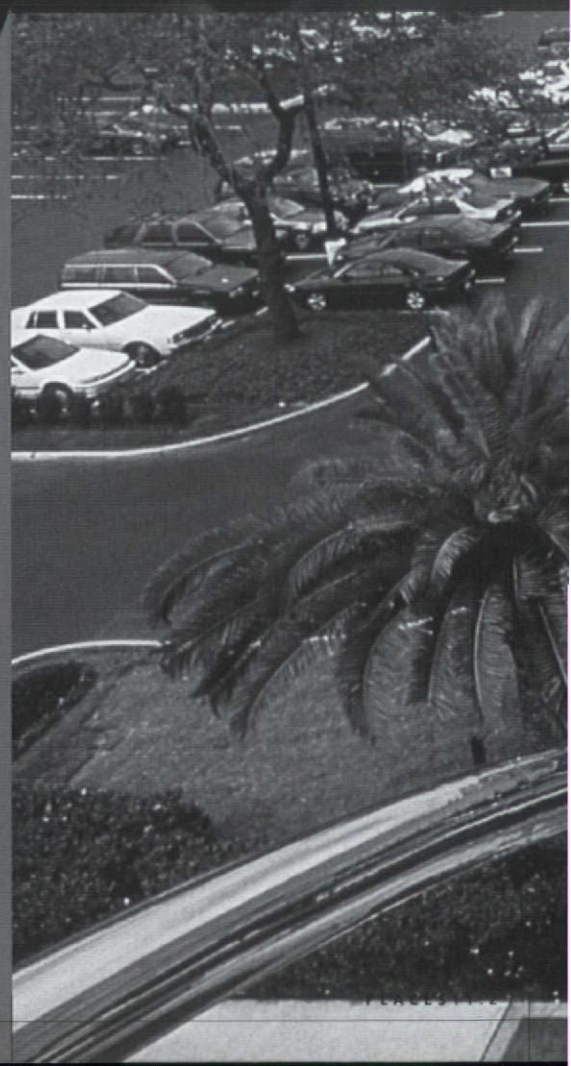
What Garreau didn't mention, of course, was streets. That's where the design team of Communication Arts and Slaney Santana Group turned when a local business group asked for ideas about creating a visual identity for the district.

The designers attempted to define the place at two scales, automotive and pedestrian, using a family of streetscape elements straight out of a 1950s futuristic fantasy. Space-age arches vault across the arterials, breaking down the scale of the street space; metal rings float like coronas over the intersections, with street names glowing from holes punched in their surfaces. The street light fixtures and traffic signals are all off-the shelf hardware so that they can be maintained easily, but they are enclosed in custom-designed housings.



The arches land in "oases," some of which connect directly to adjacent development. They are "rewards for people who have the courage to be pedestrians in Houston," explains Henry Beer, of Communication Arts. "At the base of each [there] is a poem or narrative about Texas and culture and life of place" along with amenities like seating and drinking fountains. In the evening, the oases are washed in pools of light so they become destinations.

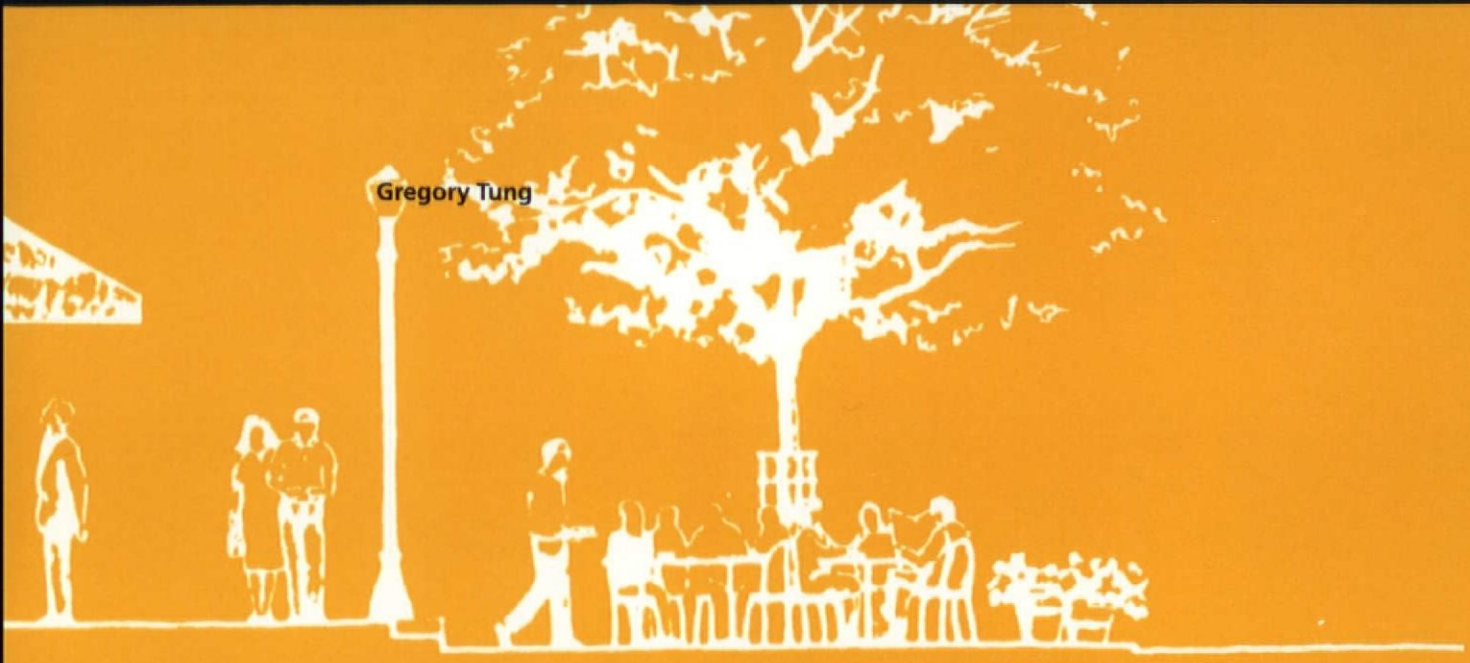
The project also involved a minor reconfiguration of the streets, primarily to add medians, and landscaping along the sides. It was sponsored by the Harris County Improvement District #1.



Photos courtesy Communication Arts.

Streetscape

Gregory Tung



Overlap Zones in the Street Section

In cities abroad or in our own countryside, we often encounter a more casual use of street space than we do in urban America. In these cheerfully promiscuous streets, cars in motion, pedestrians, parked vehicles, people sitting and street vendors mix and occupy varying portions of the street and sidewalk throughout the day, apparently in peaceable coexistence.

This flexibility occurs precisely at the interface between car spaces and people spaces. What feels different is that rather than only being a dividing line, the interface has become a space in itself, an "overlap zone" in the street section.

However charming some of us might find Mediterranean habits of street use — cars opportunistically parked on sidewalks, vendors and outdoor cafes sandwiched between them, people threading their way through — we'd quickly accumulate parking tickets and towing charges if we tried them at home. American laws are unambiguous about vehicles blocking sidewalks and our street engineering is similarly singular about where cars and people ought to be.

A certain one-dimensionality in street design and character usually results when a street is designed under this regimen. A zoning of the street section takes place, as rigid as the oft-criticized single-use character of suburbs. The center of the paved right-of-way is permanently dedicated for moving vehicles; areas in front of curb faces are reserved for parking or drop-off; and the remaining slices of space above the curbs are for walking and other pedestrian activity.

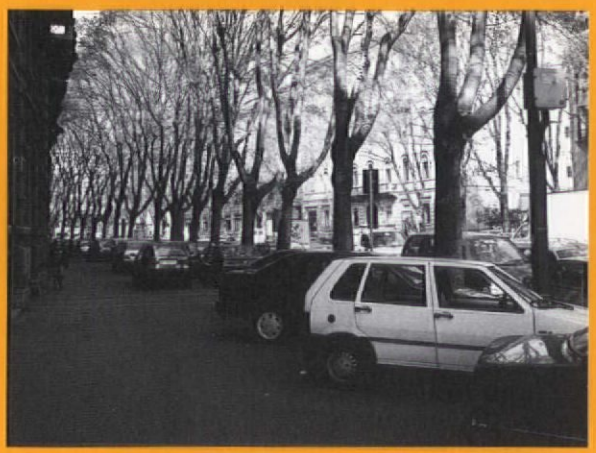
Ways of drawing and thinking about street spaces contribute to this attitude. A street section drawn in isolation can encourage the impression that the street is to be endlessly extruded. The metaphors of traffic engineering — "flow," "capacity," "design speed" — and the discipline's virtual monopoly over street design in the last fifty years have furthered this simplification of street space.[1]

The last generation has seen a shift in professional consciousness. The coverage of street space in *Architectural Graphic Standards* provides some indication: In the seventh edition (1981), street design is discussed and shown only in plan view, and solely in a suburban planned unit development context. In the eighth edition (1988), the street section drawing is reintroduced and the street space is analyzed as an urban space made by buildings, along with a simple presentation of street hierarchy. In the ninth edition (1994), Andres Duany and Elizabeth Plater-Zyberk have contributed to a multipage treatise on street design from a New Urbanist perspective.

Cultural changes and retailing trends have also played a part. Increased overseas travel has made images and experiences of colorful mixed-use streets and spaces more familiar, along with the growing influence of ethnic quarters and cuisines in American cities. The growth and maturation of the suburbs has created a demand for a more digestible urbanity closer to home, ranging from ad-hoc, small-town street closures for farmers' markets to retooled shopping malls with curving simulated main streets.

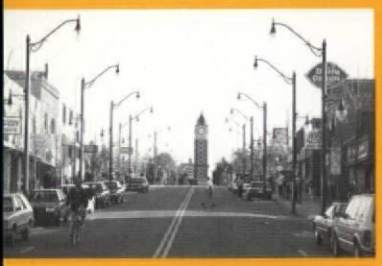
Overlap zones offer a potential for redefining the spatial relationship between cars and pedestrians and increasing the pedestrian-friendliness of

Opposite page: On Castro Street, a commercial street in downtown Mountain View, Calif., the overlap zone is between the sidewalk and the traffic lanes. It can be used for cafe tables, street vendors or diagonal parking (see following pages). Graphics courtesy Freedman Tung and Bottomley.



The promiscuous street: Pedestrians, parking and traffic achieve a peaceful coexistence on Milan's Foro Buonaparte. Photos courtesy Gregory Tung.

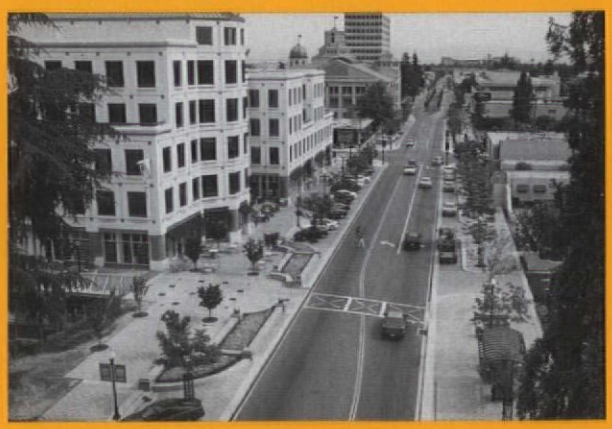
city districts. An early example of this was a retrofit of University Avenue in downtown Palo Alto where new London Plane trees were located in the parking lane in curbed islands, spaced every 48 feet along both sides of this traditional main street.[2] This reduced the visual width of the street (trees on opposite sides of the street are 43 feet apart), without changing the widths of sidewalks or vehicle lanes or moving curbs and drainage lines (curb-to-curb distance at 51 feet).



Above: On Welch Avenue, in Ames, Iowa, street lights were placed in the parking lane as an alternative to trees for establishing vertical definition. Right: Castro Street in Mountain View. The street was reduced from four traffic lanes to three, and the extra space was used to create wide, flexible-use "overlap zones" on both sides.

Motorists appeared to sense the constraint of a seemingly narrower street corridor and slowed down, perhaps even beginning to notice merchandise in shop windows. Pedestrians sensed a broader walking corridor between the buildings and the trees, even though the sidewalk width remained the same. At the street corners, sidewalk "bow-outs" expanded into the parking lanes, creating a real increase in pedestrian territory where people actually had to confront drivers to cross the street.

