Street Design, Traffic, and Fear of Crime: Moving from Gated Communities to Transit Villages

by

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Submitted to the Department of Urban Studies and Planning
in Partial Fulfillment of the Requirements for the Degree of

Master in City Planning

at the

Massachusetts Institute of Technology

June 2001

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May 17, 2001

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Abstract

The first phase of Tren Urbano, a rail rapid transit system in San Juan, Puerto Rico, is currently under construction, with future phases in the planning stages. San Juan's built landscape is presently dominated and dramatically fragmented by gated developments, which poses fundamental problems for the success of Tren Urbano. This thesis documents and explores the negative impacts of widespread gated communities on transit use and transit-conducive development, including inhibitions on the directness of pedestrian access to stations, the quality of the pedestrian realm, the ability to sustain mixed land uses (and thus the ability of transit riders to "trip-chain"), the ability to plan efficient feeder transit service, and residents' socio-geographical perspectives of their relationships to their neighborhoods, transit, and the form of the city.

If there is a way to ameliorate residents' fears of crime and achieve the sought-after benefits of gated developments while facilitating more connective pedestrian-oriented transit-supportive settlement patterns, then alternative models should be understood and promoted. The extent to which measures less restrictive than gated developments in other cities have indeed mitigated fears of crime (and actual crime) and produced more neighborhood satisfaction could provide a new model for San Juan to follow, especially around Tren Urbano stations. To arrive at such an alternative model, this research asks why Sanjuaneros are attracted to gated communities and explores urban design paradigms that take a different tack at satisfying these concerns in a more connected context.

Analysis of the underlying roots of fear of crime and other perceived benefits of gated communities in San Juan reveals a common denominator concern with the physical and sociological effects of auto traffic. Gated communities provide a lure of restricted access, a refuge from the auto which brings with it the perception of uncontrollable and unpredictable threats to personal security, neighborhood livability, sense of place, and community integrity.

Delving into the related physical and sociological neighborhood impacts of auto traffic enables us to work from the ground up toward pedestrian-oriented alternative models of neighborhood development. Experiments with street modification and traffic calming in Chicago neighborhoods participating in the city's Community Security Infrastructure Program confirm that by altering perceptions and use parameters of street space as well as the strutucure of the street network, residents feel enhanced control of their neighborhood domain, enhanced personal and community safety, more comfortable using public space, and generally more satisfied with their neighborhood environment.

Ultimately, from the Chicago experience emerges a set of street and neighborhood design principles, that address both the *space* of streets and the *structure* of movement networks. *I outline a set of urban design principles that should be applied to residential neighborhoods to satisfy individual and communal reasons that make gated communities attractive, however based on highly-connective and rich pedestrian networks within a fabric that maintains the integrity of mixed-uses oriented around transit.* This fabric optimizes pedestrian permeability while maintaining defined neighborhoods where the flow of movement and the tone of activity is community-defined and set within the comfort zone of the residents.

The five principles that facilitate these goals are: (1) Use street space to articulate a constructive and positive vision of neighborhood activity by physically expanding the pedestrian domain to encompass the street holistically; (2) Stress elements in the street realm that act as neighborhood amenities; (3) Use street elements that exude the symbolism of invitation and accommodation by serving the dual functions of traffic control and inter-neighborhood zones of exchange; (4) Optimize the pedestrian network and constrain the auto network with street design elments that recognize and take advantage of the potential overlapping duality of these networks and their respective relationships to the same built fabric; and (5) Extend the comfort and identification zone of "home" and "neighborhood" via permeation of integrated street design and careful articulation of boundaries, potentially encompassing the transit station.

While Tren Urbano first needs to figure out why gated communities are so attractive to Sanjuaneros and develop an urban design model that meets these needs while satisfying the needs of pedestrians and transit, implementation of these design principles is the next challenge. Of the strategic options available, the current realities in San Juan make (1) the creation of development incentives for building along a parallel set of design guidelines and (2) sponsoring and marketing demonstration projects the most feasible and likely to succeed at the present in forging a new direction and opening the city's eyes to new options in urban living.

Thesis Supervisor: Lawrence Vale
Title: Associate Professor of Urban Studies and Planning

Acknowledgements

This thesis was a complex effort, bringing together many disciplines and realms of thought as well as pulling together case studies and observations from far-flung venues. Trying to see the forest for the trees and weave a coherent story was an ongoing and engaging task, and I owe my advisors, Ken Kruckemeyer (Civil and Environmental Engineering) and Larry Vale (Urban Studies and Planning), gratitude for their efforts in keeping me focussed and pushing me to think critically. Thanks also to Ben Hamilton-Baille, Harvard Loeb Fellow, for offering targeted words of advice and overall inspiration in the consideration of streets and neighborhood design.

In January 2001 I met with numerous people while in Puerto Rico who helped get the ball rolling on this thesis and introduced me to the scenario of development in San Juan. In this regard, I owe thanks to Professors Anibal Sepulveda and Esteban Senyyey of the Universidad de Puerto Rico in Rio Piedras, as well as to Elmo Ortiz, head of Urban Design at the Tren Urbano Office, who provided me with several key contacts. Additionally, several people helped me logistically to acquire important resources along the way, and I owe thanks to all of the Tren Urbano Office staff in San Juan, especially to Lydia Mercado and to Ginny Siggia (at MIT).

