SUBURBAN URBAN PATTERNS:
THE FUTURE FORM OF SUBURBAN GROWTH CORRIDORS

by

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ABSTRACT

This thesis seeks to identify the need for a new set of urban design principles to be used in the future design of suburban growth corridors and to examine the potential for their implementation.

The combined impact of the federal highway program, lenient suburban development codes and a shift in the American economy from a manufacturing to a service economy is currently being realized in metropolitan areas across the country. The South and West present a particularly clear picture of the resulting rapid suburbanization.

Specifically, one resulting urban form is the suburban growth corridor. Once thought of as rather unremarkable suburban strip development, suburban growth corridors have emerged as an urban form with a unique set of characteristics. As a predominant urban form along metropolitan interstates and beltways, growth corridors deserve a closer look.

The basis of this thesis is a discussion of traditional urban design issues and their revision for application in the development of suburban growth corridors. Three scenarios are tested against the normative principles.

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CHAPTER I: 
THE SUBURBAN GROWTH CORRIDOR PHENOMENON

STATEMENT OF THE ISSUES

For over one hundred years, agricultural land has been transformed by land developers utilizing public services and public transportation to raise land values and attract settlers. The result has been "the suburbs." One word has been used to describe locations and populations ranging from small residential developments clustered along a railroad line to today's suburban communities which often ramble over several counties, accessible only by automobile. Despite geographical differences, areas characterized as suburbs have had four unique characteristics in common: 1) they are primarily inhabited by affluent and middle class residents 2) who live far from their work places 3) in homes that they own 4) in the center of yards that by urban standards are enormous. (Jackson, 1986, p. 6)

During the past decade that description has begun to change in some very significant ways. Suburban populations have begun to diversify and the range of available housing types has broadened. Perhaps the change with the greatest impact on the future form of the suburbs has been the distance between residents of the suburbs their work places. The offices are moving to the suburbs.

The past five years have brought an unprecedented boom of office development to the suburbs. By the early 1980s, suburban office space surpassed that in central business districts for the first time. The total share of office space outside central cities jumped from 25 percent in 1970 to 43
percent in 1980 and 57 percent in 1984. (Cervero, 1986a, p. 389)

This massive shift of employment centers from central business districts to the suburbs has brought suburban communities into a new stage of development—intense mixed use developments in the suburbs have been touted as the wave of the future. With residential areas of suburban communities largely developed and support uses (shopping centers, schools and churches) in place, a new type of suburban growth has begun.

The rapid pace of suburban office and commercial development has not allowed time for comprehensive planning efforts. As a result, the form of suburban growth corridors presents several challenges in the next decade. Traffic gridlock is increasing as office and commercial development strains roadway systems intended for residential use. Multiple ownership patterns, reinforced by zoning and building controls, create rows of free-standing structures surrounded by acres of surface parking. Conflicts arise between the multiple municipalities and agencies with jurisdiction over these "suburban downtowns."

Residents, city officials and administrators and developers all know that suburban residential communities are being transformed into cities. However, as Christopher Leinberger, a California real estate consultant has pointed out: "Nobody has an image of what that city should be." (Fulton, 1986, p. 14) Until recently, suburban form has been a very flexible form. The low density and relative large area of vacant land has allowed changes as demanded. If a development was poorly designed or constructed, there was always more land available to try again.
Now the suburbs are filling in—not just with expendable houses and shopping centers, but with office towers and corporate headquarters. The structures being constructed are much more permanent and will have long reaching effects on the future quality of life in the suburbs. Reconciling the image of the suburb, which has made suburban locations so desirable, with the resulting urban environment is a critical issue for the future.

Suburban design had its beginnings in the offices of some of the nation's most talented designers. Often, great thought and care went into the design of the suburbs developed at the beginning of the century. However, changes in the development process changed that. Mass production development techniques left suburban development to the ordinary practitioner and speculative builder. (Stern, 1981, p. 6) J. Thomas Black, staff vice-president of the Urban Land Institute, believes that "we've been ignoring a major part of our urban landscape. There is a tremendous bias among urban designers, who don't like to admit that the suburban centers exist. There's a real shortage of concepts as to what the alternatives are." (Fulton, 1986, p. 14)

The intent of this thesis is to examine the possibilities for what Robert Cervero has called the "new suburban design template" and, more specifically, the design template for suburban growth corridors. Recognizing the need for improvements to the urban form of suburban growth corridors, I will examine the institutional and organizational structures controlling the urban form of suburban growth corridors as well as existing suburban urban patterns and potential improvements to these patterns.
A DEFINITION OF SUBURBAN GROWTH CORRIDORS

The general phenomenon of high density suburban office and commercial development has been given many names: suburban growth corridors, megacenters, suburban activity centers, urban villages and suburban downtowns. The terms suburban growth corridors and suburban centers will be used in this paper to describe that phenomenon.

A recent nationwide survey conducted by the Urban Land Institute (ULI) identified 182 suburban activity centers in 16 regions of the United States. The survey defined activity centers as projects with at least three million square feet of floor space and 5,000 employees. These centers cover a broad spectrum of developments. Many are as large as 30 million square feet and house over 100,000 employees. (Dunphy, 1986, pp. 32-35)

The results of the ULI survey point to the broad range of suburban development types, each with very different characteristics, each requiring very different responses. Robert Cervero has divided suburban employment centers into three basic types: 1) campus-style office and business parks; 2) clustered towers and urban villages; and 3) freestanding independent office structures. (1986a, pp.42-49) The first two, while certainly not problem free, are typically master planned developments under single ownership. The regulation and implementation of urban design policies in these environments is not exceptionally difficult. The third category, freestanding independent office structures, presents a unique challenge.

My research is focused on those suburban growth corridors which meet the following criteria of location and characteristics.
Location
Suburban growth corridors of the South and West United States are the general topic of this thesis. Although suburban growth corridors are located across the country, the rapid pace of development in the South and West presents a unique situation. Planning and development decisions have been made in rapid sequence, often before comprehensive municipal planning has taken place. In addition, the topography of the South and West has had a unique impact on suburban form. Developments have sprung up on former ranch and range land, land which has little if any topographic features which dictate the form of development. The resulting urban patterns are formed almost entirely by people.

The definition of suburbia has become more and more vague and distorted as suburban development has taken on many different forms. In fact, the U.S. Census Bureau does not have a specific designation for suburbs. The Bureau categorizes parts of a standard metropolitan area (SMSA) as "central city" and "not in central city." For the purposes of this thesis, suburban will refer to locations five or more miles from a regional central business district (CBD). In many cases, suburban areas lie within the city limits of metropolitan areas. Others are incorporated areas adjacent to major cities.

The boom of office and commercial development in the suburbs was facilitated by the construction of beltways and highways. I am particularly interested in suburban growth corridors which developed because of their immediate proximity to highways. The dominance of the automobile is most strongly felt in these situations, emphasizing the need for a resolution of conflicts between pedestrians and automobiles.
Characteristics

The term "growth" in the name suburban growth corridor denotes the constantly changing nature of these areas. Located in the midst of communities which are rapidly growing, the composition of a growth corridor is constantly changing.

Suburban growth corridors can be divided between those developed under the ownership of one entity and those which are composed of a patchwork of landowners. My interest lies in the development of growth corridors composed of many different property owners. Methods of organization and control in such areas are much less straightforward than single ownership developments and offer a particularly interesting challenge.

Suburban growth corridors typically fall under the jurisdiction of many different levels of government and types of agencies. In addition to the presence of several local municipalities, a transit agency, state highway authority and county government are usually involved. In addition, private associations, such as Traffic Management Associations also have a hand in guiding development. The future orchestration of all of these entities is critical to any changes which might be made in suburban urban patterns.