In 1989, urban designer Michael Freedman and I took this a step further in the redesign of Castro Street in the downtown of neighboring Mountain View.[3] One travel lane was eliminated, traded off for the expansion and conversion of two parking lanes into flexible zones: highly designed multi-use spaces between the dedicated pedestrian sidewalk space and the moving traffic stream. The flexible zones would permit either convenience parking or pedestrian uses like sidewalk cafes at will, without any street reconstruction (at the time, we thought this would help Castro Street's sole healthy economic sector, the restaurant trade). Storefront businesses now apply for a use permit and their sidewalk cafe plans are regulated by the city.

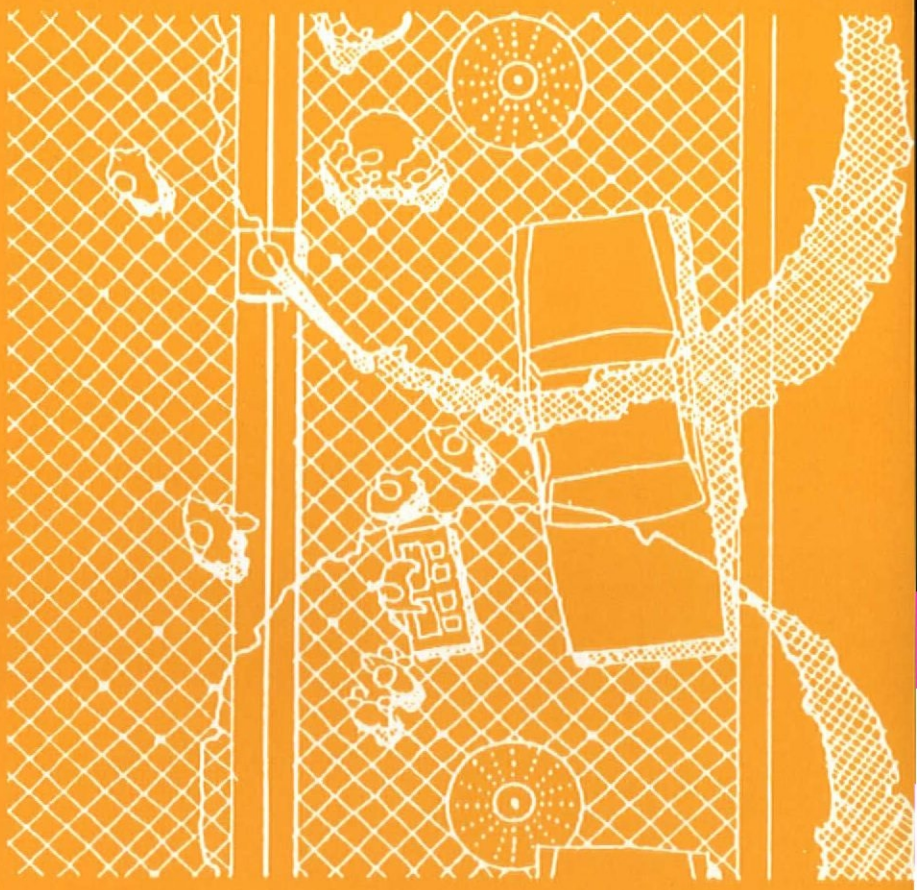


The flexible zones were configured with a suite of design features intended to be seen and enjoyed at walking speed. These included: *material cues,* such as pigmented pattern-stamped concrete for pedestrian–auto spaces that read primarily as pedestrian paving, *spatial definition,* by using rows of Idaho Locust trees in flush tree wells centered in the zone or bordering objects (fixed precast concrete bench/ planters, stair curbs studded with streetlights, portable planters for edges of sidewalk cafes), *body imagery and geometric ordering* principles like bilateral symmetry, capital-shaft-base articulation, serial repetition and linear alignment. Wherever possible, every artifact and relationship was imbued with pedestrian speed, scale and texture, while maintaining conventions of use by motorists and pedestrians alike.

Castro Street's flexible zone created a full overlap between pedestrian and auto use and territorial boundaries. Architects have traditionally developed similar gradients and interpenetrations of public and private space in the front yard of buildings, what architect Daniel Solomon calls the "encroachment zone." In streetscape design, the gradients have to happen inside conventional and existing entities: a row of parked cars becomes a multi-use space, or a curb becomes a stair and sometimes a bleacher.

With a public mandate to radically improve the pedestrian friendliness of streets in downtown Phoenix, we recently explored a range of manipulations of the overlap zone on three major street corridors.[4] While the activity overlaps were not as pronounced as in Mountain View, the different use of edge-defining vertical elements illustrates

Canopies shelter a cafe in the Castro Street overlap zone.



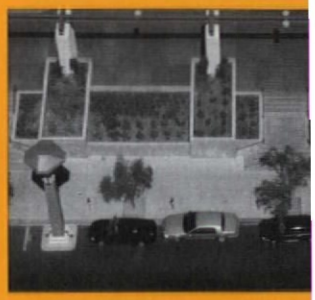
the potential for creating different place experiences within a gridiron of one-way downtown streets in an archetypical Sunbelt city.

Borrowing from the colonnaded Via della Conciliazione in Rome and Van Ness Avenue in San Francisco, we added flanking rows of 30-foot-tall freestanding light columns to existing parking lanes on three blocks of Second Street, creating 1:2 Renaissance proportions for what had been an irregularly contained corridor space. With the Phoenix Suns' home arena on the street's south terminus and the new streetscape treatment, Second Street has become a true processional way (and a setting for future victory celebrations).

Intersecting east-west Adams and Monroe Streets were planted with blue Palo Verde trees or Monumental Date palm trees in curbed wells in parking lanes. With a restoration of two-way travel on these streets, the width of one lane was traded off for new diagonal parking to support storefront businesses.

Capital improvements were focused on vertical elements instead of areas of flatwork for maximum impact. Dramatic uplighting of columns and trees and high-level area lighting were essential to re-creating downtown as a new public nighttime environment.[5] Along with exciting new museums and other municipal projects, the streetscape improvements are part of setting the public stage for downtown Phoenix's rapidly expanding civic life.

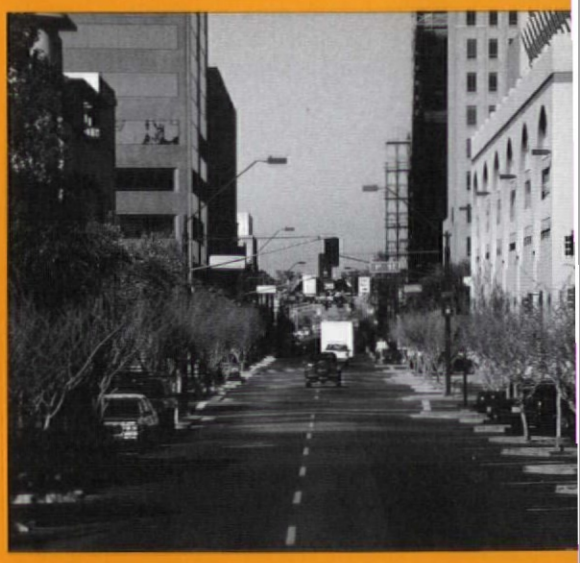
How do we introduce these unconventional or unfamiliar street design concepts to curious public audiences, distracted public officials and skeptical engineers (the adjectives are all interchangeable, of

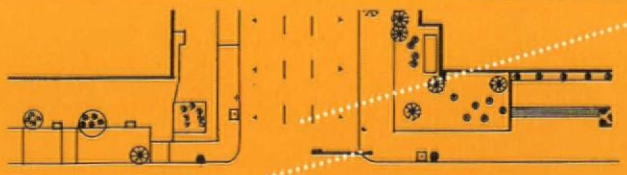


Lighting and trees are interspersed with parking areas along Second Street (left) and Adams Street (below left) in downtown Phoenix.

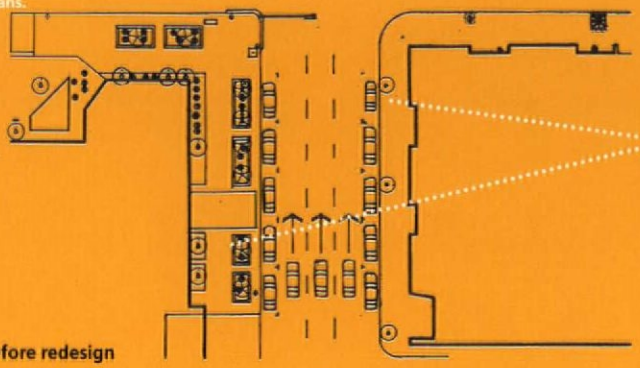
course)? In all of these projects, we have referred to existing models, demonstrated with visual explanations – slides, drawings and in-person walk-through tours. If a favorite urban design feature is from abroad, we should show it together with an American counterpart, with as many of the latter as possible. We've stressed that all of these seemingly new ensembles are made of familiar small components; the delight of urban design comes in telling the story of how it's happening right here, in your very own town.

When architects and engineers were first asked to design Skylab and other spacecraft environments, they quickly brought to their task an understanding of how small spaces had to play many perceptual roles and functions, to help preserve the sanity of the inhabitants as well as provide functional habitat. We hope that more attention to public realm design can bring a similar attention to the street, after a century or so of often uneasy coexistence between pedestrians and cars.

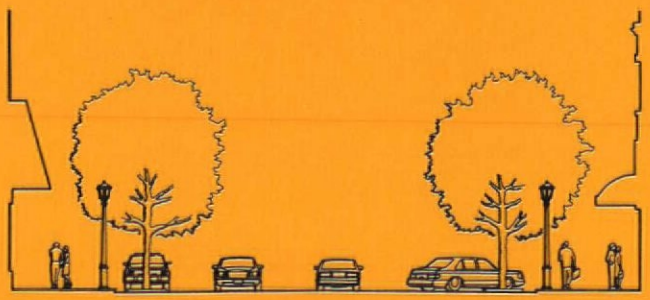




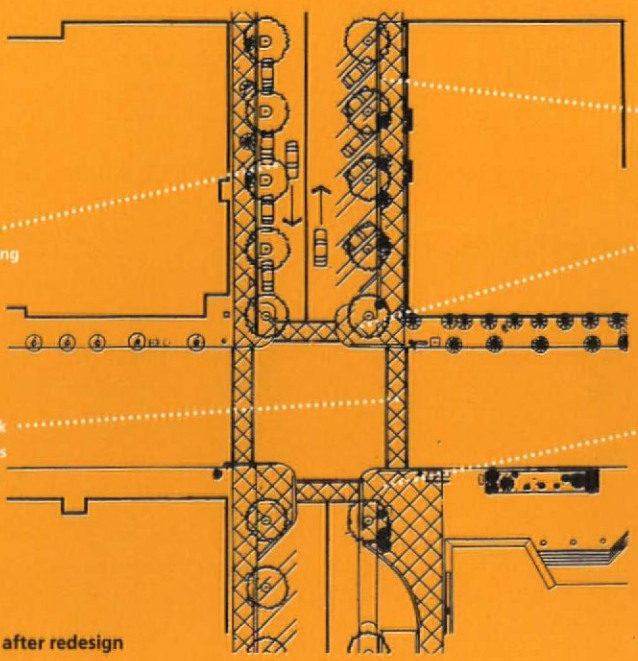
Mast-arm stoplights emphasize auto scale; timed signals accommodate vehicles at the expense of pedestrians.



Monroe Street before redesign



Monroe Street after redesign



Monroe Street after redesign

Notes

1. Street space as architecturally designed and sequenced urban space was last championed in the U.S. by Walter Hegemann and Elbert Peets in 1922. See "Architectural Street Design," chapter four in Hegemann and Peets, *The American Vitruvius: An Architect's Handbook of Civic Art* (New York: Princeton Architectural Press, 1988), a reprint of the 1922 original.
2. Designed in 1973 by ROMA, San Francisco, and Johnson Lefingwell & Associates Landscape Architects, San Francisco.
3. See Gregory Tung, "Mountain View, California: Fiat Res Publica," *Places* 5:4 (1989).
4. The 1994 "Downtown Visioning Process," conducted in Phoenix, Arizona, by Moore Iacofano Goltsman and the Downtown Phoenix Partnership.
5. We used five footcandle, 3200-degree K warm white metal halide area lighting, with sharp cutoff distribution.