On the Chicago end, I was fortunate to find many friendly people willing to share some thoughts and time with me. I want to extend special thanks to Tom Samuels at CDOT and Ernie Constantino, transportation aide to Alderman Mary-Anne Smith, for sharing with me their enthusiasm and experience with traffic calming in Chicago.

This thesis process was a long and arduous one, and I couldn't have managed to stay sane without the support of my friends at MIT. Special thanks go out to Jennifer James for saving my thesis from being eaten by the computer and to Adam Varat for serving as a sounding board for my evoloving ideas and for agreeing that two days of backcountry skiing in New Hampshire was the best thing to do three days before thesis defense.

The technical production of this thesis ran into some snafus in the waning days, and I want to thank Duncan Kincaid, the Macintosh guru at the CRL, for helping me work through the snags.

And lastly, I want to extend my heartfelt thanks to my parents for supporting and encouraging me throughout graduate school and for taking an interest in urban planning and other things I obsess about.

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Chapter 1

Introduction: Can Tren Urbano Succeed in the Context of Gated Communities?

Under the auspices of the Puerto Rico Highway and Transportation Authority (PRHTA), the first phase of Tren Urbano, a heavy-rail rapid transit system, is nearing completion in San Juan. Costing over $1.8 billion, this portion of the system runs 10.7-miles (17.2 km) from Sagrado Corazon, on the edge of the government center in Santurce, at the north, south through the business center of Hato Rey, bending west at the center of Rio Piedras and the campus of the University of Puerto Rico, and terminating near the historic center of Bayamon (Fig 1.2). Totaling 16 stations in all, this line passes through three municipalities – San Juan, Guaynabo, and Bayamon. Five phases in all are planned for the system, eventually forming a large "H" over the metropolitan area, adding connections to Old San Juan, San Juan International Airport, Carolina, and eventually south the city of Caguas (Fig 1.3).

San Juan is one of the most automobile-dominated cities in the Western Hemisphere, with more cars per mile of road than any other city. A metropolitan area of approximately 1.3 million people, San Juan is home to roughly 37% of entire island's population. Gridlock is a daily ritual, air quality is suffering, the landscape is increasingly defined by strip malls, and patchwork urban development is expanding the girth of the city and consuming open space at an unsustainable pace. With the hopes of reducing automobile dependency and its

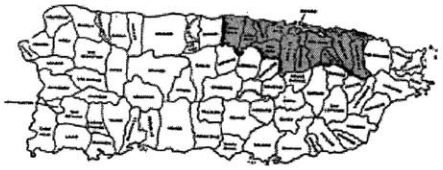


Fig 1.1. Puerto Rico, showing municipal borders; San Juan metropolitan area shaded.

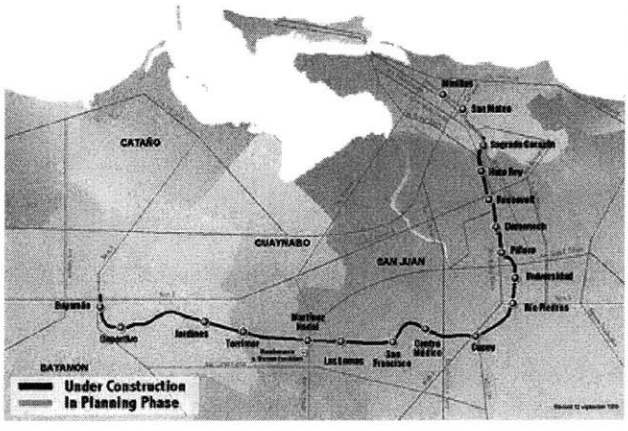


Fig 1.2. Tren Urbano Phases I and IA.

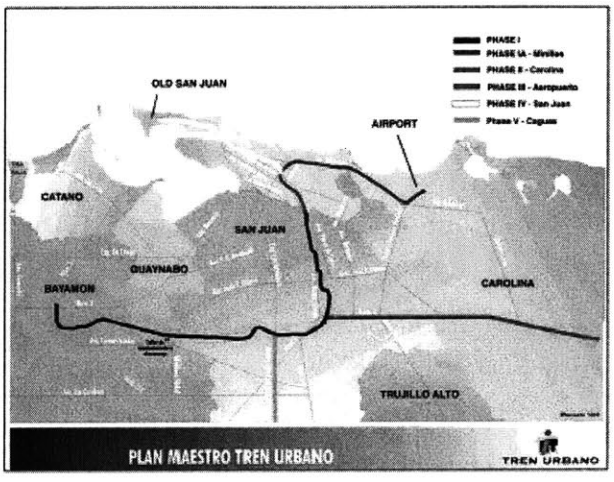


Fig 1.3. Tren Urbano Master Plan.

attendant ills, as well as providing superior accessibility and convenience for thousands of San Juan residents and visitors, Tren Urbano is planned to usher in a new age of transportation inter-modality and urban living in San Juan.