Although there is still a substantial amount of freestanding office development located in what may best be described as exurbia, the more immediate challenge comes from office and commercial development which is located in the midst of residential communities. The relationship between the growth corridor and adjacent residential areas and the role that the growth corridor plays in the lives of surrounding residents is currently an important issue in many communities.
THE CATALYSTS FOR SUBURBAN GROWTH CORRIDOR DEVELOPMENT

James Hughes and George Sternlieb have cited three factors instrumental to the boom in suburban office development during the past decade: economic and technical changes; the regulatory framework; and the interstate highway system. (1986, p. 32)

Economic and Technical Change
The service industry has dominated the American economy since the early 1980s. The shift from manufacturing to service industries was dramatic—the number of industrial jobs has declined from one third of all jobs in 1920 to one sixth today. (Leinberger, 1986, p. 45) In turn, anticipated office space demand to accommodate this shift has dominated the real estate development market.

In addition, the move to the suburbs has been facilitated by the increasing sophistication of office communications. It is no longer necessary for back office functions to be performed in the same location as executive offices. The freedom of advanced telephone and computer communications has changed the spatial relationships within and between companies. The initial move to the suburbs was by back office divisions of corporations. They have been followed by the move of middle and top management.

Regulatory Framework
Federal tax and regulatory policies have directed real estate investors to nonresidential development. These policies have included: the 18-year depreciation schedule, special tax treatment for syndications and limited real estate
partnerships and financial deregulation allowing savings and loan associations to finance nonresidential development.

On a more localized level, suburban zoning and building codes have encouraged development by allowing construction of low-rise bulky office buildings which are less expensive to construct. In some cases, suburban municipalities have offered relaxed standards as incentive to developers. In exchange, the communities have received a broadened tax base.

**Interstate Highway System**

Hughes and Sternlieb point out that the final impact of the federal highway program is being realized in the development of suburban growth corridors. The initial impact was felt in the 1950s and 1960s as residential communities of commuters moved to the suburbs. Intended as a system to bypass metropolitan areas, interstate highways are now the anchors of intensive development.

The combined impact of the highway system and the shift to a service and information based economy has precipitated a shift in modes of transportation. The private automobile and trucking companies have replaced the trolley and box car. Both people and goods are no longer tied to terminals and train stations.

**THE ROLE OF SUBURBAN GROWTH CORRIDORS**

Metropolitan areas have expanded to the point that they are not easily comprehended. In reaction, people have organized their lives within smaller segments of the city.
High intensity suburban development has been identified as the new downtowns. While it is tempting to consider high intensity suburban growth corridor development as the suburban equivalent of the traditional central business district, it is difficult to compare the two. The two share a common function as employment centers, but they differ dramatically in their size, form and density.

Is it possible for corridors of buildings to serve the same role in suburban communities as central business districts have in cities? Or is there a new urban environment being created?

Bisected by major highways, growth corridors are not destinations in the same sense as traditional downtowns. It is possible to drive through a corridor without traveling at less than 55 mph. These are places to drive through on your way to somewhere else, stopping only when specific business is required.
When a visit is made, it is possible to drive to an office building, park in the building's parking structure and walk directly into the building without ever having any interaction with the rest of the corridor. A visit to a traditional CBD is a much different experience, requiring the visitor to walk through the urban landscape.

Individual elements of suburban growth corridors are reminiscent of downtowns. In the suburbs, the social functions of the downtown appear to have been adopted by neighborhood shopping centers and regional shopping malls, both elements of the growth corridor. Commercial developers consider three story regional shopping malls to be the equivalent of a three city-block walk. (Muller, 1976, p. 31) This analogy illustrates the difference between a five mile corridor of development which includes a shopping mall and a one square mile downtown which has shopping integrated with offices and entertainment.

Although we may draw correlations between the suburban growth corridors and traditional downtowns, there is no model for the suburban growth corridor. The scale presents a different urban environment. As metropolitan areas grow into multi-nodal networks, the growth corridor presents a new urban form with a new regional role.

THE ORGANIZATION OF THIS PAPER

The remaining chapters of this thesis present a view of both the existing and the future form of suburban growth corridors. Chapter II, "Rethinking Normative Principles for Urban Form: the Suburban Response," provides a foundation for
understanding urban design issues unique to these areas. The third chapter examines one corridor in particular, Parkway Center in Dallas, Texas. The fourth expands on the description outlined in this chapter and explores the typical spatial organization of growth corridors. Chapter V completes this examination of suburban growth corridors with specific recommendations for three growth corridor scenarios.
CHAPTER II:

RETHINKING NORMATIVE PRINCIPLES FOR URBAN FORM:
THE SUBURBAN RESPONSE

THE NEED FOR NEW URBAN DESIGN CRITERIA

Before prescriptions may be made for improved suburban urban form, some idea of what constitutes good suburban urban form must be developed. Kevin Lynch defined a normative theory as a coherent set of ideas about proper city form and its reasons. (1981, p. 73) These ideas are necessary as a rational ground for deciding what a city should be. (Lynch, 1981, p. 99) The following set of normative principles has been developed as a point of comparison to be used in developing recommendations for the future form of suburban growth corridors. These principles provide a means of expressing qualities which should be fostered in growth corridors.

Important to consideration of ideas for future suburban urban form is the definition of urban design. The term urban design used in this paper refers to not just the appearance of the built form, but the entire environment. For example, the arrangement of landscape elements and the facades of buildings are important aesthetic considerations. However, equally important is the climate of a place. Ambient qualities such as the heat of sunlight (ever present in the South and West) and the impacts of traffic congestion should also be considered.

This new urban form, suburban growth corridors, requires that we rethink our conceptions of an urban environment. As
discussed in the previous chapter, suburban growth corridors are not the same as central business districts and other urban environments which we have used in the past as our measure for good urban design.

Since the 1960s, both the practice and institutional regulation of urban design have been the subject of great investigation. Practical and theoretical work have resulted in established criteria for good urban design.

Six basic urban design issues are of particular interest in suburban growth corridor development. The following descriptions of each issue outline traditional considerations and the design principles appropriate to suburban growth corridors. Each description is followed by the means of testing successful implementation of the principle, if it should be tested. While ability to test successful implementation does not necessarily determine their validity, it is helpful in beginning to think about how to take action. Specific applications of these principles are presented in Chapter V.

THE RELATIONSHIP OF EMPLOYMENT AND HOUSING

A mix of employment and housing offers a variety of benefits. Urban design professionals have long advocated the integration of housing in urban settings. However, while housing in suburban growth corridors may solve some problems, the concept is not as easily applied in growth corridors and is not always appropriate.
Traffic congestion is probably the single most serious problem faced by suburban communities. Just as in their central city counterparts, gridlock creates chaos in suburban growth corridors as employees dependent on automobiles struggle to get to and from work. Just one of the many solutions to suburban traffic congestion is the provision of housing close enough to places of employment to reduce the need for driving. Studies have not proven that the provision of housing in suburban centers will alleviate traffic congestion. However, the opportunity for reduced traffic congestion should not be overlooked.

Another problem faced by central business districts is also a problem in the suburbs. After the office workers go home at night, the area is virtually devoid of activity. A more diverse range of activities might ensure that the hotels won't be the only locations of activity after dark.