Doug Suisman

The Bus Stop as an Urban Place

Forrest Gump is probably the only feature film ever made that takes place almost entirely at a bus stop. Notwithstanding flashbacks to other times and places, the center of the action is a simple wooden bus bench on a concrete platform along the edge of one of Savannah's beautiful squares. Gump sits there recounting his extraordinary life story to the passengers who arrive and depart throughout the day.

This particular and positive focus on a bus stop is refreshing. Outside the world of the movies, when money is actually spent to improve a transit system, the overwhelming balance goes to expensive subway and light rail stations. In the transit family, bus stops are neglected stepchildren; needing so little, they get even less. These sidewalk Cinderellas are even less likely prospects for enhancing public space. The phrase "bus stop" rarely connotes urbanity, character or charm.

Why should it matter? Because in most places, the only transit is bus transit. And bus stops are highly visible: they pepper major streets every few blocks, stand right on the curb and are highly visible to both drivers and pedestrians.

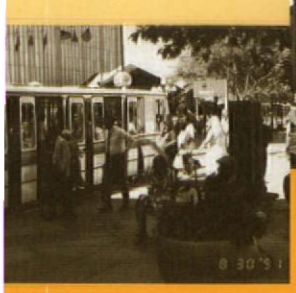
Bus stops advertise the transit system to the public. A stop that looks dirty or neglected, or whose waiting passengers look hot, cold, wet, confused or vulnerable sends a devastating message: you're lucky you don't have to ride the bus. A stop that looks clean, comfortable, safe and informative suggests that riding the bus is a practical, attractive alternative to driving.

Bus stops also send a message about a city's public space. They are the place where bus transit and municipal identity overlap. Each stop can be thought of as having a two-way identity; it is a gateway to the transit system for pedestrians getting on, and a gateway to the adjacent neighborhood for passengers getting off. Each stop should be assessed as part of a pedestrian network that permits someone to get to and from the stop.

Modest physical improvements — shelters that protect transit users from bad weather; comfortable seating; good lighting for reading and security; good information about fares, schedules, routes, transfers and nearby destinations; a drinking fountain, telephone and newspaper box — can go a long way toward making a bus stop a sidewalk amenity.

What follows is a trip along a hypothetical bus route with a collection of bus stops, at many of which Forrest Gump might feel at home.

1



Denver

This bus stop on Denver's transit mall has movable chairs. People make their own casual seating arrangements, which makes waiting for the bus seem almost leisurely.

2

Morelia

In Morelia, Mexico waiting passengers can pick up a snack of fresh mango or pineapple. These well-maintained vending cars, which are regulated by the city, are painted bright yellow and topped with white canvas awnings.

3

Portland

Good information about the transit system is important, but often missing. Stops along Portland's main downtown bus thoroughfare are exceptionally well equipped. The graphic information system, with special color-coded logos for each direction, help people navigate the bus network; monitors show bus schedules.

4

Los Angeles

At bus stops in Los Angeles, passengers must wait on advertising benches. There is no sense of protection from the fast and close traffic, and certainly no amenities to speak of. Information is limited to a sign with a route number and general direction, not much help even to regular riders.

5

Philadelphia

Bus shelters along Philadelphia's Market Street have beautiful posters that tell the history of nearby buildings, people and events. In most cities this space is reserved for advertising.

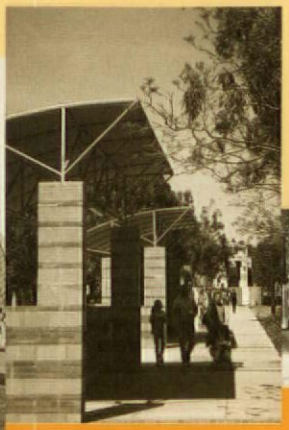
All photos except Portland courtesy Doug Suisman. Portland photo courtesy Todd W. Bressi.

6

Paris

The quirky, fan-shaped profile of the Paris bus stop marker is so distinctive that you can spot it from a block away. The RATP, Paris's bus and rail agency, manages to compress an extraordinary amount of information on these kiosks, from diagrams of the immediate area to maps of the regional transit network. A new, electronic version can be programmed from a central office to tell passengers when the next bus will arrive.

7



U.C.L.A.

Most off-the-shelf bus shelters are humble affairs, extruded aluminum pieces bolted together for minimum cost and ease of maintenance. But on the UCLA campus, these shelters, which pick up the banded masonry of the university's historic buildings, show that reasonably priced shelters can be both durable and quirkily monumental.

8

Champs d'Elysees

At the other end of the spectrum, these Champs d'Elysees shelters, designed by Norman Foster, achieve an elegant transparency. They are part of an overall streetscape program managed by JCDecaux. In exchange for advertising rights, Decaux works with leading designers to develop, build, install and maintain customer-designed shelters.

9

L.A. Civic Center

Neither monumental nor transparent, the standard Los Angeles shelter is clunky and dark. While they do offer protection from sun and rain, they also separate out from the visual environment of the street. The prototype was designed by the Gannet Co. in response to city requirements, which were mainly developed by engineers intent on having the shelters withstand the impact of a car moving 55 m.p.h.

10

Seattle

The translucent roofs of Seattle's downtown shelters allows filtered light into the waiting area and helps the shelter blend into the surrounding area.

11

Barcelona

Barcelona's obsession with thinness and transparency in design is well represented by this beautiful shelter. With its wafer-like roof, its bright and hard yellow enamel finish, its bright red information band and its crisp stainless steel joints, the shelter brings color and sparkled to the street while allowing you to look right through it to the building and the sidewalks behind.

12

Santa Monica

Santa Monica asked my firm to develop a bus stop marker that wasn't a shelter. We picked up on a landmark Craftsman-style pergola along the oceanfront and developed a vertical column that carries vines and an illuminated sign.

13

Claremont

Bus stops often occupy the overlapping jurisdictions of a regional transit agency and a local municipality. Foothill Transit asked us to develop stops that would unify stops throughout the system yet recognize the widely varying identities of 20 towns and cities in its service area.

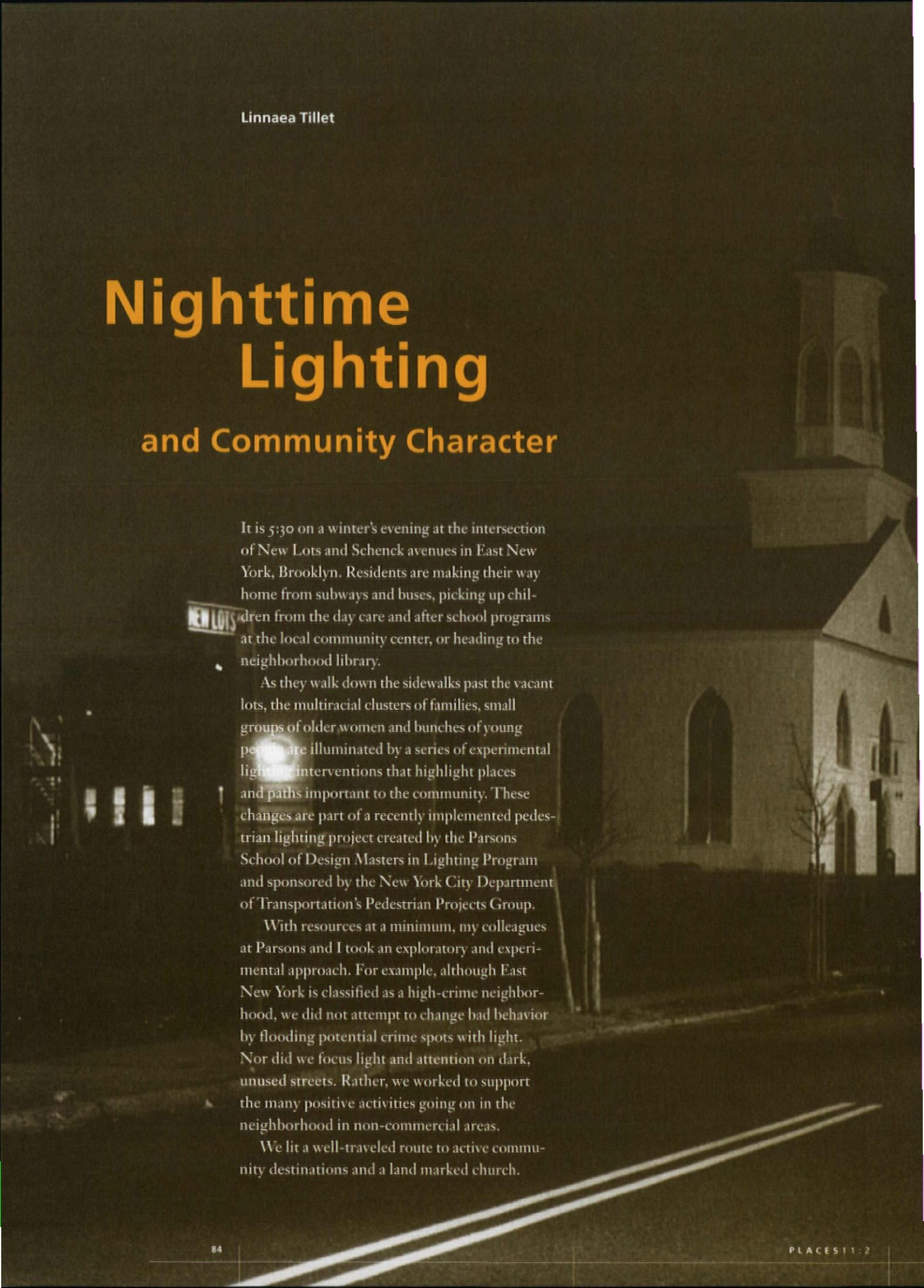
We developed a program of bus stop improvements that keep certain elements consistent throughout—for example, the curved profile and and standing-seam metal of the shelter roof and the shelter's structural module—but allow the cities to select and customize other elements. These include the color of the roof and the cladding of the vertical supports.

In this example, the town of Claremont picked a terra cotta color for the roof and river rock for the supports, which harmonized with the architecture of its downtown village.

Linnaea Tillet

Nighttime Lighting

and Community Character

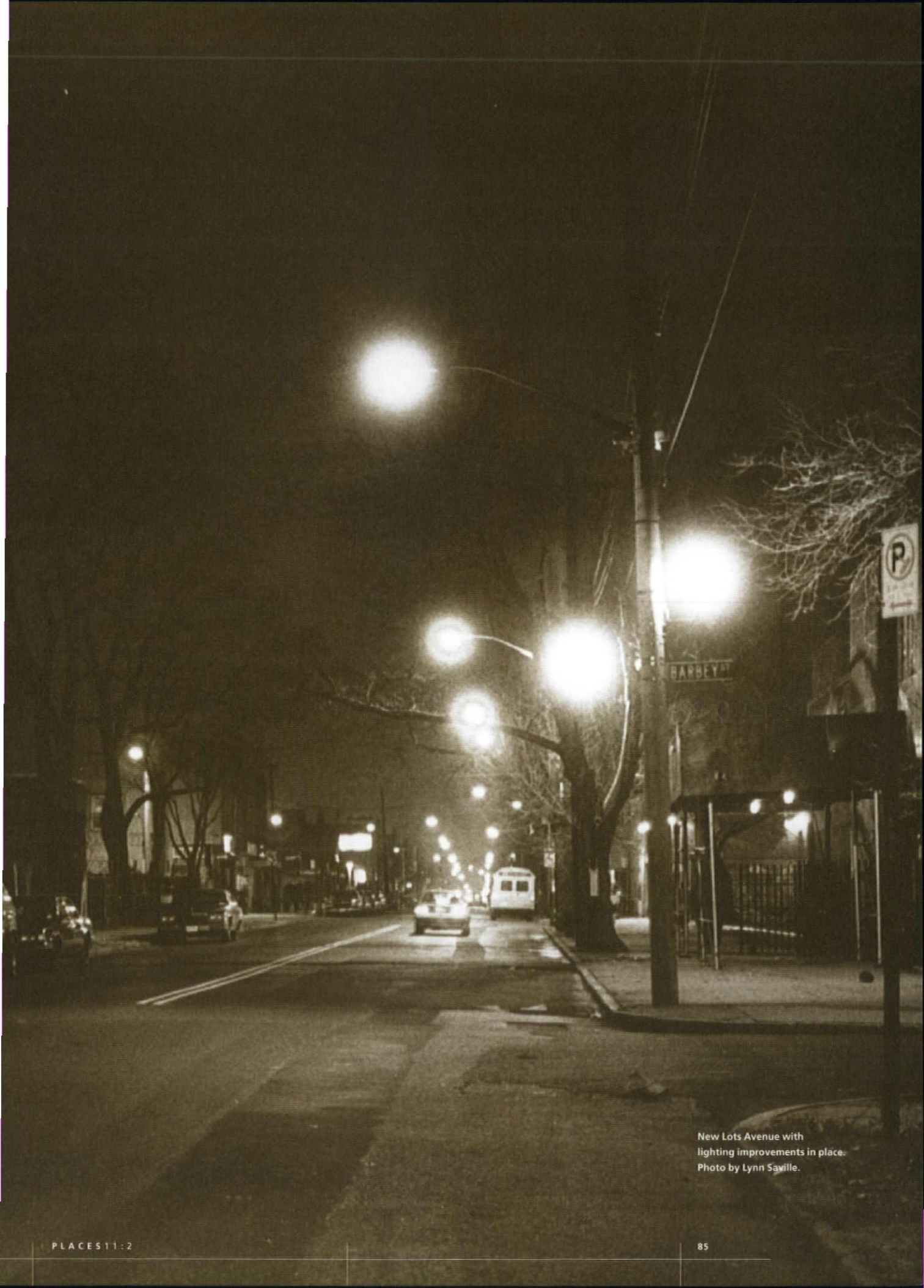


It is 5:30 on a winter's evening at the intersection of New Lots and Schenck avenues in East New York, Brooklyn. Residents are making their way home from subways and buses, picking up children from the day care and after school programs at the local community center, or heading to the neighborhood library.