While some view Tren Urbano as just a piece of a transportation network that moves people and goods, many others see Tren Urbano in a more holistic way, hoping that it will create new social patterns of interaction, generate an awakening towards the virtues of the city and public realm, and become the backbone of a new urban form for San Juan. The Techonolgy Transfer Program, of which this thesis is part, is an attempt to broaden the dialogue in Puerto Rico around the creation of a transit-based city. As such, this effort tries to move the consideration of transit beyond merely the operational and engineering aspects of running a train itself, toward a consideration of the city and activities the train supports.

To capitalize on the fact that rail transit riders are essentially pedestrians when using the system, development around stations should be pedestrian-oriented, with a high quantity and variety of origins and destinations within comfortable walking distance. This would increase the "catchment" of potential riders served by transit and correspondingly make transit use more attractive and practical for a larger number of people. Stressing pedestrian access to stations also would reduce demand for station auto parking (freeing land up for other uses) and ease demands on local feeder transit services. This concept is variably known as the "pedestrian pocket," "transit-oriented development (TOD)," and the "transit village." (Calthorpe 1993, Cervero 1998) At the urban scale, as each station area develops into a node of TOD that contains a fairly self contained collection of major attractions, workplaces, and residential areas, linked together by a spine of transit (like "pearls on a string"), the city can become superbly pedestrian-accessible, making the use of automobiles optional rather than necessary.

Most prevalent among contemporary design and development trends in the San Juan area is that toward gated communities, both new insular neighborhoods designed for complete separation of uses, circulation, and socialization, as well as extant neighborhoods retrofitted with gates, guards, and other access control accoutrements. Omnipresent fear of crime has exerted great force on the urban form of San Juan. While crime has fallen significantly in the past several years, fear of crime remains extremely heightened and the effects linger, defining the city's evolving physical landscape.

The fragmentation created by gated communities poses a structural disadvantage to the success of Tren Urbano, most notoriously as this pattern affects pedestrian circulation and access – access to stations, surrounding commercial establishments and public facilities, and feeder transit. Additionally, the potential for reshaping the communal conception of the city as an integrated whole organized around Tren Urbano, as well as the notion of one's neighborhood as including the transit station, is jeopardized by such a fragmented and walled-off environment. The prevalence of gated developments has been a major factor in the diminishment of San Juan's walkability, functionality, and sense of cohesiveness and shared urbanity.

In a paper entitled "Site Design and Pedestrian Travel," Anne Vernez Moudon and Paul Hess identified poor pedestrian access resulting from fragmented development and insular site design as *the* key shortcoming of urban areas that otherwise have the density and *overall* mix of uses that could support transit. Fragmented and enclave-like environments produce fewer pedestrian trips and generate less activity than areas with high levels of connectivity and continuity. (Moudon and Hess 1999, 2000, Hess 1997) Such is the problem in San Juan around many of the Tren Urbano stations. The pedestrian "catchment" of the transit station is not merely a function of density within an imaginary circumscribed distance from the station, but a function also of the quality, continuity, and connectivity of the pedestrian realm. If the character, fabric, and scale of a station area neighborhood are fragmented, the transit station district will fail to capitalize on the synergistic "whole-is-greater-than-the-sum" potential that transit-based communities can create. Ridership will not likely grow as it might in more supportive environments and the transit system and stations themselves will not grow to become considered seamless and integral parts of the community. Moudon and Hess conclude that it is incumbent upon planners to "address the deficiencies in the infrastructure and site design of existing clusters to allow them to function properly as mixed-use areas" and that guidelines and strategies are needed both to retrofit existing areas and improve the design of new development.

In order to arrive at such "guidelines and strategies" we need first to understand the phenomena with which we are dealing and progress through a series of analytical steps, blending observation and theory, gradually building to an alternative model of development. The issue confronting San Juan is not simply one of implementing better pedestrian connections where none exist, as the problems now in question are not the result of naive design or careless attention to pedestrian orientation, but the result of deliberate design and development decisions about what makes a "livable" urban residential environment. While gated development might not be the only (or even an effective) solution for the fears and concerns of Sanjuaneros, it has been clearly the easy answer with great alure put forward by the development industry and many residents alike, such that it has become the standard cure-all.

The task set out for this thesis is not just to broadcast a dramatic call to action and change of course by documenting the negative impacts of gated development, but to understand the primal reasons for this style of development and to move forward to see how these concerns can be met in forms that are more healthy for Tren Urbano and for San Juan itself. The goal of this thesis research is to establish a set of urban design principles that satisfy the underlying concerns and lure of gated communities, but in a framework of connectivity that begins to resemble a holistic transit village that can facilitate and encourage pedestrian access and transit use. Only once an appropriate set of new neighborhood design principles is clear can implementation be put on the table. Jumping ahead to think about how we can improve pedestrian linkages between developments would ignore the central question, the root of the problem – the lure of gated communities.