Opportunities for multi-family housing will be especially important as suburban single family residential property prices exclude more and more of the people who work in suburban growth corridors from living in the area. Corporations have found a generous supply of clerical workers in suburban housewives. And, of course, suburban growth corridors are ideal locations for corporate executives. But the suburban growth corridors are inaccessible to lower income workers. Hotel maids and office security guards must often travel great distances from homes located near the central city downtown, often via long bus rides. Suburban communities have changed dramatically from the post World War II homogeneity for which they are infamous and populations are increasingly diverse. However, there is still a very limited supply of low and moderate income housing available—particularly in the areas attracting employment centers.
All of the above situations point to the apparent validity of integrating housing into suburban growth corridors. However, for economic, environmental and functional reasons, the concept is only partially applicable to suburban growth corridors.

The intensification of development which will bring housing will also be the catalyst for increased prices. Without strict requirements for housing, it is unrealistic to depend on growth corridor development to provide any housing, let alone affordable housing. This problem is exacerbated by the fact that suburban communities are historically the most reluctant to deal with affordable housing.

Integrating housing into suburban growth corridors presents some very different urban design considerations from other urban environments. The very terms "highway" and "housing" indicate a conflict. Neutralizing the impacts of an eight lane highway on residences is not possible. Locating housing adjacent to an eight lane highway goes beyond the traditional urban design principle of mixing housing and employment and is not appropriate.

Perhaps the most important element to consider is the functional relationships between uses. The segmented arrangement of uses in suburban growth corridors is much different than the integrated functions of more traditional urban environments. Placing compartmentalized suburban uses adjacent to one another does not create the same sort of environment. Creating artificial relationships between residential and other uses will not guarantee a dynamic urban environment.
In order to maximize the benefits of integrated housing and employment while avoiding the problems, housing should be located adjacent to suburban growth corridors. This suggests that growth corridors should be considered in terms of primary and secondary areas, the primary area being directly adjacent to the highway and appropriate for office and commercial development. The secondary area should be removed from the highway but adjacent to the primary area.

The test of successful mixing of employment and housing should compare not only the number of workers to the number of residents directly adjacent to a growth corridor, but also the number of single family residences in the surrounding areas to the number of multi-family residences in the corridor.

PEDESTRIAN AND VEHICULAR SYSTEMS

Traditional urban design principles are very concerned with the provision of a pedestrian supportive environment. In contrast, suburban growth corridors have been designed almost exclusively for the automobile. Located at the intersections of highways, these areas accommodate the automobile in every way. Environments have been created which hinder, if not prohibit, pedestrian activity. For example, although restaurants are generally in abundance, a quick walk to lunch is usually impossible. While the distance may be short, such a walk would probably involve crossing major thoroughfares or a highway interchange without adequate signals and crosswalks.

Leon Krier has hypothesized that "the social and cultural complexity of a city has necessarily to do with its physical and structural complexity and density."
should be as small in length and width as is topologically viable; they should form as many well defined streets and squares as possible in the form of a multi-directional horizontal pattern of urban space. (1982, p. 43) His hypothesis highlights the primary difference between suburban urban and traditional downtowns--suburban growth corridors have been scaled to the car, while central business districts accommodate the pedestrian.

In addition, traditional downtowns have been served by a wide variety of transportation modes. Employees are discouraged from driving private automobiles by the lack of affordable parking spaces. Krier has also noted that "the 'form follows function' principle has generated building types without taking the city into account. Buildings have been shaped as isolated objects and architects have been trained to organise single entities." (1984, p. 21) Parcel-by-parcel developments have provided acres of surface parking. With pedestrian connections between buildings and between buildings and bus stops almost nonexistent. When walkways are provided, pedestrians must walk great distances just to traverse the parking lots.

Interaction between users of an urban environment is a valuable quality which should be encouraged in growth corridors. As noted above, traditional opportunities for people to share urban spaces are not necessary when people move directly from the parking facility to their destination. New spatial arrangements are needed to provide these opportunities.

Because the dominance of the automobile leads to safety problems as well as an unattractive environment, elimination of conflicts between automobiles and pedestrians is of utmost importance. However, improvements to pedestrian environments
in suburban growth corridors must be balanced by an equal focus on the automobile. Vehicles are not, and should not be, easily dismissed in an environment which found its very reason for existence in highways. Rather than mimic the pedestrian environment successful in traditional urban design settings, a combination of pedestrian and vehicular systems should be implemented. Clearly defined pedestrian and vehicular zones are needed. A rapid transition must be made from a high speed roadway to a parking lot. Designs should address that transition and provide environments scaled to large volumes of vehicular traffic and separate environments scaled to pedestrians.

Pedestrian scale can be tested at two scales: at the site specific scale and the regional scale. The site specific scale is the easier of the two to handle—the size and shape of public areas, the physical relationship between buildings and the provision of a pedestrian-related streetscape are tests which can be monitored. The regional scale presents a more difficult challenge. Determining the pedestrian scale over a broad region is a function of many different tests. It requires an examination of the roles of various forms of transit and the pedestrian, the size and scale of blocks and plazas and that general quality which Kevin Lynch called the "sense of a region." (1981)

A VISUALLY COHESIVE ENVIRONMENT

Kevin Lynch coined the term "imageability" which he used in the following context: "A highly imageable . . . city . . . would seem well formed, distinct, remarkable; it would invite the eye and the ear to greater attention and participation."
What are the attributes of a suburban growth corridor that would draw us to visit and participate? The very name suggests an uninviting environment, a strip of buildings unrelated to one another and their visitors.

While traditional central business district architecture features compactly arranged high rise structures, the architects of suburban growth corridors are still struggling to settle on a typical form. Some suburban building codes limit the height of structures but allow substantial floor area ratios. Others allow tall buildings which are often out of context with the surrounding community. Current codes promote scattered buildings, each surrounded by its own sea of parking spaces. Developments turn in on themselves rather than opening out toward adjacent projects. The problems of individual structures are amplified when the visual character of the corridor is taken as a whole.

An array of uses adds to the jumble of building types: there are hotels and motels, shopping centers and malls, offices and parking garages with car dealers and apartments mixed in. The result is often visual chaos. While it is the variety of structures and architecture which make an area interesting, it also has the potential for creating an environment which is confusing and offensive.

In competition with other major suburban activity centers, suburban growth corridors are a significant disadvantage. Single-ownership master planned environments offer coordinated landscaping, adequate transportation facilities and infrastructure--all features which are usually lacking in a suburban growth corridor. (Lockwood, 1986, p. 122) As many different types of suburban activity centers emerge as a regional network, the regional perceptions of a corridor will become increasingly important to its success.
Traditional means of creating a cohesive image must be adjusted to the scale and pace of suburban growth corridors. For example, visual organization can often be aided greatly by establishing boundaries, gateways and edges. This is true in growth corridors; however, the means of establishing those elements should be appropriate to the individual scale and speed of a corridor's spine.

For example, where uses along the corridor conflict with the surrounding community, boundaries should be established to discourage sprawling strip development. Where there is no conflict, boundaries should be softly defined. Similarly, gateways to a growth corridor are important when the contained uses are distinctive and important on a regional scale. Other corridors do not need the announcement of arrival which a gateway provides.

There are three textures, or degrees of scale, which should be considered. At the pedestrian scale, streetscape elements are of particular importance. Site design and layout is of concern at slower vehicular speeds. And building mass relationships are significant at high vehicular speeds.