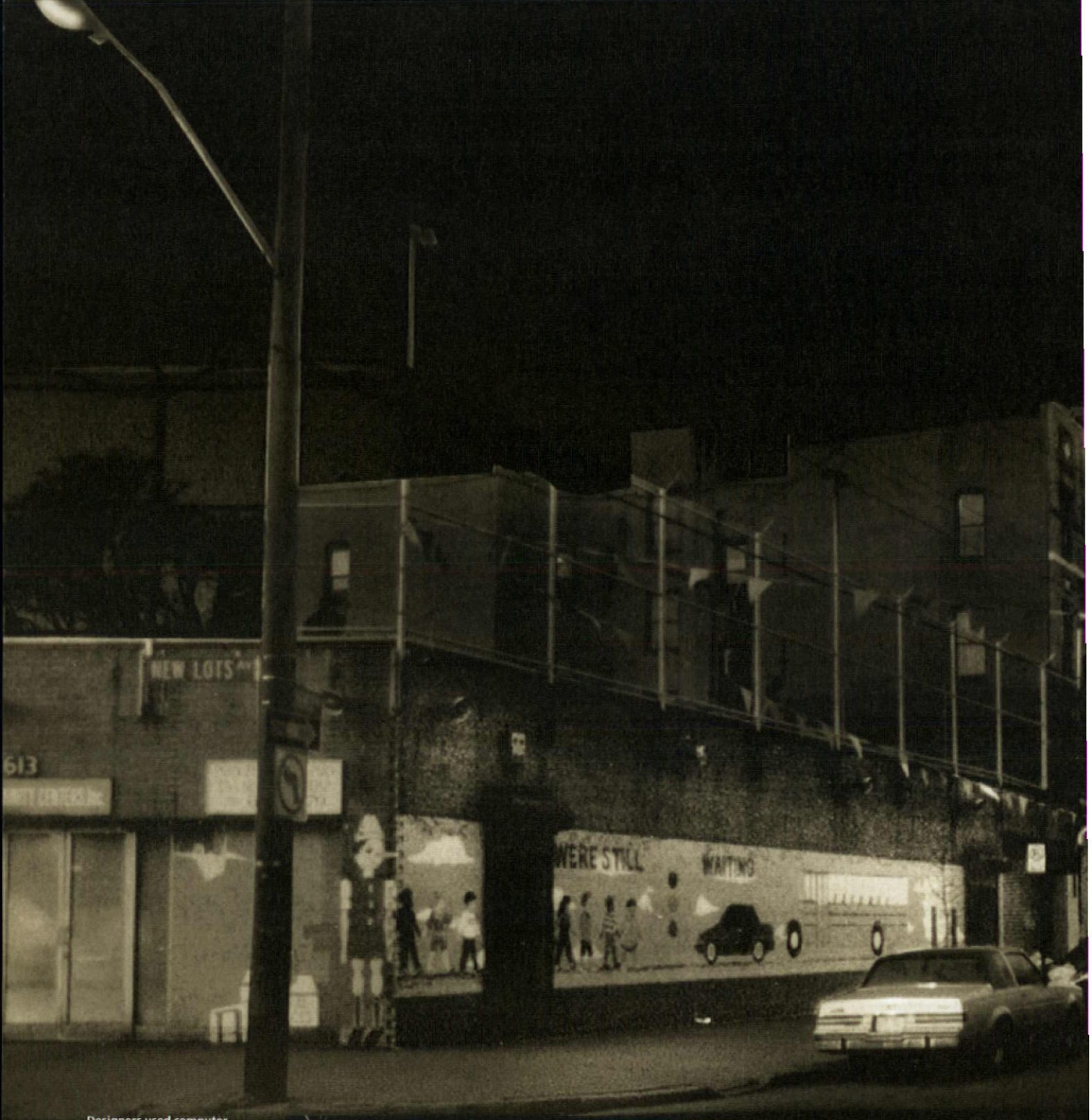
As they walk down the sidewalks past the vacant lots, the multiracial clusters of families, small groups of older women and bunches of young people are illuminated by a series of experimental lighting interventions that highlight places and paths important to the community. These changes are part of a recently implemented pedestrian lighting project created by the Parsons School of Design Masters in Lighting Program and sponsored by the New York City Department of Transportation's Pedestrian Projects Group.

With resources at a minimum, my colleagues at Parsons and I took an exploratory and experimental approach. For example, although East New York is classified as a high-crime neighborhood, we did not attempt to change bad behavior by flooding potential crime spots with light. Nor did we focus light and attention on dark, unused streets. Rather, we worked to support the many positive activities going on in the neighborhood in non-commercial areas.

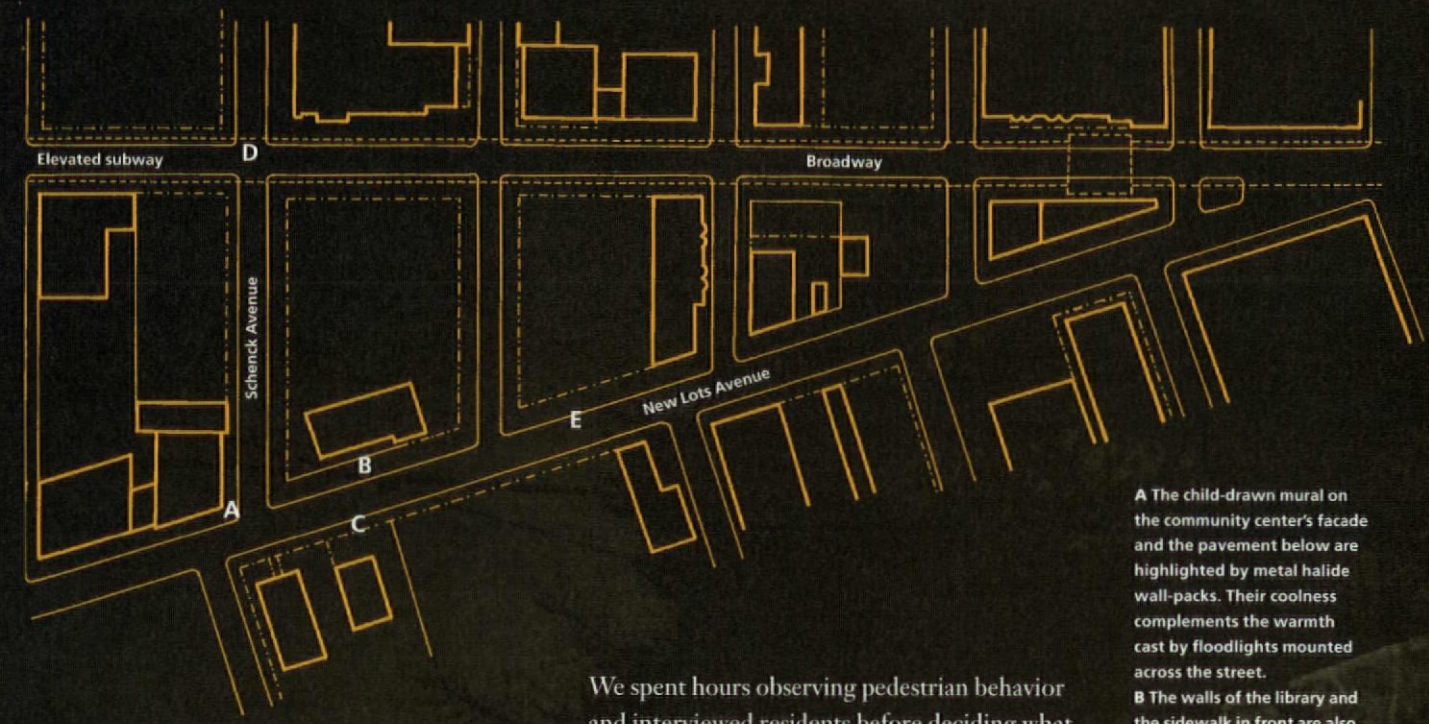
We lit a well-traveled route to active community destinations and a land marked church.



New Lots Avenue with lighting improvements in place. Photo by Lynn Saville.



Designers used computer simulations, such as this view of Schenck Avenue, to study how lighting changes would change the pedestrian environment. This simulation shows the effect of painting the underside of the elevated subway white and adding uplighting, and of washing a mural on the community center wall with light. The original conditions are shown in the inset photo. Simulation by ASco/Amy Samelson, photo by Lynn Saville.



A The child-drawn mural on the community center's facade and the pavement below are highlighted by metal halide wall-packs. Their coolness complements the warmth cast by floodlights mounted across the street.
B The walls of the library and the sidewalk in front are also washed by floodlights.
C The white wood walls of the 150 year-old Dutch Reformed Church are luminous, in sharp contrast to the dark cemetery and the general surroundings.
D The underside of a subway viaduct is painted bright white and glows with light directed from below.
E On New Lots Avenue, light is cast by decorative lanterns hanging from light poles that previously directed light only towards the roadway.

We spent hours observing pedestrian behavior and interviewed residents before deciding what routes to focus on, noting that the graffiti-free church, community center mural and library seemed to be cared for by the community. We made computer simulations of our proposals and showed them to community members to get their response. We were seeking to accomplish precise interventions that would make small but significant differences in the daily life of those who walk the streets.

Rather than focus on "making the streets safer" we developed solutions that treat aesthetic and practical considerations as inseparable. Key to this approach were selecting a community that was in the process of rebuilding itself and developing close working relationships with community members and city staff. This allowed us to experiment with unconventional solutions. For example, we installed fragile decorative fixtures that depend on community protection against vandalism. (Six months after installation not one has been broken.) The presence of these fixtures sends a strong message that the community is of value to itself and the rest of the city.

In the coming year we will revisit East New York to evaluate how our interventions have affected pedestrian behavior and people's impressions of the neighborhood. We hope that our modest project will address some of the community's needs and point to new ways of lighting all kinds of pedestrian areas.

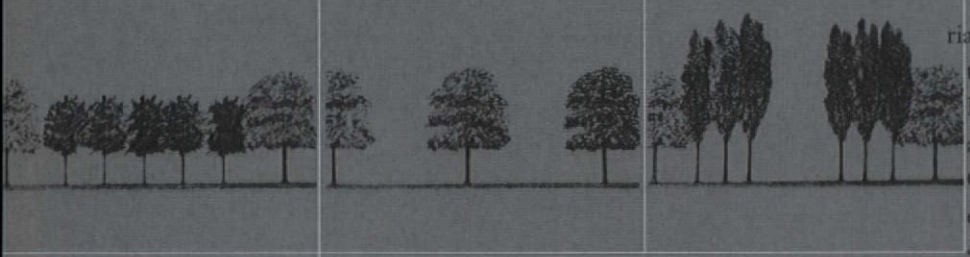
Nathalie Rozot

Landscape architects and planners: Abel Bainnson Butz (Nathalie Rozot, design consultant). Graphic designers: Russell Design Civil engineers: Eberlin Eberlin Mechanical and electrical engineers: Wesler Cohen

South Broadway in Yonkers is the kind of street that is part of almost every city but has been largely forgotten. A mile-long strip of neighborhood-oriented shops and auto-related businesses, it is also a route for trucks and buses leading to New York. The street is lined with low-rise buildings, parking lots and a park.