This research is structured along the following sequence of questions: (1) What is the phenomenon of gated communities, how has it developed, and what are its forms? (2) What are the problems that this phenomenon

presents to Tren Urbano – i.e. why should we care? (3) What are the root causes of the phenomenon – what concerns do gated communities assuage that make them so attractive to Sanjuaneros (so we know what we are dealing with)? (4) Are there alternative ways to dealing with these root causes? (5) Have these alternative ways been tested anywhere before, and if so, what have been the results? (6) Informed by the results of these experiments and the theory built through the preceding research, what is an appropriate set of neighborhood design principles that will provide a more pedestrian and transit-friendly framework while addressing the right set of concerns? And finally, (7) By what mechanisms might San Juan consider using to begin implementing these principles?

Chapter 2 sets the stage for this exploration, examining the rise of gated communities in San Juan, its origins, cultural context and state of the public psyche, physical form, and evolution. The first section tells of the rise in crime that began in the mid-1980s accompanied by a rise in fear and paranoia, that has lasted far beyond the duration of elevated crime levels. Citizen and government reaction to concerns about crime are covered in Section 2.2, including resident demands for gating public streets and government para-military actions in public housing projects, along with the controversies and results of each. Section 2.3 presents the characteristics of the physical form of several types gated developments that have emerged around San Juan.

Chapter 3 introduces Tren Urbano into this landscape of gated communities and context of fear, urban fragmentation, and indifference to pedestrian accommodation. After a look at the theory and mechanics of transit-oriented development in Section 3.2, 3.3 provides an in-depth analysis of the ways in which gated communities pose challenges to the success of transit in terms of pedestrian access to stations as well as the pedestrian experience in the public realm. Section 3.4 explores how gated communities violate of the notions of transit-supportive mixed-use development and 3.5 weighs the impacts on traffic flow and feeder transit. Lastly, Section 3.6 delves into psycho-geographical conceptions of the city and the neighborhood and how gated communities can shape residents' formation of mental maps of the urban landscape.

Next, at the beginning of Chapter 4, we step back for a moment to look deeper into the sociological roots of fear of crime. Only once we understand the fundamental reasons why current conditions in San Juan evoke fear and what qualities gated communities possess which satisfy these concerns and lure potential residents, can we begin to look for more positive and benign alternatives or propose modifications that will be attractive and appropriate for the creation of transit-oriented neighborhoods in San Juan. Section 4.2 introduces the concepts of "defensible space" and principles of constructing physical realms that reinforce patterns of movement and neighborhood activity in ways that break down fear of crime and naturally support positive community perceptions. After looking at how gated communities misinterpret or fail to address these principles of design, Chapter 4 concludes by reviewing the mounting evidence and realization that gated communities cannot eliminate actual crime.

From these explorations it becomes more evident that the way in which gated communities address residents' fears and provide a desirable quality of life at the very local scale is by minimizing and attempting to control

the infiltration of auto traffic into neighborhoods. Chapter 5 explores this connection between traffic, perceived insecurity, and neighborhood integrity and looks to alternative concepts of street and neighborhood design that potentially meet these needs while facilitating richer urban connections and accessibility. After reviewing the purposes and forms of traffic calming and alternative street design in Section 5.2, Section 5.3 considers how such street modifications can address fear of crime and promote positive neighborhood activity. The final section of the chapter looks at the few locales in the United States that have experimented with using various forms of traffic control and street modification to address concerns of crime and fear of crime.

In order to test the hypotheses about the intersections among traffic, fear of crime, and neighborhood livability, it is necessary to examine neighborhoods that have undergone extensive street redesign efforts and evaluate residents' changes in behavior and attitudes that have taken place. Chapter 6 details the evolution of traffic calming in Chicago and the implementation of its Community Security Infrastructure Program, an experiment using traffic-controlling street modifications in four neighborhoods which were grappling with issues of crime, fear of crime, and intolerable intrusions of traffic. Observation of the neighborhoods and conversations with residents, local politicians, police, and city transportation planners sheds light on the successes and failures of this program.

Synthesizing these explorations, Chapter 7 presents principles of neighborhood and street design culled from observations of the successes and shortcomings of current San Juan development, concerns expressed by residents in San Juan, urban design and sociological theory, and the Chicago neighborhood experiments, that attempt to mesh the fundamental alure of gated living with the goal of creating connected pedestrian-oriented transit villages. Using the Torrimar/Jardines Tren Urbano station areas as contextual examples, strategies and issues for implementation of these principles in San Juan conclude the chapter.

Finally, Chapter 8 concludes the thesis with retrospective remarks on the challenges for the implementation of these ideas and areas for future research.