Visual cohesiveness is similar to pedestrian scale in terms of our ability to measure and define it. Specific architectural and urban design controls provide tests which can be monitored by public agencies and architectural review boards. But our ability to control the environment must not become so regimented that the result is a perfectly arranged and designed development. An overly organized and orchestrated development may be worse than a chaotic environment.
THE RELATIONSHIP TO SURROUNDING COMMUNITIES

Traditionally, urban designers have advocated buffers between high density development and low density residential areas. Surrounded by industrial buildings and high density apartments, downtown office and commercial functions and traffic have been separated from single family homes. In contrast, suburban growth corridors are often directly adjacent to single family homes--creating conflicts between the two. Neighborhood buyouts have almost become a matter of course in the development process of suburban growth corridors and suburban homeowners are faced with the very urban atmosphere which they moved to the suburbs to escape.

Even if a corridor is not adjacent to residential areas it is usually flanked by strip development, making it hard to discern where the corridor begins and ends. Where this occurs, the boundaries between residential and commercial areas need to be clearly defined.

In addition, a suburban growth corridor may or may not be an integral part of the community in which it is located. Located directly on a highway which is on the fringe of the community, growth corridors are often considered to be separate from the day to day life of the community. The size and composition of a corridor determines whether it has a local or regional orientation. In an effort to capture as large as tax base as possible, many suburban communities have allowed intense development along their highway frontage. Physically unrelated to the residents of the community, this activity has gone unnoticed until tall buildings and traffic congestion have encroached on residential areas. As
development has intensified, serious conflicts between residents and developers have erupted.

Donald Appleyard identified an important concept in the interpretation of technical planning and environmental decisions. Such actions are not only value-based, but also identity-based. Physical planning decisions can, and frequently do, threaten the identity and status of certain groups while enlarging the powers of others. The environment is divided into "ours" and "theirs." The question of whose territory is being invaded, who the insiders are, and who the outsiders are is one which is continually evolving. (Appleyard, 1979, pp. 143-153) As suburban growth corridors expand and intensify, developers and residents will need to resolve the boundaries of their territories.

Testing the relationship between suburban centers and surrounding residents is perhaps best quantified by the number of automobile trips between the two areas. A less objective measurement is a survey of the types of businesses and services offered in a suburban center. A center which provides services to the neighbors as well as office workers and visitors probably relates much more strongly with the surrounding neighborhood. A more ambiguous concern, testing the image of a growth corridor is not as important as keeping the concept in mind while making decisions. Images are vague and often fleeting.

**SIGNS AND SYMBOLS**

In examining the Las Vegas strip Venturi's design studio asserted that "the sign is more important than the
architecture." (Venturi, 1978, p. 13) They found that, in Las Vegas, if you take the signs away there is no place. Large bold signs communicate to travelers on the highway. This is partially true in suburban growth corridors. Car dealers and shopping centers, in particular, rely on large signs to identify themselves. The buildings behind the signs are often rather unremarkable.

For other types of buildings in growth corridor it might be said that the building is the sign. Pink granite, blue reflective glass and black glass are signposts for the traveler to an office building in a suburban growth corridor. Directions are given first by highway exit and then by building description. Rarely are office building names displayed in a way which guides a visitor.

In an environment where the automobile reigns supreme, highway and street signs have a great impact on the character of a corridor. Without some degree of coordination between highway and city street signing, there is certain to be visual chaos and traffic congestion. In the 1970s urban design influenced the design of integrated signs, signals and lights for city streets. The next challenge is to integrate those systems with highway systems.

IMPLEMENTATION AND INSTITUTIONAL FRAMEWORK

Suburban growth corridors stretch the range of traditional urban design implementation processes. A complex combination of responses is required to address the multiple jurisdictions and interests involved in growth corridor development.
Coordination of high intensity development is difficult enough when it is located within the boundaries of one municipality. It is not unusual for suburban growth corridors to fall within two or more jurisdictions. Subtle differences between building codes can create a hodge-podge appearance or may encourage development in one section of the corridor more than in another.

There is a gap between the private architectural review boards and the city planning councils which have control over development. Architectural review boards govern the quality of development. They ensure that building facades will be compatible and signs will be uniform. City planning councils and their staffs have the responsibility of administering zoning codes. They ensure that each parcel is developed according to city code. In between these two lies a gap in how to regulate development. Daily public and private sector decisions should be linked to a broader plan for the future. The rapid pace of development makes this connection especially important.

Three concepts have an important role in the future design of suburban growth corridors: regional planning, private sector involvement and negotiated design. The degree to which each of these concepts is utilized in a particular corridor should be commensurate to the corridor's physical size and the type of land uses contained within.

A more regional approach is needed. Planners have long bemoaned the lack of regional coordination in the United States. The problems faced in coordinating suburban development provides an especially clear picture of the need for cooperation between local governments. The future of each suburban municipality is closely tied to its neighbors. The future success of suburban growth corridors is dependent upon
coordinated infrastructure and transportation development between municipalities.

Much of the current interest in suburban growth corridor design is primarily a spin-off of public and private sector concerns over traffic congestion. Faced with gridlock, property owners have been forced to collaborate with public agencies. Capital improvement programs have been developed and private sector associations called Transportation Management Associations have been formed. In the process, urban design considerations are beginning to receive attention from the private sector. Their involvement is very important to implementation of urban design improvements.

The third concept which should play an important role in growth corridor development is negotiated design. William Fleissig has merged the concepts of negotiation and urban design. There are two important elements in his concept of negotiated design.

First, the use of negotiations to bring together all of the stakeholders in a growth corridor. Development negotiations have traditionally involved only the developer and the municipality. Expanding negotiations to include citizen and neighborhood groups and surrounding commercial property owners. Second, the merging of policy, financial and design solutions. Development negotiations traditionally have been based on financial and public policy considerations. Fleissig suggests that the result has been buildings which are not in tune with the surrounding community and don't make a positive contribution to the urban environment. By adding design considerations to the negotiation process a more balanced decision can be made. (Fleissig, 1986)
Almost twenty years have passed since geographers and planners first identified the suburban growth corridor phenomenon. Corridors now exist across the nation which exemplify many different stages of development. In this chapter, attributes of a specific growth corridor are described as typical examples of institutional and physical characteristics of growth corridors.

HISTORY OF DEVELOPMENT

Parkway Center in Dallas, Texas provides an example of the suburban growth corridor phenomenon. Typical of highway corridor developments across the South and West, this corridor is the result of scattered development along a highway which has intensified to the point that the area can be identified as a specific place. Both the physical and institutional development of the area are relatively mature. Although both will continue to change, each has an identifiable structure and character.

Parkway Center straddles the Dallas Parkway, an extension of the Dallas North Tollway. The tollroad runs north and south, bisecting the City of Dallas and providing a connection between downtown Dallas and suburban communities to the north. Much of the tollroad passes through residential areas of
Dallas. However, between I-635 (LBJ Freeway) and Beltline Road the Parkway has served as a catalyst for intense commercial and office development.

The sequence of development has been rapid. Aerial photographs of the area reveal only a small amount of scattered development in the area until the late 1970s. As plans for expansion of the four lane Tollway extension were made, there were large numbers of real estate transactions and development projects completed.

By 1980, the large amount of real estate speculation in the area led to it being referred to as the Golden Corridor. The Parkway area included almost four million square feet of office space in the immediate area of the Tollway. In the general vicinity were three major shopping centers and eight hotels. Development in the area expanded to approximately 6 million square feet of offices, another 5 million square feet under construction and an additional 8 million square feet announced in the surrounding area by 1985. (Lockwood, 1986, pp. 119-120)
As the Texas economy has slowed recently, development along the Parkway also experienced a slowdown. Many projects have been delayed. Despite the downturn, real estate analysts expect longterm prospects for the area to be good.