Two years ago Yonkers sought proposals for reconstructing South Broadway. Our concept addressed the way pedestrians and drivers would experience moving along the street. Many of the following design details, unfortunately, were left out during construction.

We gave the street a strong visual rhythm, pacing it with six evenly spaced, specially treated activity areas. Each corresponded to a functional element, such as a city gateway or municipal parking lot and bus stop. We lined the street with trees but varied the species in the various segments between the activity areas. The tree spacing fluctuated, with the densest planting in areas of highest pedestrian activity. Lighting and signage established visual rhythm at night.

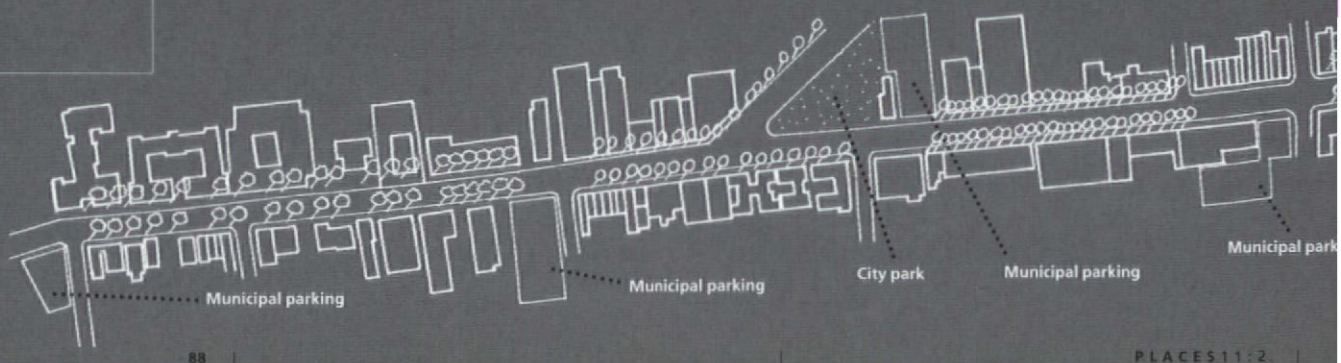


The spacing of trees and graphics varies in plan depending on the character of the street. Trees are spaced more closely in busy pedestrian zones to create a stronger sense of enclosure and slow traffic. Large signs and banners greet motorists entering the city. Graphics courtesy Russell Design.

The activity areas were given special treatment. The city gateway consisted of a series of tall signs on both sides of the street, then a series of banners, both depicting activities that occur along the street. Their spacing tightened as motorists proceeded into the city to create a dynamic of densification.

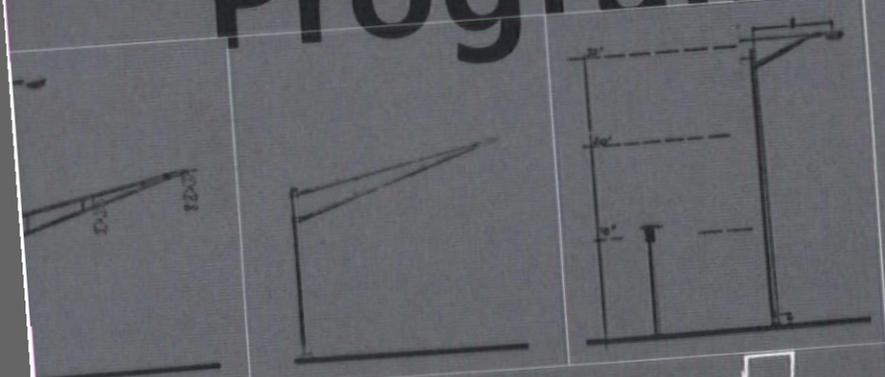
The five other areas are also gateways – parking lots and bus stops where people leave vehicles and become pedestrians. They were left free of trees and marked by lines of dense, low, cool lighting (10-foot poles, mercury vapor lamps), which contrasted with the high, warm lights (30-foot poles, high-pressure sodium vapor lamps, cobra-head fixtures capped with blue toplights) that march down the street in pairs every 100 feet. In front of each parking lot the pedestrian space was widened by six feet to accommodate amenities such as seating and lighting and signage that would lead pedestrians into adjacent commercial areas.

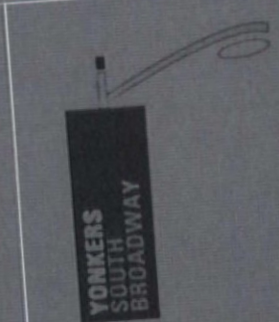
We emphasized the use of quintessential materials and equipment for street furniture and signage to ensure low and cost-effective maintenance. Poles, fences and trash receptacles were brushed aluminum and hot-dipped galvanized steel. Gateway, bus stop and parking lot signs consisted of reflectorized adhesive material on aluminum sheets, like those typically used for highway signage. We also highlighted the six specially treated areas with horizontal markers – sandblasted text in the concrete sidewalk to mark the parking lots, reflective delineators and carpets of giant letters (reflective material, like that used for highway striping, affixed to the asphalt) spelling out "South Broadway" for arriving pedestrians and motorists.



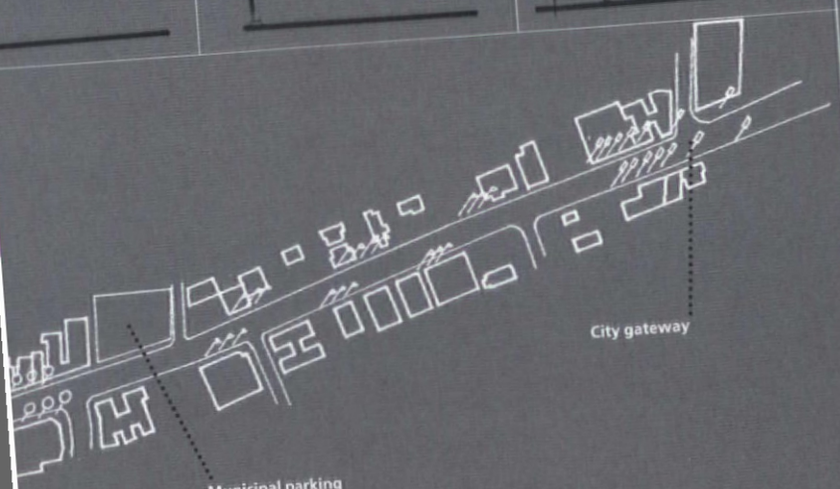
South Broadway Streetscape Program

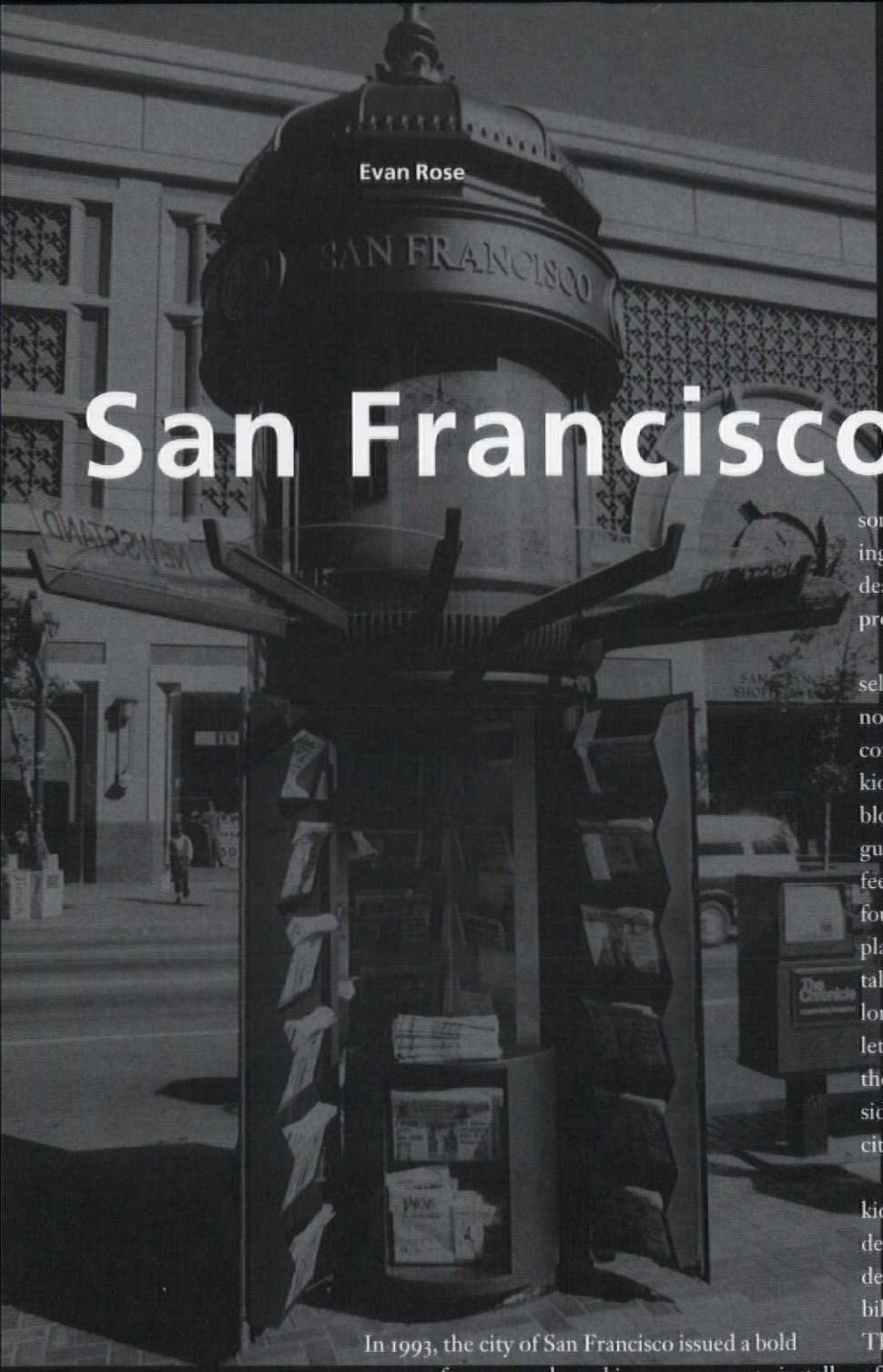
Where possible, bus stops and parking lot entrances were coupled to create entry areas. These places are marked by expanded sidewalks, which allow busses to drop off passengers without pulling over, as well as special signage, lighting and street trees that lead pedestrians into adjacent commercial areas.





Signage and lighting are scaled into horizontal bands that respond to the varying speeds of movement of pedestrians and vehicles. Informational signage is located at bus stops and parking lots, where people begin their pedestrian journeys along the street.





Evan Rose

San Francisco Toilets

Above: Newsstand on Market Street. Courtesy Evan Rose. Opposite page, top: Advertising kiosk on Geary Street. Courtesy Evan Rose. Opposite page, bottom: Toilet next to Washington Square Park. Courtesy JCDecaux USA.

In 1993, the city of San Francisco issued a bold request for proposals, seeking a company to install and maintain public toilets on city sidewalks. While such facilities are increasingly common in Europe, they are unheard of in U.S. cities. Moreover, San Francisco decreed that it could not afford to pay for the amenity it desired. Instead, the company that operated the toilets would be authorized to erect advertising on the street. JCDecaux USA, the winning bidder, proposed putting up 4.5 advertising kiosks for each toilet.

For years, cities have had privately managed bus shelters underwritten by ads. In San Francisco, some of this advertising was already on self-standing kiosks along Market Street. What made this deal different was the number of kiosks Decaux proposed and the considerable size of each one.