Chapter 2

The Rise of Gated Communities in San Juan

2.1 Crime and fear of crime in Puerto Rico

Dramatic economic, social, and physical structural changes have transformed Puerto Rico since the end of World War II. Once a primarily agricultural-based society, focused on the monoculture of sugar cane, with a population dispersed throughout the island, the Puerto Rican economy took a nosedive at the close of the 19th century with a decline in worldwide sugar prices and changes in dominating global agricultural practices. "Operation Bootstrap," formally instigated by the U.S. Congress as the Industrial Incentives Act of 1947, sought to jump start economic development on the island. The program sought to encourage corporate industrial and manufacturing activity and the development of the tourist trade via generous tax exemptions, low-interest loans, and other incentives. The economic activity induced rapid urbanization towards the centers of industrial activity on the island, San Juan being foremost among them. In Puerto Rico, internal migration accounted for 63.6% of urban growth in the 1960s (at its peak) (Gizewski and Homer-Dixon 1995).

However, as industrialization expanded, unemployment grew as well, as the number of jobs created in manufacturing did not absorb the large influx of workers or keep pace with the rate at which agricultural jobs were being eliminated (United States Department of Commerce, Economic Study of Puerto Rico, 1979). As many of the Bootstrap financial incentives expired, American corporate ventures left the island, not having invested in actual technology transfer or development of the Puerto Rican economy, leaving many people jobless. Operation Bootstrap widened the gap between the rich and the poor, with the poorest 40% receiving only 8% of the island's total income and the wealthiest 10% receiving 35% of the income during this period. By the early 1980s, island-wide unemployment stood at over 20% and 70% of the population received U.S. federal aid; in 1989 55.3% of families reported income below the poverty line (Kortright 1993). New settlement patterns emerged, with an economic underclass forming marginalized fringe settlements (de la Rosa Tirado 1989).

The situation of high unemployment and a growing poor underclass proved to be fertile ground for a burgeoning drug trade in 1980s. In 1985 the United States government began to crack down on drug traffic entering the country through Florida, the Bahamas, and other gateway cities. This shifted activity to Puerto Rico, which became a centralized hub with easy access to other Caribbean islands, Latin America, and direct connections to all over the United States (Hutt 1994). The petty crimes generally associated with a large economically depressed population appeared to erupt in the public consciousness with seemingly more frequent outbursts of violent, generally drug-related, crime. Violent crimes reached a growth rate of almost 20% per year from 1989-1992, during which time murders doubled (in absolute figures). Although the

island's murder rate was twice that of the overall US mainland (22.6 homicides per 100,000 residents vs. 9.8), it was still significantly lower than that of New York City (29 per 100,000) (Rohter 1993). The drug connection continued throughout the 1990s, and the White House Office of National Drug Control Policy designated the island as a "high-intensity drug-trafficking area" in 1994 (Navarro 1995).

Growing economic inequality between rich and poor, feeble legal systems, a lucrative drug market, and high unemployment have served as a communal backdrop for rising crime and even more intensely escalating fear of crime throughout Latin America and the Caribbean. Measured by per capita murder rate, South America is the most dangerous continent, with Puerto Rico coming in at the lower, safer end of the spectrum. One estimate put all of Latin America's annual average murder rate at 30 per 100,000 people, three times that of the United States and six times the worldwide average, and several burgeoning cities fare much worse: Sao Paulo records 48 murders per 100,000, Caracas at 60 per 100,000. Economic polarization has proved to be worse on safety than political upheaval, as El Salvador has surpassed Colombia as the most murderous nation with more homicides per year than deaths during the height of its civil war (Larmer and Brant 1998). Non-violent and property crimes have grown too in this polarized economic environment. For instance, auto theft increased fourfold from 1990-1996 in Mexico City, as 157 vehicles were stolen each day (*The Economist* March 8, 1997; Margolis 2000).

A professor at Florida International University declared that "the number one crisis in the entire region [of Latin America] is the crisis of personal security... Latin American citizens are more fearful than ever" (Larmer and Brant 1998). This spreading fear has spurred both a buying frenzy of security-paraphernalia and a growing effort by those who have acquired material comfort to defend it. Brazilians are estimated to spend between $3-5 billion each year on private-security goods and services. In 1998, *Newsweek* reported on the trendiest new item among those who consider themselves targets — armored passenger cars (Margolis 2000). But if conspicuous consumption of indulgent security gadgets was the only result of this increasing fear, it would be relatively harmless to the city as a whole. However "with legal systems too weak or corrupt to enforce law and order, citizens are turning their homes into fortresses" and the rich moving into walled condominiums everywhere (Larmer and Brant 1998). Ironically, while the more comfortable classes are the ones constructing layer upon layer of shield and shutting themselves in high rises and distant compounds, most of the murders actually are perpetrated in the shanty-town periphery developments, well away from those most fearful (*The Economist* March 8, 1997).