INSTITUTIONAL CHARACTERISTICS

The theme of multiple jurisdictions is a common one in suburban growth corridors. Parkway Center is divided between three municipalities (two suburban communities and the City of Dallas) and several transportation authorities. Pockets of development along the Parkway in the two suburban communities, the City of Farmers Branch and the Town of Addison, reflect the liberal zoning policies of those two communities.
Long Range Planning

Each of the municipalities has its own plans for the area. The City of Farmers Branch is in the process of preparing a Comprehensive Plan to guide future growth. At the same time, the City of Dallas has initiated the Parkway Center Project with the North Dallas Chamber of Commerce to prepare guidelines for future development in the area. The name "Parkway Center" is a result of that study. The Town of Addison is not actively working on plans for the area but of course does have its own set of development codes. Although each municipality acknowledges the existence of the others, each is planning primarily for its own future.
The above diagrams illustrate the conflicts inherent in isolated planning by individual municipalities. Looked at comprehensively, the boundaries of the Parkway growth corridor would encompass both sides of the tollroad. In reality, even the most comprehensive existing planning effort, the Parkway Center Project, is focused on only one side of the tollroad.

**Zoning Administration**

In addition to long range planning, each municipality has its own style of regulating development along the Parkway. In Dallas, most development along the tollroad has been at a standstill while long range planning has been underway. Development which occurred prior to the mid 1980s within the City of Dallas was handled through standard zoning categories. Recent zoning requests have been in the form of detailed Planned Development district ordinances. In contrast, the City of Farmers Branch and the Town of Addison have utilized Planned Development districts for the majority of developments.

The difference between these two methods of zoning is evident in the resulting built form. Planned Development districts have resulted in more landscaping and phased development.
coordinated with infrastructure improvements. They have also allowed developers larger square footages than might have been allowed under standard zoning categories. A review of Planned Development districts in the Parkway area within the City of Farmers Branch reveals an increase in sophistication ordinance language and requirements.

**Transportation Agencies**

In an area where highways are such a dominant feature, two agencies play a major role in the area's future: the Texas State Department of Highways and Public Transportation and the Turnpike Authority. The impact of the Turnpike Authority on the physical form of the corridor is perhaps most evident when viewing an aerial photograph of the right of way which averages 200' in width—not much less than the depth of many parcels of land adjacent to it.

In addition, the Dallas Area Rapid Transit agency (DART) has plans for future light rail stations in the area. As plans for suburban service are just being formulated, developers and municipalities are vying for their preferred rail alignment and station locations. As of yet there has been little planning between DART and suburban municipalities.

**MARKET INFLUENCE**

**Land Banking through Interim Uses**

Development of Parkway Center has advanced to the point that land uses have changed from those designated just ten years ago. For example, medium density apartment complexes adjacent to the Parkway which were built in the early 1970s were
recently part of a major rezoning request. The 90 acre parcel is now slated for 4.9 million square feet of development.

The City of Farmers Branch Draft Comprehensive Plan estimates that, in that city, for 65 percent of the nonresidential acreage in the general vicinity of the Parkway the land value exceeds the value of the site improvements. Because of the large number of major rezoning cases from 1983 to present which allow significant additional development rights, land values in the general area of the Parkway have increased and there is an increasing demand for rezoning.

The Shape of Development

Much of the built form in the Parkway Center area can be attributed to the real estate market. Office real estate speculation boomed during the early 1980s. The result was a rapid development process involving several parties. Land was purchased and zoned by developers. A structure was then constructed, either by the original owner or by a new owner. Upon completion of construction, the building was leased and, most likely, sold. The rapid sequence of events has created a continuing cast of characters, very few of which have a long term stake in the area.

The highly competitive market led to buildings which fit a standard package. Typical floor plans, landscaping and site amenities were developed. Although building facades differ, the formula remains the same. In most cases the result is a homogenous building which can be found on any growth corridor. The most recently constructed buildings have employed greater architectural creativity but stand alone as "signature" buildings unconnected to any sort of urban fabric.
PHYSICAL CHARACTERISTICS

The placement of structures on the land has several repeated characteristics:

**Dominance of the Tollway**
The term "center" in the name Parkway Center belies the actual form of the area. The original name, Golden Corridor, presented a much more accurate description of the area's physical form.

In addition to providing the horizontal spine which organizes the corridor, the Parkway also contributes a vertical dimension to the landscape. Elevation changes in the roadway to accommodate overpasses provide the only available relief from a very flat landscape. Although the Parkway is the dominant feature, the buildings rarely relate to it. And, in general, they do not relate to one another.

**Little Pedestrian Space**
This is not a pedestrian environment in any sense of the word. Both the impact of the highways and the climate discourage if not prohibit any pedestrian movement. Few sidewalks connect the isolated buildings. Pedestrians waiting for public buses at the curbside stops look out of place and uncomfortable.

**Not as Intense as Downtown**
Parkway Center has the potential for becoming a relatively intense urban environment. However, it is not to be confused with the Dallas central business district. The core of development along the tollroad covers approximately 1000 acres—in contrast to the 190 acre core of the Dallas CBD.
Constantly Changing Environment

There is a mix of uses and building types which is constantly changing. The composition of uses along the Parkway has evolved from apartments and strip shopping centers to office buildings and megastructures. In effect, the two story structures have provided an economical means of banking the land until completion of the tollroad extension.
CHAPTER IV:
A DEFINITION OF THE URBAN FORM OF SUBURBAN GROWTH CORRIDORS

Understanding the spatial organization and functions of the elements of suburban growth corridors is critical to visualizing their future form. While suburban growth corridors may differ in size, shape and composition, they most certainly have a common set of elements. The two elements are horizontal patterns and building types/land use.

In addition to providing patterns by which suburban growth corridors can be typified, these elements also exhibit a range of attributes which can be used to define growth corridors. Suburban growth corridors are a phenomenon which have emerged from seemingly random suburban sprawl. The size and shape of individual elements/characteristics are the means of discerning between the random sprawl and identifiable growth corridors.

This chapter outlines the range of shapes and sizes of specific elements found in suburban growth corridors. Specific sizes and forms are based upon review of aerial photographs of Dallas, Texas and standard real estate industry criteria given in the
HORIZONTAL PATTERNS

The horizontal arrangement of space in suburban growth corridors is divided into very distinct zones. The horizontal zones can be defined by their speed and scale.

Vehicular
Highways and Major Thoroughfares
The dominant feature of growth corridors is the high speed highways or busy thoroughfares which are form the spine of the corridor. Organization of all other space is determined by the highway.

Arrival speeds are such that the buildings lining the corridor are not comprehended. It is in the midst of traffic and confusion that one enters a suburban growth corridor.

The major roadways which form the spine of suburban growth corridors may be divided between those which have overpasses and those without. Development of the roadway from a six lane local major thoroughfare to a regional highway with overpasses will occur simultaneous with land development.
In addition, the number of lanes in the roadway is an important attribute to catalog. At least six lanes of traffic are necessary to create an environment which can be typified as a growth corridor. The vehicular oriented environment created by this amount of traffic is a dominant characteristic of suburban growth corridors.

At the upper range of highway size is an eight lane highway with four lanes of service roads. Beyond this size the width of the highway seems to be a barrier rather than a spine.

Streets
Strips of development on either side of the highway are further divided by secondary streets. Arrival speeds decrease but congestion increases.

These streets are typically four lanes wide but may be as wide as eight lanes. Those streets with six to eight lanes of traffic provide the limits of the growth corridor, resulting in corridors two to four miles in length.

Similarly, streets running parallel to the corridor's spine form boundaries.
Parking
Upon leaving the street to enter a particular building, the visitor enters the parking facility, either a surface or structured parking garage.