Many San Franciscans did not like the idea of selling the public right-of-way for advertising, no matter what the public benefit. There was concern about the scale and character of the kiosks; many people felt they would be too tall, block views and demean the city's jealously guarded sense of place. (The kiosks are 14 to 17 feet tall, depending on their "hat," and roughly four feet in diameter. The toilets have a floor plate of five by eight feet and are about eight feet tall.) There was considerable doubt about the long-term viability of the project; would the toilets really be taken care of? And some people said the deal was not fair: Decaux could make a considerable profit on the advertising; shouldn't the city share the windfall?

Decaux offered a standard toilet design and two kiosk designs, each with newsstands and public art designed specifically for San Francisco. The toilet design was reviewed and modified to meet accessibility requirements and aesthetic considerations. The kiosks were reviewed, too, for they were offered as "public service kiosks" on which there would be three panels, two for advertising and one for designation by the city. The city decided that two-thirds would be used to replace unsightly newspaper stands and the rest for public art.

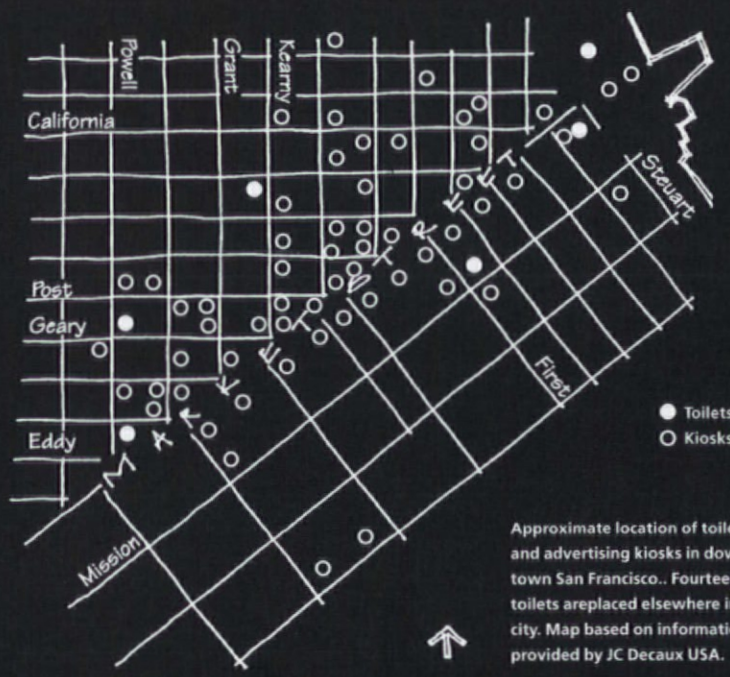
The placement of the elements also required scrutiny; each proposed location was subject to a public hearing. The planning and public works departments, working with other city agencies, developed design and placement guidelines to facilitate the installation of the toilets and kiosks while preserving citywide pedestrian goals. For

the downtown area, the guidelines were integrated with a streetscape design plan that was being developed concurrently.

The toilets have been installed throughout the city, but the kiosks are concentrated downtown, especially along Market Street. For advertisers, this concentration makes sense, but to many people, the kiosks have become the dominant design element on the street. This concern was mitigated somewhat by the quality of the design, although some designers in town aren't thrilled by the neo-Victorian motif (the city rejected the contemporary designs it was offered).

The installation of twenty toilets and ninety advertising kiosks, which took about a year, has been a guarded success. The toilets are used frequently, by everyone from tourists to the homeless. The maps on the toilet structures seem popular, too. However, the newsstand kiosks seem underutilized and the public art component has been underwhelming, primarily due to lack of city funds. The most controversial detail was Decaux's attempt to install a few rotating kiosks, which were quickly removed at the city's insistence.

Some people will always be opposed to change in San Francisco, but the general reaction to this initiative seems favorable. There is a sense that the vendor has delivered as promised, and that a well-designed, well-maintained streetscape is a fair trade for the presence of more advertising. In fact, the city is investigating whether the city should increase the number of toilets and exploring other street furniture improvements, including some soon-to-be-installed kiosks designed by Norman Foster, and a tantalizing technological solution to the vexing problem of proliferating newsracks.



Approximate location of toilets and advertising kiosks in downtown San Francisco.. Fourteen toilets areplaced elsewhere in the city. Map based on information provided by JC Decaux USA.

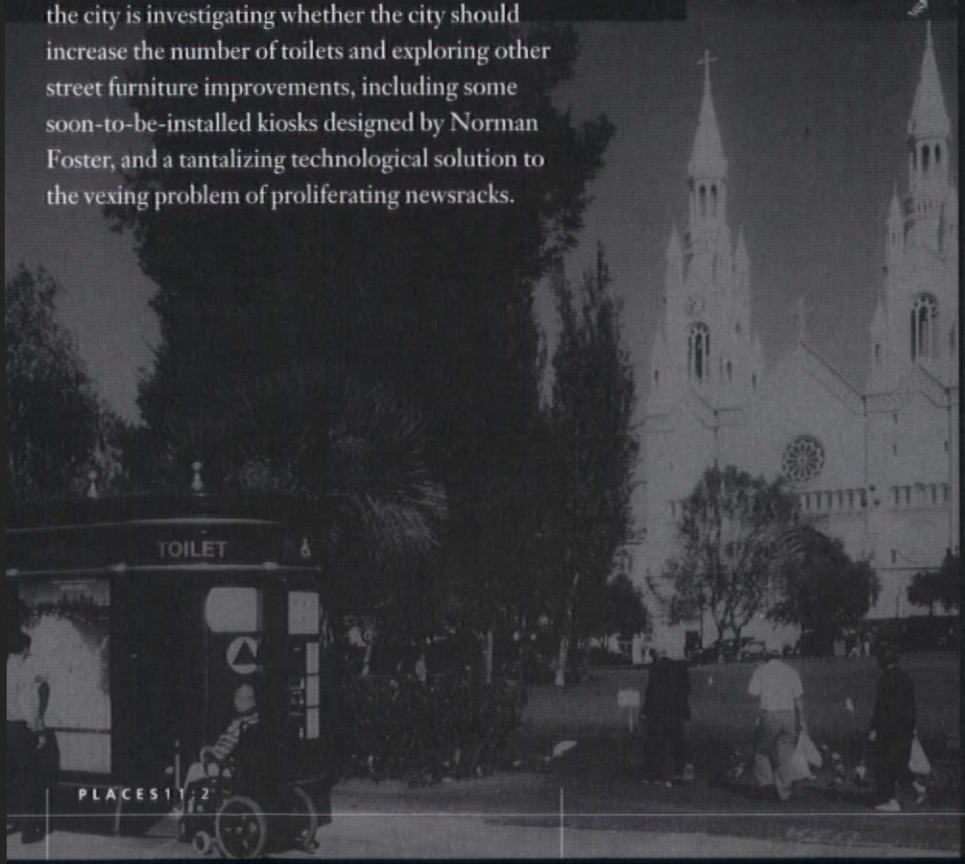
San Francisco's new toilets and advertising kiosks seem, on balance, to be a positive addition to the cityscape.

The scale of the kiosks is hefty, but it actually seems appropriate for the city's streets, and the dark color fades easily into the cityscape. The advertising images are dramatically overscaled, but since the ads are turned to face the street, this effect is diminished somewhat; pedestrians rarely encounter a perfume bottle or alluring model face to face. The backlit ads add a splash of color to the streets, particularly on foggy or overcast days; they cheapen the street no more than normal commercial signage (but could be more tasteful).

Undoubtedly, the kiosks are over-concentrated in places. At the foot of Market Street, they jostle with flimsy triangular frames that carry ads placed by a bus shelter company; sometimes they flank opposite sides of the street like pincers. Spacing all the advertising structures with a maximum of one to a block would make more sense.

When one encounters a kiosk, there is first a sense of surprise, then a feeling of recognition, since the kiosks have become familiar elements of the streetscape. One only wishes that each kiosk could be more localized, with more space for information about local history or activities. Instead of enclosing newsstands, they might include bulletin boards, neighborhood maps or information terminals. At least it would be good to see a wider variety of ads, and ads that relate to local businesses, not only national marketing campaigns.

—Todd W. Bressi

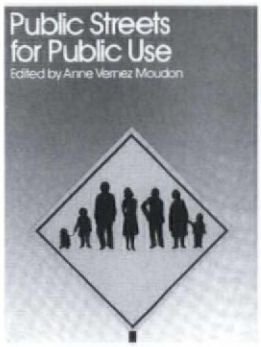


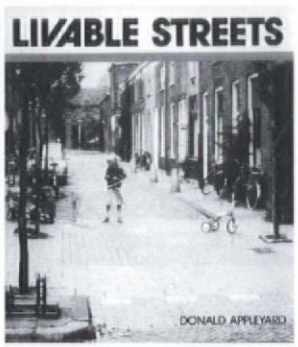
Those Books On Streets

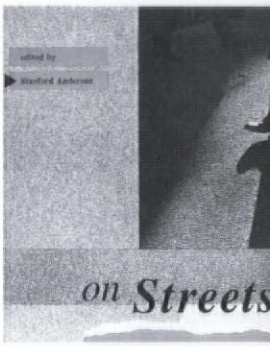
Eran Ben-Joseph

I fancy, that the civic renaissance which must surely come, which indeed has already appeared in its sporadic beginnings, will never get very far until we have awakened to a realization of the dignity of the street, the common street, where the city's children play, through which the milk wagon drives, where the young men are educated, along which the currents of the city's life flow unceasingly.

— Charles Mulford Robinson[1]







In 1911, Charles Mulford Robinson published a treatise on how to design civic streets. In *The Width and Arrangement of Streets — A Study in Town Planning*, he discusses the full spectrum of city street design, from general platting, width and influence on land value to the construction of curbs and gutters. Robinson stresses the economics of street construction; mentioning the burden that falls upon citizens when excessive and ill-platted streets are built.

Robinson's visions and practical solutions for street design were very progressive for his time and, in some ways, they parallel contemporary thinking. Unfortunately, this philosophy fell out of favor for much of the century. Only in the past few decades has the street been rediscovered as not only physical space but also a social and cultural entity.

This multidimensional interest in streets resurfaced in the 1960s, with books like Kevin Lynch's *The Image of the City* and Bernard Rudofsky's *Streets for People*. It was grounded in a renewed emphasis on the social function of streets, a conviction that streets should be designed for the benefit of the community, to serve a variety of functionsnot simply to move traffic. More recently, three books in particular have shaped thinking and research on street design: *On Streets*, *Livable Streets* and *Public Streets for Public Use*.

On Streets and *Public Streets for Public Use* assemble essays by writers predominantly from the design disciplines. They reflect both the complexity of streets and the diversity of concerns surrounding them, and they offer both philosophical and pragmatic approaches to discussing and designing streets. Their common thread is a refusal to reduce the role of streets to a single purpose, as engineering literature often does.

On Streets traces its roots to a U.S. Department of Housing and Development research project in the early 1970s. The agency wanted to develop a handbook with formulas for street designs and asked the Institute of Architecture and Urban Studies in New York to study the topic. At the time, urban renewal and major highway projects posed a great threat to the livability of many neighborhood streets. There was also a growing belief that street design should be an integral part of broader planning initiatives that addressed economic, racial and ethnic agendas. Such issues, the IAUS team felt, should be addressed by an all-encompassing analytical approach to studying streets, not prescriptive forumlas.

The result was a collection of historical and theoretical articles, with one case study that explores new concepts of street space through a redesign of downtown Binghamton, New York. While the original project may have involved

interdisciplinary work, the book lacks transportation planning and engineering perspectives; consequently, it has not directly affected professional practice. Nor did the Binghamton case study provide a major breakthrough. Its principal concept – that the spaces between buildings, rather than the building themselves, are the key generators of context – remains a novelty in urban design practice.

Yet, *On Streets* paved the way for further scholarly and professional work, decisively moving beyond the single-purpose outlook on streets and deepening our understanding of the true role of streets. The design-theory essays by Anthony Vidler, Kenneth Frampton and Stanford Anderson are some of the best ever written on the history of street design, and Anderson's bibliography on streets remains one of the most comprehensive to be found.

While the IAUS group centered its work on the relationships between urban form and street design, Donald Appleyard and Kevin Lynch, based at the Massachusetts Institute of Technology, concentrated on how people experience streets. Appleyard's previous books, such as *The View from the Road* (co-authored with Lynch), and his knowledge of traffic mitigation measures in the United Kingdom landed him with a project to look at responses to neighborhood traffic annoyances.[2] These studies led to the publication of *Livable Streets* in 1981.