While total crimes of violence and property declined in Puerto Rico during the early 1990s, crimes of a dramatic, and previously unheard of, nature in Puerto Rico rose and caught the national attention, including homicide and specifically carjacking (Roman 1992). The number of homicides in Puerto Rico doubled from 467 island-wide in 1989 to a peak of 987 in 1994 (see chart next page). Carjacking, the forcible taking a vehicle with a firearm, a previously unheard of crime on the island, seemed to become an instant epidemic with 8,669 incidents reported island-wide in 1992. (One observer hypothesized that the increasing difficulty of stealing unoccupied autos due to alarm systems and other protections made it relatively easier to steal an

Homicides in Puerto Rico

Year	Homicides	Violent Crimes
1989	467	N/A
1990	871	N/A
1991	862	N/A
1992	864	32,286
1993	954	26,342
1994	995	25,400
1995	864	22,450
1996	N/A	20,147
1997	710	19,596
1998	635	16,439
1999	N/A	14,180

(Associated Press Dec 24, 1998; Padilla 1994, Roman 1992)

occupied vehicle (Navarro 1994)). San Juan led all major American cities in carjackings per capita that year, with a rate of 709 carjacking per 100,000 residents (3,192 for its population of 450,000). The automobile, the dominant form of transportation on the island, became Sanjuaneros' dominant source and locus of fear. The daily activities of parking and fueling of automobiles became fearful propositions, as the Puerto Rican police revealed that most carjackings occur between the hours of 7pm and 6am near stores and gas stations. (Navarro 1994) In a very high profile incident, the brother of Puerto Rico's attorney general was shot to death during a carjacking outside his home in June 1994. (Hutt 1994) Similar trends have been noted in other Latin American cities. In Sao Paulo, security experts say most crime victims are seized from their cars, with some kidnappers using their cars to block a victim's car and force it to come to a stop (Margolis 2000). The president of one San Juan neighborhood association told the *Miami Herald* how "thugs would drive around in luxury cars – BMWs or Mercedes – until they spotted someone parking at home. They would then approach with automatic weapons to steal money and jewelry. Sometimes they would steal the cars, too" (Roman 1992). Seemingly random drive-by shootings also began to appear in the island's current events. One public housing tenant described "frequent gunfire and the parade of customers driving through to buy drugs." (Roman 1992) A San Juan front page story in 1994 announced how armed men drove up to an outdoor party in the beach town of Luquillo early Christmas Day and opened fire with AK-47s and pistols, killing four people (Hutt 1994). The reality, however, is that most of the dramatic violent criminal activity has been far from random — up to 70% of all homicides on the island are blamed on the drug trade. Governor Pedro Rosello had said that rising car theft was a manifestation of a drug problem that was also responsible for a disproportionately high homicide rate (Navarro 1994). The host of the Luquillo party, who was among those killed in the shooting, was awaiting trial on significant drug charges. And the drug trade has been connected to autos in more ways than just drive-by shootings, carjackings and auto theft. Access provided by auto-based infrastructure has facilitated the spread of the problem: one source noted that, "In Manati, a growth area accessible by an expressway from San Juan, bodies suddenly started appearing on the streets after gangs began fighting" for drugs (Hutt 1994).

Such dramatic events captured the public's consciousness. Crime became a focus of attention in the public eye in Puerto Rico, and San Juan in particular, as nearly half of the island's serious crimes (homicide, rape, theft, assault) occurred in the San Juan metropolitan area, despite containing 37% of the population (Roman 1992). In his 1992 successful bid for governorship, Rosello promised to fight crime with a "firm hand" (Padilla 1994). Except for homicides, crime was down one year into Rosello's administration, total violent crime down by 21.5 percent in Rosello's first two years, and the murder rate declined in 1995 (by 14% over

1994) for the first time in 12 years (Cuevas 1996, Hutt 1994 Padilla 1994). Carjackings dropped dramatically after the apex in 1992 by almost half (4,522 in 1993 vs. 8,669 in 1992) as the act was made a federal U.S. crime in 1992 with up to life in prison. Violent crime has continued to fall, and from 1992-1997 the rate fell by almost 40% to its lowest level since1983. Burglaries fell in the mid-1990s to levels comparable to 1974 and aggravated assault to levels of the 1960s (Navarro 1994).

In the meantime, fear of crime swept throughout island, most intensely in the San Juan metropolitan area, affecting residents' behavior, social habits, and even overall settlement patterns. *The Miami Herald* reported that hundreds of Puerto Rican families have moved to Central Florida, ostensibly to get away from crime (Padilla 1994). A form of collective hysteria has fomented, respondeding to perceived trends in crime. The general perception among residents of the prevalence and growing seriousness of crime has been generated by a number of factors, not least of which has been media sensationalism. The assistant Superintendent of Criminal Investigations for the Puerto Rican Police has stated that "People think things are worse than they really are. The media tend to highlight the negative" (Roman 1992). Media have capitalized on rise of dramatic events, hyped singular events, and propped up otherwise dismissable levels of criminal activity, continually perpetuating perceptions of higher crime rates and streets of terror. While the number of carjackings dramatically decreased in 1993, the *New York Times* reported that "many Puerto Ricans have barely noticed the decline." One needs only to point to the newspaper, *El Vocero*, a popular tabloid, which began to track the number of carjackings *daily* on the second page of the paper, highlighted in a bold sports box-score type fashion. The mere effect of reporting the rate of incidents, no matter how insignificant or statistically decreasing, can color a person's perceptions toward a "virtual" crisis. One woman interviewed insisted, "I don't believe there are fewer carjackings. The other day they stole 23 cars in one day. I heard it on the radio" (Navarro 1994).