Entering the parking lot at a much slower speed gives visitors an opportunity to take in their surroundings and approach their destination.

Parking lots typically serve one to two story buildings. Office towers and megastructures typically have parking structures attached.

Pedestrian
Plazas
The immediate surrounds of individual structures is the only zone available to the pedestrian. However, standardization of building types has resulted in typical entryways which often are not really designed for the pedestrian, but rather for effect.

Pathways
Designated pedestrian paths are virtually nonexistent in suburban growth corridors. Instead, pedestrians make their own way through parking lots and on the edge of streets.
Suburban growth corridors may also be typified by building types, vertical elements which are organized within the horizontal zones. In addition, land use within growth corridors can be categorized by building types. In the majority of cases, land use is directly related to building type. The unifunctional rows of buildings are as characteristic of suburban growth corridors as the highways which pass through them.

**Low Strip Structures**

One of the first types of structures to be built in suburban growth corridors is often strip shopping centers, low freestanding buildings and low-rise apartment buildings. The most typical uses are shopping centers which provide neighborhood service, apartment buildings and office service centers. Other uses include churches, car dealers and restaurants.

These structures often form a transition zone between single family residences and the growth corridor. Although they may be found in the core, these low bulky structures are typically on the fringe of the corridor on or near the major thoroughfares which cross the corridor's spine.
Strip shopping centers range from 60,000 square feet to over 150,000 square feet in size. As an adaptation of neighborhood service centers, these serve the needs of the immediate area. Instead of personal service, the focus is typically on business service and restaurants.

Apartment complexes occupy 10 to 40 acres at a density of 10 to 30 units per acre.

In addition to their transitionary role, these relatively inexpensive structures provide a method of banking land for future more intensive use.

Freestanding Towers
Individual buildings ranging from three to twenty stories or taller usually are scattered along a corridor's spine. The towers add both visual interest and chaos to the environment.

The primary form is that of freestanding office structures, both low and sprawling or high rise. The more intense suburban growth corridors are often rows of "signature" office buildings—each with standard footprints and unique facade treatment, each separated from its neighbors by parking lots. Structures within individual developments are oriented toward one another and rarely
relate to other developments whether adjacent or across the highway.

There are two typical shapes of office buildings. The first is a relatively square structure with a footprint of 18,000 to 25,000 sf. The second is a long thin rectangular building which maximizes sites with minimal highway frontage. The footprint of these buildings is also 18,000 to 25,000 sf.

Typical floor area ratios range from 2:1 to 4:1 on sites ranging from 5 to 20 acres. This results in potential total square footages of over 1 million sf on individual sites.

**Megastructures**

The shopping mall is a quintessential suburban feature which is almost certain to be included in a suburban growth corridor. Traditional regional malls have two or more major department stores and one to two stories of mall space. Often one of the first developments in the area, it is also one with a great impact on urban form. Shopping mall sites may require as much as 100 acres of land, approximately one half of which is devoted to parking lots.

The supermall is a hybrid of the shopping mall. This newer, more intense type of
development is the three story regional mall which includes office and hotels as well as multiple department stores and two to three stories of secondary retail.

Both structures are isolated intense activity centers which rarely relate to surrounding development in the corridor.
CHAPTER V:
THE FUTURE FORM OF SUBURBAN GROWTH CORRIDORS

LOOKING TO THE FUTURE

Tax reforms, changes in the economy and the increasing sophistication of municipal planning are all going to affect the future pace of suburban growth corridor development in the South and West. As the development boom levels out, there will be opportunities to fill in gaps, correct mistakes and create an identity in the corridors of office buildings and shopping malls—in effect, retrofit existing development and plan for future development.

To take advantage of these opportunities we need to give some thought to the probable future of metropolitan growth. It appears that the current suburban development phenomenon is only the beginning of a new stage of urbanization. Suburban growth will dominate the American landscape. Incremental changes in policy and economy will influence the speed of development but the focus will remain on the maturation of the suburbs.

Two common theories on the future form of American cities present very different views. One is the concept of urban
villages. Visualized as intensely developed cores surrounded by low density residential development, urban villages have been presented as a means of organizing suburban sprawl. Urban villages are intended as employment/entertainment centers where large numbers of people work and live.

A second view of the future suggests that we are headed toward a society of decentralized workplaces. The increasing sophistication of electronic communications has led to a vision of individuals working out of their homes with little need for office buildings.

To some degree both of these visions of the future will probably become reality. However, neither of these theories recognizes the suburban growth corridor. The impact of development along highway and beltway corridors on future metropolitan form will be significant.

As suburban areas mature, cities are becoming networks of communities. Increasingly, the traditional CBD and surrounding area are just a small part of what is commonly thought of as a city. With a large stock of suburban housing in place, the future form of development along suburban highways and beltways--suburban growth corridors--is the next stage of development.
Hans Blumenfeld noted that We refer today not to the "modern city" but rather to the "modern metropolis." This change of name reflects the fact that from its long, slow evolution the city has emerged into a revolutionary stage. It has undergone a qualitative change, so that it is no longer merely a larger version of the traditional city but a new and different form of human settlement. (Gottdiener, p. 15, 1977.)

Suburban communities look to shopping centers and local parks, often the only form of development other than homes, for their community's center. Residents identify the boundaries of their community by these centers. It is the suburban growth corridors which serve as the employment and service centers. Not downtowns in the traditional sense of the word, these corridors are creating a new form of urbanization.

The current concern of policy makers, community members and developers has set the stage for addressing the form of suburban growth corridors. Previously identified only as a part of suburban sprawl, growth corridors have emerged as a specific type of development. But within
this type there are different shapes and sizes.

The previous chapter outlined the range of attributes which may be found in suburban growth corridors. In order to identify specific design and policy responses to the varying situations presented in suburban growth corridors, three specific scenarios are examined in this chapter. The scenarios are based on existing suburban growth corridors in the Dallas, Texas area.

Existing corridors have been selected only for the purpose of allowing better visualization of the spatial organization and scale of the range of corridors. Dallas appears to be representative of cities across the South and West which have experienced rapid suburban development in the past ten years. The following recommendations are made in the context of the six urban design issues presented in Chapter II. Each of the scenarios is tested against the normative principles associated with the six issues.
The scenarios exhibit a range of types and intensities of suburban growth corridor development:

Intense Office/Commercial Development:
  Parkway Center
Strip Commercial Development:
  Airport Freeway
Scattered Mixed Development:
  Preston Road

INTENSE OFFICE/COMMERCIAL DEVELOPMENT: PARKWAY CENTER

Characteristics
Representing the most intense corridor development scenario, Parkway Center straddles an eight lane tollroad which is serviced by frontage roads with three lanes on each side. The limited access highway is constructed with overpasses, allowing access between the two sides.

Composed primarily of office structures supported by hotels and business service, Parkway Center exemplifies a concentration of development with some cohesiveness. Both the physical and institutional framework of this corridor are relatively mature. Parkway Center is described in greater detail in Chapter III.
The Relationship of Housing and Employment

Housing is not appropriate along the immediate spine of this type of corridor. Medium to high density housing should be developed on adjacent property as a transition to lower density housing. Oriented toward single family residential areas but close to employment centers, clusters of mid-rise housing would provide an urban lifestyle as an alternative to single family suburban housing.

The role of higher density housing as a transition zone could be emphasized by provision of personal service businesses, retail and restaurant space on the first level facing the corridor. A buffer of green space should be provided between the two residential densities.

In addition to fulfilling a spatial organization function, multiple family housing adjacent to the corridor can provide needed affordable housing.