This book's tremendous success and appeal can be attributed to Appleyard's pragmatic approach, with detailed descriptions of why and how to improve residential street environments. The integration of social and technical concerns, clearly illustrated examples and suggested planning guidelines appeals to experts, politicians, developers and lay readers. It is common to find this book in the offices of road and traffic engineers, next to unlikely companions such as the the American Association of State Highway Officials' *Design Guide for Local Roads and Streets*.

Appleyard demonstratates how the process through which street projects are initiated, developed and approved often ignores a social perspective-and that the prevailing emphasis on traffic performance to the exclusion of concerns for community livability has denigrated urban streets. He starts by building a case against the intrusion of traffic into residential areas and uses surveys of residents' perceptions to show that traffic volumes are negatively correlated with socializing, the perception of safety and sense of community. The simple graphics and quotes from residents give life to the statistics and create vivid images of traffic-related effects on the community.

Once Appleyard establishes the parameters of the problem, he proposes a framework for addressing it, including public action, local and regional traffic management approaches and mechanisms for public participation and education. Appleyard stresses the importance of residents' involvement in the planning process and of using cost-benefit analysis.

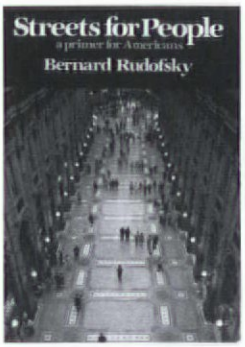
While *Livable Streets* offers general guidance, it stops short of providing detailed guidelines for traffic control or models of street design. Nevertheless, it provided a starting point for more technical research by various professionals. One of the most notable publications it inspired, the Insititute of Transportation Engineers *Residential Street Design and Traffic Control*, addresses many of the missing issues.

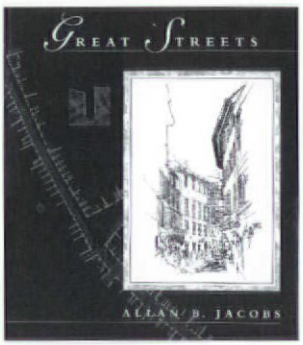
The interest generated by the book, as well as ongoing scholarly endeavors at various universities (MIT, Princeton, the University of California, Berkeley, and the University of Washington, to name a few), prompted conferences, research and wider interest in European experiences. In 1982, Anne Vernez Moudon initiated the "Streets as Public Property" conference in Seattle. The conference drew participants from all over the globe,

Notes

1. Charles Mulford Robinson, *The Width and Arrangement of Streets — A Study in Town Planning.*
2. This research produced a report, "Livable Urban Streets," and a working paper published as part of the San Francisco urban design plan.
3. See for example: *Making Choices, Skinny Streets* and *Making Streets that Work* — projects profiled elsewhere in this issue.

including Anderson, Appleyard, environmental psychologist Amos Rapoport and several pedestrian advocates from Europe. It concentrated on the practical design implications of streets as public spaces, contending that street design is the essence of urban design.





The conference resulted in the publication of *Public Streets for Public Use* in 1987. Citizens, public officials and designers were targeted as the main audience for the book, whose essays and case studies stressed the importance of wresting control of street design from the sole control of traffic engineers. The examples by Mark Francis in "Democratic Streets," where street design reflects public needs, the case studies of Robin Moore on children's behavior in the street's realm, and Eubank-Ahrens' observations of community activities after street redesign, all delivered a clear argument for rethinking street planning. The message was that streets belong to the citizens and should be used more creatively.

This is particularly apparent in the last section of the book, "Considering the Future." In it Richard Untermann's discussion on street standards and regulations is striking because of its contemporary relevance. The reality that most streets are designed as traffic channels and that street standards are set to facilitate easy traffic movement can still be seen in almost any contemporary subdivision development. Untermann's suggestions for modification and rethinking are yet to be answered.

The diversity of materials put forward by *Public Streets for Public Use* and the various issues raised by the essays rejuvenated work on street design. The book helped solidify ongoing research as well as generate new projects. Most notably, *Public Streets for Public Use* helped in realizing that the quality of personal life depends on good public spaces, particularly our streets. Such a recognition is finally trickling from designers to other disciplines, and more importantly to community groups and policy makers.

In recent years there has been a growing interest in quality of life issues and a recognition that they depend heavily on good shared spaces. This renewed interest is due, in part, to the advocacy of groups like the Congress on the New Urbanism and has been reflected somewhat in federal transportation funding.

This surge of public and government interest has rekindled discussions on street design strategies in the planning and transportation fields. Papers and technical publications are once again addressing the issues of street networks and layouts, street standards, guidelines and streetscape design. Organizations like Insititute of Transportation Engineers are establishing new guidelines for street design, and many local jurisdictions are revising their codes. Local governments and citizens groups are issuing handbooks on how communities can advocate for changes in street design approaches.[3]

This revival has been fostered by the publication of new books on streets, such as Allan Jacobs's *Great Streets* and *Streets and the Shaping of Towns and Cities*, which I co-authored with Michael Southworth. *Great Streets* advances a largely missed component in the study of streets — comparative

analysis – in the form of maps, plans, cross sections and numerical information. Jacobs's accumulation of more than twenty years of research and teaching on the subject have resulted in a unique topological survey of exemplary streets.

Yet, *Great Streets* is more than just a catalog. It is a vivid reminder of the danger in losing those qualities that make streets society's quintessential common space. Jacobs' book represents, in part, a nostalgia for a condition of urban life that was common before the institutionalization of street codes and standards, when street design was a truer reflection of a full range of the public's wants and needs.

The rigid framework of standards and regulations imposed on street design over the last sixty years have stifled innovation in urban and suburban environments. In *Streets and the Shaping of Towns and Cities*, we examine the history of these rigid criteria, explain who has been responsible for formulating them and explore the reasons why the design process has come to depend on them. We conclude by questioning whether existing spatial patterns justify adherence to street standardization, and arguing for a flexible design process that integrates social and technical needs and moves away from the expert approach to street design.

The underlying message of these books on streets is that the process through which we develop and approve street plans often excludes a social position and architectural design intentions. We need to re-examine not only the way the space of streets is allocated, but also way that responsibility for various aspects of street design are divided among different professionals, who may have different training and objectives. As we continue to uncover the complexity of the demands that are placed on streets, we must work harder to find a compromise between conflicting professional and bureaucratic approaches.

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Common Places: Anything but Simple

Todd W. Bressi

"Common places," architect Gianni Longo has written, "bring people together for the face-to-face contact that is essential for a healthy society." But with the explosion of telecommunications media, are these everyday interactions — and the places that support them — all that necessary anymore?

This is the challenge that RUDC chair Don Miles, FAIA, an associate partner with Zimmer Gunsul Frasca, issued at the committee's forum in San Francisco last March. But the forum left no doubt that San Francisco's common places are still going strong. If anything, the range of common places in the city is becoming increasingly diverse, he demands on them are ever more complex, and their design ever more sophisticated.

The forum considered a diverse landscape of common places: traditional parks like Washington and Union Squares; reinterpretations of historic types, such as the new Embarcadero boulevard; inherited places, such as the Presidio, the huge in-city military base that is becoming a national park; and integrated networks, such as the streets and squares proposed for the Transbay Terminal redevelopment area. These places range in scale from the most intimate community playground to celebratory, civic spaces that are central to the city's identity to regional networks that stretch around the bay and along the oceanfront. Designers must be attentive to how common places are woven into this wider landscape.

The forum also probed the complexity that can be found within each one of these spaces. Even the most straightforward common place, such as a neighborhood green like Washington Square or a regional street like the Embarcadero, is a space of many uses, with many constituencies and countless nuances in its design and occupation. The challenge for designers is to negotiate the complicated, often contentious, process of embedding common places with the ability to respond to this diversity.

The forum revealed the ways in which common places are in flux. A city's common ground may start with a grand gesture, like platting streets or subdividing blocks, dedicating a green or a civic square, or preserving a valued landscape. But over time, common places require constant tinkering, adjustment and, sometimes, reinvention. The richness and complexity the forum observed in San Francisco's common places reflects the richness and complexity of the city these places serve, and the acquired reverence San Franciscans have for the places they hold in common.

Perhaps the greatest revelation of the forum was the remarkable amount of change San Francisco has seen in the last decade. The 1989 Loma Prieta earthquake unleashed a chain of events — from the razing of the Embarcadero Freeway to the closure (for seismic retrofitting) of many of the Beaux Arts buildings in the civic center — that have triggered subsequent urban design projects. Other legacies of the 1980s are coming to fruition: the collapse of the office market ironically jump-started the long-delayed Yerba Buena Gardens mixed-use redevelopment project; projects to move the main public library and the Museum of Modern Art have resulted in architectural icons that are catalyzing broader changes in the public realm.

Links in a Regional Chain

Perhaps the most remarkable changes have occurred along San Francisco's waterfront. The earthquake so damaged the Embarcadero Freeway — an elevated, double-deck struc-

ture that cut off most of the downtown from the waterfront – that the city and state finally agreed to tear it down and replace it with a boulevard. In 1988, the military's base closure program targeted the 1,500-acre Presidio at the northwest corner of the city; unlike most military bases, the Presidio has been transferred directly to the National Park Service, thanks to special Congressional legislation passed in the 1970s. As a result, the city has opened to the bay in dramatic, unexpected ways and is forging its place in emerging regional open space networks.

One of first steps was to redesign the Embarcadero, a street that runs from Fisherman's Wharf to China Basin, into a formal, six-lane boulevard lined by palm trees and incorporating a new light rail line in its median. Neighborhoods are now trying to strengthen upland connections to the reopened waterfront; "a lot of the piers have come to be known by the streets that lead into them, not their numbers, a sign that people are weaving them into the city," urban designer Boris Dramov noted. Public spaces like Justin Herman Plaza (at the foot of the Embarcadero office-retail complex) and Levi Plaza (part of the Levi-Strauss company headquarters) no longer need to turn away from the port.

The most important upland connection is at Market Street, the city's main street, which terminates at the Ferry Building, one of San Francisco's most cherished landmarks. The key decision was to filter traffic that used the freeway through the downtown grid, rather than force it along the new boulevard or into a tunnel, explained Dramov, whose firm, ROMA, has worked on the design. Now the boulevard rights of way separate and encircle a new Ferry Plaza, which will be "the crossroads of the city," he said.

The success of this connection will depend on the treatment of adjacent spaces, Dramov said. Justin Herman Plaza is to the west, and an open square is to the south. "We cannot think of these as one large space, they will work only if you think of them as a series of linked places that, when combined, should be the living room of the city," he said. Thus Justin Herman Plaza, already a stage for formal events and informal performance, might be refined as a terraced amphitheater with the Ferry Building as a backdrop. The space to the south could be used for active recreation.

The reuse of the Ferry Building will also be important; ferry activities and connections through the building to the terminal, pier and waterfront need to be clarified (the city's port agency is issuing an RFP for its ground floor). One proposal – relocating a farmers' market now held at Ferry Plaza – demonstrates the fractal nature of common places. Leon Sugarman, AIA, explained that the building and the spaces around it offer a variety of settings – street edge, interior corridor and bays, bayside promenade and pier. Various market activities – cafes, retail stalls, produce stalls and a wholesale area – would be matched to appropriate settings, creating a range of physical and sensual experiences.

These improvements are part of a chain of transformations that will make the Embarcadero a diverse common place. South of Market Street, a new public pier is open, a new waterfront park serves the growing South Beach community and a baseball stadium is planned. To the west, the reawakened Embarcadero will connect to established common places – Fisherman's Wharf, Aquatic Park, Fort Mason, Marina Green, the Presidio and the Golden Gate National Recreation Area. This newly stitched together waterfront is an example of how common grounds are most powerful when they are related to the regional landscape.

This article reports on the spring, 1997, forum of the American Institute of Architects' Regional and Urban Design Committee, held March 13-16 in San Francisco. The next forum, which also will explore the theme of "common places," will take place in Chicago September 25-28. Call 800-242-3837 for more details.

AIA

Common Places and Compromise

For any place to survive, it must have constituents — people who are willing to activate it, monitor it, advocate for it, embrace it as their own. Common places, by their nature as shared places in a democratic society, must be claimed by a range of constituencies if they are to be successful. The design process is as much one of resolving physical questions as it is one of balancing various interests.