While overall crime, and even overall violent crime, was declining in the early 1990s, acts of apparent increased severity and sensational quality, such as murder, increased. Total crimes of violence and property in Puerto Rico dropped in 1991 compared with 1990, but homicides increased from 600 to 871. While people were statistically not very likely to be a victim of such an incident, and increasingly less likely to be a victim of crime overall, the increase of more *dramatic* acts instilled a greater fear. Additionally, a small number of high-profile crimes have punctuated the news, creating the appearance of a pervasive crime epidemic that reaches the highest and most exclusive echelons of society.

An undercurrent of crime has permeated the consciousness of Sanjuaneros, coloring how they perceive the city as well as physically interact with it. The hyperbolic attention by the media combined with a strong culture of word of mouth news communication, has magnified the perception of the omnipresence and permeability of dramatic crime throughout the entire population, such that most people feel like they have been directly affected by incidents. One statistic in 1994 revealed that half of all Puerto Rican families surveyed indicated that have been touched by serious crime (Padilla 1994). (A highly unlikely statistic; this could also be influenced by what Puerto Ricans consider as their "family" or "extended family.") Exaggera-

tion of personal contact and preoccupation with inflated sense of personal risk has become the norm. "Almost everybody I know has been carjacked, most in broad daylight. The paranoia to me is worse than the carjackings. Everybody is so scared." (Navarro 1994). This culture of perceived crime is also manifested in how people perceive areas of the city and refer to it when discussing things among themselves and others. Residents in the urbanizacion of Garden Hills in Guaynabo, one of the most expensive neighborhoods in San Juan, took to calling their neighborhood 'the electronic teller,' because thieves came so often to make "withdrawals" (Roman 1992).

Fear has struck such a nerve with people that many have taken to altering their routines or behavior temporally and spatially. Newspaper stories have reported on people avoiding nighttime activities, such as movies, as well as amenities placed in the public realm, such as telephones and cash machines. Mostly, these fears have revolved around carjacking, and behavior surrounding the rituals of driving has been most shaped. "The risk of getting in and out of the car is by now so ingrained in the collective psyche that it has changed driving habits." Drivers have reported routinely circling the block several times before parking for fear of carjacking. The woman quoted earlier as having kept up with the carjacking "box score" in the media also described how as a result of this awareness she makes her husband drive three times around the parking lot of Plaza de Las Americas [shopping mall] until he finds a spot close to the store entrance (Navarro 1994).

This omnipresent motif has become ingrained into the public psyche and maintains a steadfast persistence that fails to reflect reality or at least actual changes in reality. The resulting fears are not manifested as just common "concerns" or even "heightened awareness": observers describing the public consciousness in San Juan have commonly thrown about the terms "paranoid" and even "collective hysteria" (Navarro 1994, Navarro 1995). Regardless of the actual crime trends in Puerto Rico and the risks of victimization from crimes most feared by residents, perception persists and behaves independently of reality. While certain crimes have indeed risen (and subsequently fallen), reality is really in the mind of the beholder. "My sense is that both the perception and the reality are there. In things like crime, sometimes perception can drive the reality," remarked a professor at Florida International University (Bohning 1999). Even language used by officials reflects the sense that perception and reality are divergent: a 1993 memo by Norma Burgos, president of the Junta de Planificacion, the island's urban planning authority, stated that communities today "se siente amenazada por el problema de la alta criminalidad." That is, they "feel" threatened about elevated crime, but Burgos refrained from using the phrase "is" threatened. (Burgos 1993) Fear is certainly a powerful enough force to overcome reality; in fact fear defines the reality.

So, despite significant reductions in all crime over the past several years, the perception of its prevalence and seriousness, and the resulting fear, remain high. A poll of island residents taken by the newspaper *El Nuevo Dia* on Feb 27, 2000, found that drugs, crime and corruption the three major concerns of Puerto Ricans. Of all residents polled 92% of those polled consider drugs to be the island's principal problem, while 91% are worried about crime and safety, though corruption rose the most from 60% in May 1999 poll to 72%.

2.2 Demands for security and municipal responses: regulations and implementation of gating

Exacerbating the perceived prevalence of serious crime is the perception that those in authority are impotent or ineffective to adequately address crime. Residents commonly acknowledge corruption among law enforcement and government, and until recently have not felt they could look to either to deal with these matters of security. In 1994 30% of police officers lived below the poverty level (with a monthly salary of $750), giving incentive for corruption and little willingness to risk their own well-being for such poor compensation (Roman 1992). The judicial system has also been perceived not to have fulfilled its role in addressing crime, or there is at least general ignorance as to the judicial system's activities and accomplishments. While the media spends a great deal of bold ink covering dramatic acts of violence, they spend comparatively little ink reporting on the prosecution or resolution of such events, giving residents the perception of rampant crime going undeterred. "It's not merely a matter of whether crimes are reduced or increased in the Caribbean, but also how many criminals are arrested, convicted, and punished" (Bohning 1999).