Pedestrian and Vehicular Systems

Dividing a corridor into manageable clusters of development is a particularly important concept in a corridor such as Parkway Center. Clusters of office development can be defined by the highway and secondary streets. Within each cluster an internal circulation system of sidewalks and streets should be developed.
which brings the growth corridor down to a more pedestrian scale.

Recognizing that cars will continue to be the dominant mode of transportation, it is necessary to integrate parking facilities into the overall design of a corridor.

Parking structures centralized within the clusters would aid in separating vehicles and pedestrians. They would also serve another important function—they would promote interaction between users of the corridor. The urban pedestrian network would be strengthened if business services were also centralized within these clusters. Distances between structures should be minimized with open spaces centralized adjacent to the parking/business service areas rather than scattered between buildings.

Pedestrian connections between parking facilities and destinations should be part of a clearly defined pedestrian system, allowing circulation within and between clusters of development.

Encouraging any pedestrian activity in the South and West requires a sensitivity to the climate. Large open plazas become unbearably hot during a good part of the year. Providing shade from structures and trees is important as is architectural
design which protects and invites the pedestrian.

In growth corridors like Parkway Center, a variety of transportation alternatives to the automobile are being developed. Possible future transportation includes private shuttle buses, city buses and light rail. Site designs should anticipate points of arrival of these modes of transportation.

A Visually Cohesive Environment

In order to compete with large single ownership mixed use developments a corridor of individual office sites like Parkway Center should be organized to present a cohesive image as an office employment center.

Arrival to a corridor striving for such an identity could be marked by cornerstone structures. Forming a gateway, the size and architecture of these buildings would announce the highway traveler's arrival in a place. Existing structures already demark cornerstones to Parkway Center on three of four corners.

Another simple means of creating a particular image is to apply a name to the corridor. Identifying the area by more than the name of the highway which spurred
development is the first step toward creating a place.

Corridors of speculative office buildings are composed of many individual structures. Set at angles to one another, the buildings often do not appear to be related to one another or to the highway which they front. Instead of random arrangements, buildings could be sited so as to create an edge along the highway. The structural edge could be highlighted by a vegetative edge designed to make an impact on a person traveling through the corridor at 55 mph.

The clusters described in previous sections above should be defined by creating a street edge with buildings and landscaping. Strict landscape and urban design standards will also help create a corridor with a distinct image. However, standards should not be so strict as to stifle all creativity. Rows of identical structures are only boring.

As development extends along the northern extension of the tollroad, Parkway Center should utilize edges, boundaries and gateways to organize the corridor into identifiable segments.

The Relationship to Surrounding Communities

Parkway Center is an example of a corridor located on the fringe of several
communities but with no community which calls the corridor its own. A corridor of this scale should be considered regionally.

Parkway Center is surrounded by a variety of land uses. Those areas adjacent to residential development should be handled as described above under "Mix of Housing and Employment." Where the corridor abuts commercial and industrial uses, the boundaries should become much softer. Intense development should be located adjacent to the highway and intensity should gradually diminish as it approaches residential areas.

There is great potential for this corridor to expand into a center. A significant amount of vacant land is available in Dallas. In Farmers Branch, property adjacent to existing office developments might be available for redevelopment. As Parkway Center transitions from a corridor to a more massive form, a network of roadways will be needed to carry people into the development. Building heights and sizes should be tied to the capacity of that road network. The tallest and most intense uses should be located along the Parkway, decreasing in size and intensity with the capacity of the road network.
As Parkway Center expands, the intersections of the road network with the Parkway and with peripheral thoroughfares will be important gateways into the center.

Signs and Symbols
In corridors of speculative office buildings, the building is the sign. Facade treatments and building forms speak for the tenant. Instead of looking for signs, visitors identify their destinations by the color and shape of a building. This type of building identification should be encouraged and the written word should play a minimal role in this environment.

Implementation and Institutional Framework
The impact of growth corridors composing intense employment centers such as Parkway Center should be considered by a regional planning authority.

Creation of an office employment image should involve property owners along the corridor and probably depends upon their initiative for a truly successful environment. Traffic Management Associations and Planned Development districts are critical in this type of development to insure that large phased commercial and office developments provide
the necessary infrastructure and amenities.

Local municipalities should plan for affordable, medium to high density housing.

STRIP COMMERCIAL DEVELOPMENT: AIRPORT FREEWAY/HIGHWAY 183

Characteristics
Airport Freeway presents an entirely different scale and speed of corridor from Parkway Center. Essentially an overgrown strip, this highway is flanked by car dealers, fast food restaurants, motels and office buildings. Local traffic travels under the highway but highway exits bypass local thoroughfares, focusing highway traffic on businesses lining the highway.

Mix of Housing and Employment
Housing is not appropriate in any part of this type of corridor. Unlike Parkway Center, this is not an intense employment center. There are very few employees relative to the goods and services provided and housing for those few employees is not realistic.
Pedestrian and Vehicular Systems

Vehicles are especially dominant in a corridor such as Airport Freeway. Pedestrian and vehicular zones should be very clearly defined and separated.

There is some need for pedestrian connections between businesses located on the same side of the highway. A pathway connecting the facades of buildings which might share parking and patrons should be provided. Because all parking facilities are surface lots, there are acres of asphalt and concrete. Pedestrian movement should be drawn away from the highway and parking lots and up to the buildings.

Carefully selected pedestrian connections should be provided between surrounding housing and the growth corridor.

The highway and frontage roads are exceptionally congested in this type of corridor. Improved vehicular circulation is needed throughout the corridor almost without exception. Clearly defined access and egress points should be developed when the occasion arises through redevelopment or highway improvements. Pedestrian connections across the highway should not be provided at the same level as vehicular traffic.
A Visually Cohesive Environment

Airport Freeway exemplifies a growth corridor which has no clear points of arrival. Scattered development on the edges leads up to a concentrated mass in the center.

Airport Freeway is an example of a very narrow corridor--lot depths are approximately 500'. Because the rear lot lines are visible from the highway, boundaries between the corridor and adjacent properties should be especially well defined. A boundary of vegetation could frame the corridor and visually concentrate the conglomeration of buildings and signs. In addition, such a greenbelt would provide an appropriate buffer between residential and corridor uses.

A great deal of the visual chaos of Airport Freeway is created by overhead electrical and telephone lines. Elimination of those elements would greatly enhance the visual environment.

In general, the image of this corridor is one of chaos. But in the chaos is a familiar form. Visitors know how the circulation surrounding a fast food restaurant works because it is the same pattern as all other locations of the same restaurant.
While not attractive, strip commercial development along the highway is functional and important to our continual dependence on the automobile.

The Relationship to Surrounding Communities

The edge of the corridor adjacent to single family housing should have a very well defined edge. As noted above, selected pedestrian access points should be provided between surrounding residences and the corridor. However, except for those access points, there should be a clearly defined boundary between the two. The noise and odors from the highway, fast food restaurants and other uses is particularly obnoxious to surrounding residential areas.

This type of corridor is a stopping off point on the way to work or home, rather than a destination. Surrounding communities have access to the corridor, but it is not a center for any one community. Ease of access from the highway is an important part of Airport Freeway's function in the region and should be preserved and enhanced.

Development along thoroughfares intersecting the highway provide a transition of sorts between highway commercial and community oriented commercial uses. The difference between
these transition points and sprawling strip development is difficult to discern, but should be carefully considered.

Signs and Symbols
Much like the well studied Las Vegas strip, the big sign and the little building are the rule along Airport Freeway. Signs must convey their message in seconds as travelers speed down the highway.

At a slower speed, approaching businesses from the frontage roads, buildings serve as their own signs. An adobe building advertises a Mexican fast food restaurant, the bright blue roof identifies an International House of Pancakes.