Quite often the constituencies that have claimed a place, and the interests they have staked, become evident through processes like charrettes or hearings. But Fred Kent and Kathy Madden, principals of New York-based Project for Public Spaces, argued that designers also need to hone their skills at assessing who inhabits spaces and how, and must apply those skills in their basic field research for any project.

Kent and Madden led a field observation exercise in which teams fanned out through the North Beach neighborhood, critically observing parks, street corners, alleys and pedestrian ways. Each participant interviewed users of these spaces and assumed an identity, such as that of a child, to imagine how well the spaces suited diverse kinds of people. In these spaces, at least, forum participants found that a series of small fixes would go a long way toward making those places more pleasant. One busy intersection at the corner of Washington Square Park, for example, is now controlled by a four-way stop; a traffic signal might cut down on the quick starts and reduce the noise that disturbs people in the park and sidewalk cafes.

Designing a new place poses a more difficult challenge. Constituencies must be identified and cultivated beforehand, and designers must help identify trade-offs and mediate compromises. Presidio landscape architect Michael Boland presented an elegant plan for reconciling the demands of preservationists, environmentalists and wind surfers in the redesign of Crissy Field. This waterfront wetland was filled by the military in the early twentieth century and turned into one of the nation's first air bases; it has since been used as space for large events and celebrations and most recently been claimed by wind surfers and people walking dogs.

Boland's plan includes a series of settings — a beach/parking area, tidal marsh, historic airstrip and bluff. Each is a careful balancing act; the tidal marsh, for example, includes carefully controlled access points so that schoolchildren can use it as an environmental education resource while placing the least strain on the biological resources.

One of the most contentious and long-running projects in San Francisco, the Yerba Buena redevelopment project, is finally bearing fruit. The recently opened cultural facilities and central open space, called Yerba Buena Gardens, emerged after contentious battles about whose interest the redevelopment would serve. "The day they opened, the press wrote, nobody needed a training manual, they knew how to use them," commented Helen Sause, the project manager for the city's redevelopment agency. In fact, the redevelopment agency has devoted great resources to establishing standards for the space and building a constituency of occupants and activities. It devotes great resources to cleaning the public spaces and having "security ambassadors" present; a special nonprofit group, the Yerba Buena Alliance, organizes some 90 special events in the gardens every year.

Designers can also be attentive to establishing a variety of common spaces, so that various groups can choose the settings that serve them best. Karen Alshuler, AIA (Simon Martin Vegue Winklestein), reported on redevelopment planning for the Transbay Terminal area; there, redesigned streets will be coupled with new interior block spaces to create a differentiated public realm.

Places Evolving Over Time

The earthquake has also presented new opportunities at San Francisco's Civic Center. Many of the buildings in the complex, perhaps the most fully realized Beaux-Arts civic

center in the U.S., were damaged and have been closed for seismic retrofitting. While this has resulted in a burst of construction, it has also cast the central plaza into decline and opened the question of how this City Beautiful-era space can be made a vital part of the city again.

San Francisco has built out its Civic Center patiently; new government or cultural buildings have been constructed in almost every decade. Last year the new main library opened, addressing complicated physical and social contexts. For example, two sides of the building face the formal Civic Center, another faces Market Street, which cuts by at an angle. To address both situations, and to encourage activity at street level, the designers (Pei Cobb Fried; Simon Martin Vegue Winklestein) wanted entrances on three sides; this made internal circulation complicated because libraries like to have one control point, according to Cathy Simon, FAIA.

The issue of how civic buildings activate public space will be faced again as the city turns its attention to redesigning Civic Center Plaza for the first time in forty years. Evan Rose, an urban designer with the city planning department, catalogued the problems with the space: pedestrian circulation is difficult, few constituencies have claimed the place, the elements in the plaza are a hodgepodge (a fountain and pool, bosques of olive trees, highway-style streetlights, vents for an underground parking lot) that undercut its ceremonial function. The forum brainstormed approaches to redesigning the plaza; observers commented that both the perimeters and center need attention. Since it is unlikely that the activity in the civic buildings will spill out vigorously into the sidewalks, designers should consider models like Pennsylvania Avenue and Bryant Park, suggested Marilyn Taylor, AIA.

San Francisco isn't even the most populous city in the Bay Area anymore (San Jose is), and forum participants wondered what the prospects for common places are outside the region's historic urban center. Gary Binger, Associate Director for Research at the Association of Bay Area Governments, a regional planning research organization, reported that the track record is mixed. Mountain View recently completed a new civic center whose park serves as a transition between a commercial main street that was rebuilt several years ago and surrounding neighborhoods. Walnut Creek has been requiring downtown developers to connect their projects to a network of pedestrian spaces that flow into the city's BART station.

Committee member Frank Spielberg remarked that the AIA chapter in Orange County, whose suburbs are of the same generation as Mountain View and Walnut Creek, has been giving awards recognizing excellence in "places in the public realm" for several years. "We have powerful Hispanic streets, all kinds of public places," he said. But he worried about California's rapidly emerging exurban development, particularly new cities in the Central Valley, where three to five million new residents are expected to settle in the coming decades. "There is a possibility of a new infrastructure for urban growth at a different scale than we have been talking about."

The forum did not probe this issue, but the underlying message is cautionary. Suburban common places like those emerging in downtown Mountain View and Walnut Creek may be important steps forward. But if San Francisco is an example, the most satisfying common places have a number of underlying strengths. They are products of a mature, diverse community, one that has developed a long history of both social and urban traditions. They are part of a network of public spaces that vary widely in their scale, function and the constituencies they serve, and at best are connected with regional landscape features. They are constantly evolving, always being reconsidered and improved by many actions, large and small. The greatest challenge and responsibility for designers, perhaps, is to cultivate these conditions; the prospects for building a common place from the ground up are poor, it seems, but the possibilities embedded in staying with those places are very rich indeed.

–Todd W. Bressi is Executive Editor of Places and teaches urban design at Pratt Institute.

The Real Cost of Freeways John O. Norquist

Fifty-seven years ago, Norman Bel Geddes, the father of the interstate highway system, issued a warning. "A great motorway has no business cutting a wide swath right through a town or city and destroying the values there," he wrote in his book, *Magic Motorways*. "Its place is in the country."

Would that Bel Geddes' admonition had been codified instead of the 90 percent federal highway funding share that pays for divided limited access roads that cities would never finance on their own. Highway contractors, state bureaucrats and pork-barrel politicians still work hand-in-hand to chop up cities with miles of high-priced concrete – confirming Bel Geddes' warning.

Many Milwaukee residents, business owners and municipal leaders are opposed to the highway lobby's latest plan to spend $1.32 billion to reconstruct a multi-level interstate interchange and add lanes to a 13-mile East-West stretch of Interstate 94 from the heart of the city, alongside city neighborhoods and through homes and businesses to suburban Waukesha County.

Milwaukee has been down this traumatic road before. In 1966, the same disregard for the fabric of urban life led to the construction of another highway, Interstate 43, right through 8th and Walnut, the city's African-American commercial and cultural hub.

Few thought twice about it. Certainly no one with power did. Lawyer and State Representative Lloyd Barbee picketed the first bulldozer in protest of what he called the "dirty ditch." But his action was futile, and the once-proud "Bronzeville," Milwaukee's little version of Harlem's 125th and Lenox, was removed without a trace, except for an annual remembrance in a nearby park. The Regal Theater, the Flame Night Club (where Duke Ellington once played after hours), and the tobacco shop and shoe repair with Representative Barbee's office above, are forever gone.

Milwaukee's Italian community, concentrated in the Third Ward just southeast of downtown, wielded more clout than Bronzeville. The Italians operated Milwaukee's still vibrant wholesale food district. So when the Wisconsin Department of Transportation (WisDOT) decided to construct another Interstate leg, I-794, through the Third Ward, the Italian residents resisted, at least for awhile.

Ultimately the supporters of "progress" prevailed, but not until WisDOT and the county agreed to place a monument to the demolished Church of Our Lady of Pompeii, which had been the spiritual center and chief landmark of the Italian community. Two years after the elevated freeway was built, the neighborhood had declined so fast that the city contemplated turning the remains of the Third Ward into a pornographic "combat zone." Happily, that plan failed, and today the Third Ward prospers, except for those portions next to the noise and smell of the freeway, where most buildings have crumbled or been razed for surface parking lots.

The lesson taught by the losses of these neighborhoods is that cities are devalued by the freeways meant to enhance them. Cities thrive on the mingling of ideas and cultures that, in turn, spawns innovation and builds our economy. The divisive physical design of freeways works against this valuable process.

Some argue that more freeways reduce congestion by moving vehicles faster. What they

fail to take into account is that freeways induce more and longer trips until so many more people drive that congestion and pollution become worse than ever.

Highway proponents argue, often successfully, that more roads are the only practical option; that rail cannot be considered as an alternative because it is rail is old-fashioned, is not flexible enough, costs too much and is too late, since urban sprawl is already the reality.

This ignores the fact that when roads become congested, buses stop too, whereas a rail transit system can move large numbers of people calmly and efficiently on its separate right-of-way. It gives this choice to a certain number of people who will change transportation modes immediately when transit becomes available. More important, people who have not yet developed transportation habits will have the opportunity to build transit into their lives. They can choose to live near a transit line, choose not to spend money on that second car, or choose the compact neighborhoods that transit tends to generate.

In most American cities, including Milwaukee, rail transit is gone, but where it still exists – Boston, Portland, Atlanta, San Diego and elsewhere – you'll find viable downtowns and lively neighborhoods.

Rediscovering the value of avenues, boulevards and streets is another alternative to freeway building. Unlike freeways, which only function to carry vehicles, an avenue adds value to the city. If the avenue is built to meet a variety of public and private needs, land values along and near it tend to increase. Milwaukee's Forest Home Avenue, the Bronx's Grand Concourse, L.A.'s Wilshire Boulevard and Chicago's Michigan Avenue have benefitted from great investment and impressive increases in property value.

"Freeways" are not only of limited use but are expensive and elaborate. Milwaukee's Marquette Interchange, designed in the 1950s and built in the '60s, cost $81.7 million to build (in today's dollars that would be $378.6 million). Rebuilding it to today's standards is estimated to cost up to $460 million – only 30 years after the "freeway" was constructed. The rest of the system needs to be replaced, too. So this gift of the federal government joins many other federal gifts that never stop costing.

ISTEA, assuming that it's reauthorized, should shift more money into rail, bus and other transit options that genuinely give all residents, visitors and workers real transportation choices. Cities and especially the low-income residents clustered in core neighborhoods need options that will help get them to jobs that are moving to the suburbs. Highway expansions paid for with federal funds that cater to suburban sprawl may doom the success of welfare reform if transit for the unemployed is not a top federal priority.

What cities need is choice, options and local authority to spend a fair share of federal transportation funds that will enrich cities and their surrounding neighbors. Portland and Toronto, with their balance of rail and roads, have shown us that Bel Geddes was right, and that it is not too late to look to him for guidance. But disregarding his wisdom will only fuel the futile attempt to build our way out of congestion, using the public's money to hurt cities, where much of that very money is generated.

–John O .Norquist, in his ninth year as Mayor of Milwaukee, is a board member of the Congress for the New Urbanism.

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The Environmental Design Research Associatoin and *Places, A Forum of Environmental Design*, are pleased to announce a new awards program that will recognize excellence in design research and in the design of places.

The purpose of the program is to recognize research and design projects that address human experience as a basis of well-designed places, with an emphasis on projects that demonstrate the transferability of research to design practice. The program will be open to the entire breadth of environmental design professions, and nominations will also be accepted from the public.

A formal announcement will be made, and application materials will be available, by late summer 1997. Submissions will be due in November, 1997. To be put on our mailing list for materials, please contact:

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Cities in Between

Suburban edges and urban cores are the continued focus of design attention and capital reinvestment. But what of the areas in between, the transitional areas around downtown and older suburbs that have been left behind? These areas, many of which have been left to fend for themselves, have been providing some of the most interesting paradigms for urban redevelopment. They have been changing incrementally, becoming more socially and economically complex – and perhaps more sustainable – than other parts of urban regions.

We are seeking case studies of "cities in between." Articles should examine the infrastructure, design, regulatory and community frameworks that have set the parameters for urban innovation and regeneration. They should reflect on both continuity and transformation – how community traditions and physical legacies are extended, and how innovations that meet current social and economic needs are sparked and take root.

The deadline for submissions is October 15. Please send article drafts to:.

Robert Gonzalez, Assistant to the Editor, *Places*
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