Highway exits are particularly important in this environment. In the chaos of traffic, buildings and signs, it is often difficult to select the correct exit. Signs placed one half mile before the exit could inform travelers of the businesses located at the upcoming exit.

Implementation and Institutional Framework
The role of municipal government should be especially strong in regulation of growth corridors with a strong commercial orientation.
Realizing that a municipality generally gets what it asks for in terms of development quality, prototypical designs for pedestrian connections and highway exits should be developed by local agencies. The city should take the initiative with the state highway department to implement improvements to exits.

SCATTERED MIXED DEVELOPMENT:
PRESTON ROAD/HIGHWAY 289

Characteristics
An example of the least intense growth corridors is the Preston Road corridor. While it is a major city thoroughfare, Preston Road is also a county highway which connects the City of Dallas with outlying suburban and rural areas. Six lanes of traffic are divided by a median and controlled by stop lights at one-half mile intervals. Office and commercial development are scattered among residential development--both single and multiple family. Vacant land still exists along the roadway.

As residential development occurred in the 1970s, Preston Road served as a neighborhood commercial center. In the
past five years, development in this corridor has included office buildings.

Mix of Housing and Employment
Existing single and multiple family housing is interspersed between office and commercial development directly adjacent to the corridor. Brick walls and landscaping buffer residents from traffic. The concept of mixing employment and housing currently has limited application in this setting. The relatively small numbers of employers do not provide enough positions to employ large numbers of area residents.

As additional office buildings develop, the feasibility of walking from home to work will increase. Pedestrian/bike paths should be incorporated into plans for the immediate area in anticipation of future employment possibilities.

Pedestrian and Vehicular Systems
The size of this corridor, the speed of the roadway and the range of land uses would imply that this type of corridor, more than the other two, is the most appropriate location in which to foster a pedestrian supportive environment. However, it is constructed at a scale which creates long distances between
buildings. Parking is rarely concentrated in buildings, creating large expanses of parking lots.

Just as in the Airport Freeway corridor, a pedestrian system should be developed connecting the entryways of buildings. In addition, the design of parking lots should incorporate shade creating arcades and landscaping.

The location and design of building service areas is especially important in a corridor of this type. Screening service areas from the roadway and from surrounding homes should be of utmost importance in site designs.

**A Visually Cohesive Environment**

Landscaping should also be used to line the roadway to create a parkway. Trees planted in the medians and along the road would help define vehicular movement. They would also break up the wide open space between buildings.

An important part of creating an environment which "invites the eye and ear to greater attention and participation" at the moderate vehicular speeds in this type of corridor is ease of access. Clearly defined entryways at driveways and buildings are necessary.
Both the pedestrian environment and the visual character of this corridor would benefit from decreased depths of parking lots between the right of way and building facades.

While vacant land is still available, consideration should be given to designating public open space. The suburban, rather than urban, character of this corridor is appropriate and both publicly and privately owned open space would help preserve the suburban scale of the corridor.

Establishing gateways to a corridor of this speed and scale is not necessary or feasible.

The Relationship to Surrounding Communities
Because many of the uses in this corridor serve the immediate community, the relationship between the two is especially important. Pedestrian connections should be developed.

The scale and architecture of buildings should be compatible with the surrounding neighborhoods. As the corridor and community develop, selected densification may be appropriate but should not be considered without attention to the provision of green space.
As this suburban area has matured, Preston Road has developed a character of its own, particularly in the areas containing residential development. Despite the large volumes of traffic which pass through the corridor, a community oriented quality remains.

Signs and Symbols
Because traffic is moving at a slower speed it is not necessary to have large, garish signs. Visual clutter should be kept to a minimum and signs should be unobtrusive.

Because major intersections play a major role in orienting travelers through the corridor, signs announcing upcoming thoroughfares should be provided. Traditional small city street signs are difficult to find, let alone read, across a roadway of this size.

Implementation and Institutional Framework
Community participation is not only possible but necessary in a corridor of this scale. As suburban communities acquire increasing numbers of office and commercial development there is a real need for "negotiated design."
CONCLUSIONS

In metropolitan areas in the South and West it appears that the term "growth corridor" can be applied to almost any highway lined with development. The three scenarios in this chapter were selected for their diverse characteristics in an effort to see just how far the definition of growth corridors presented in this thesis can be stretched. But can the urban design principles for growth corridors presented in Chapter II be applied across the board? Despite their diversity, suburban growth corridors present a new urban form which requires a different set of urban design responses from traditional urban settings. That set of urban design principles can be applied to the wide range of sizes and scales that suburban growth corridors fall within.

The first principle to consider in the design of suburban growth corridors is the acknowledgement that these environments are dependent upon the automobile and should be designed accordingly. Designs should be sensitive to both the requirements and the impacts of vehicular movement.

Shared urban space is a valuable quality which should be encouraged. Individual mixed use developments may be successful but the overall character of suburban
growth corridors is one of isolated structures and uses. Interaction between uses cannot be forced simply because of their proximity to one another. New opportunities for interaction between people in suburban growth corridors should be promoted through the design of pedestrian connections and centralized activities.

Traditional urban design elements of gateways, boundaries and edges can be valuable tools for designing suburban growth corridors. If adjusted to the scale and speed of the corridor, these elements can improve the environment. In applying these elements, it is important to remember that they are not essential or appropriate in every situation.

The scale of the highway, the orientation of uses in the corridor and the local street pattern determines the degree of fit between a growth corridor and surrounding communities. Typically, the larger the highway, the less the corridor is connected to the surrounding community.

A seemingly simple but important principle is one related to housing. Housing in the vicinity of suburban growth corridors can be a positive addition to the environment, ideally allowing for reduced commuting time or even elimination of the need for the automobile. However, housing directly
adjacent to the highway is not economically or environmentally feasible. Housing should not be developed without careful consideration of the noise and other negative impacts of the highway.

The fit between various levels of government is important to the implementation of urban design principles. The size and complexity of the institutional framework should be commensurate with the physical scale of the corridor. The institutional framework should be expanded to include both regional planning and more detailed site planning.

These design principles and the scenarios tested in this chapter raise a number of additional questions about the future form of suburban growth corridors.

The way in which suburban growth corridors mature presents two interesting questions. First, is there a peak to growth corridor development, a high point beyond which the area experiences disinvestment? The preliminary review undertaken for this thesis suggests that this is not the case. It appears that growth corridors continue to evolve, experiencing ups and downs, adjusting to the demands of the immediate communities and the region. Further study of this question might provide greater
insight into the future form of growth corridors.

A second question raised by the maturation of growth corridors is the form into which they will evolve. In many cases, a growth corridor is limited in size to a highway commercial zoning district bounded by existing development. However, corridors such as Parkway Center illustrate the potential for new forms of growth corridors. Given the area in which to expand, growth corridors may become centers of activity covering much broader areas than the corridor of a highway. In such cases, the corridor appears to be a stage of development.

The testing of urban design principles against the three suburban growth corridor scenarios presented in this thesis also reveals the complexity of addressing the visual cohesiveness of these environments, and the incompleteness of our understanding of it. The question of how to address visual cohesiveness in suburban growth corridors warrants more indepth study.

Perhaps most importantly, the principles and concepts presented in this thesis provide a framework for developing site specific urban design standards for suburban growth corridors. The next step is application of these concepts and
principles to an actual growth corridor environment. Testing this thesis at a site specific level is necessary in order to determine the extent to which suburban growth corridor urban form can be planned and regulated.
BIBLIOGRAPHY