Little faith in the police or government to deal with perceived problems of crime creates a general perception of a fundamental breakdown in civil society's ability to care for its citizens. The results are extraordinary defensive actions on the part of fearful potential victims, who feel exposed in their present situation, as if in a hostile wilderness without shelter. The primary reaction is the "forting up" of the population, or the creation of a "safe zone" around one's home. People feel as if they have little ability to affect the goings-on of the world around them, and the home is one of the only places and spheres of influence where they can actually retreat to craft protection until the larger environment appears safe again for engagement. Authors Blakely and Snyder (1997) have boiled down simply the options of the fearful: "those who feel threatened have two options: fort-up or move to a safe zone;" the wealthy with homes in desirable locations fort-up, the working and middle classes without resources to move *have* to fort-up.

With the rise in drug activity evident to most Sanjuaneros, sensitivity to these trends manifested itself even before the main surge of the murder rate hit the island. The pressure on politicians from residents to allow them to fort up their neighborhoods grew substantial enough in the late 1980s such that the legislature authorized Law Number 21 on May 20, 1987. The resolution authorized the Junta de Planificacion to consider rules and regulations regarding the control of vehicular traffic and the "public use of streets" in urbanizaciones. Essentially, this was a decree to allow residents to gate off their communities to insulate them from perceived threats. The resulting regulation, *Reglamento 20: Reglamento de Control de Transito y Uso Publico de Calles Locales*, was passed by the Junta on Jan 20, 1989, setting guidelines for urbanizaciones to alter access to public streets. The regulation established a minimum 75% resident approval for implementation, established basic rules requiring resident funding for implementation and maintenance, as well as set standards for design and operation. There was a tacit recognition in formulating the regulation that such changes

would cause major disruptions to city living and circulation patterns, resulting in the stipulation that such street controls be limited to application in urbanizaciones with "only one access or that have more than one access which do not constitute primary rights-of-way of passage to other communities." The legislature amended the regulation once in July 1992 (as Law No.22), primarily to add and clarify new rules regarding the administration of the regulation (including the payment and collection of maintenance fees and agency approvals) (Burgos 1993).

While the neighborhood gatings were ostensibly neighborhood actions not funded by the government, much public money has actually been used for these gatings as a result of political popularity and pressure by urbanizacion organizations. Over $1.8 million in public funds was used from 1990-1994, the vast majority going to upper- and upper-middle class neighborhoods, according to one newspaper report (Ross 1993). The gatings have largely followed economic class lines, despite the nominal financial assistance provided by the legislature. Not only does construction of the access controls cost significant amounts of money, but maintenance can add to a financial burden that most lower-income communities simply cannot afford. A significant additional cost comes with employing guards (with questionable legality, discussion to follow) to monitor the comings and goings of residents and visitors, and up to 45% of closed communities have guards (Ross 1993).

The gatings offered to fearful residents the perception of "instant relief" from crime. The mentality and common belief had developed that structural ways of addressing crime through civil society and conventional methods of law enforcement were totally ineffective in protecting the populace from the wolves that prowled the streets in people's minds. The perception was cultivated that "when violent crime reaches current levels, it overwhelms conventional methods of prevention and control." (*The Econimist* March 8, 1997) (Of course, both parts of that notion are questionable – first that the "current level" of crime actually *exists*, and second that the chosen method of dealing with it actually is a practical form of "prevention and control.") One state legislator, Senator Silva, went on record saying that gating is "the only effective mechanism for crime control." (Ross 1993) Rather than tackling actual roots of crime, gating provided an easy answer and a way for fearful people to feel that they could regain control over what they saw as a lawless environment. What people really seek is "instant relief" not from crime, but from fear, as the actual risk of victimization by the dreadful crimes most people fear is actually fairly low. The gates and walls are placebos – though to residents *perception* is reality.

Emerging problems and controversies of gatings

But despite the political popularity of allowing urbanizaciones to gate open public streets, this movement has had significant and vocal detractors who have brought into the public dialogue many inherent problems in such schemes. The claim has been put forth by the Junta and supporting legislators that "the drafting of the regulation took much care in looking after the interests of the entire citizenry, those that favor and those that don't favor access control" (Burgos 1993). However, the "tyranny of majority" has been played out time and

again with respect to gatings, as the rights and desires of non-supportive residents are swept aside by other residents who are willing to sacrifice other qualities of civility and of their neighborhoods in pursuit of this "instant relief." Lawsuits filed by the Coalition Opposed to Indiscriminate Closing of Streets and the civil rights group Ciudadanos en Defensa de los Derechos Civiles challenged the gating tactics not just on behalf of un-supportive residents, but on broader questions of the equity of impacts and of assaults on essential inalienable constitutional rights. Maria Kortright, president of Ciudadanos, listed a litany of people impacted negatively by these access controls: the elderly, the handicapped, small merchants, the poor, users of public streets, those who live "between" urbanizaciones, and those who live in areas that remain open. She made the case that gating fundamentally promotes inequity, violations of civil rights, fragmentation, and favoritism toward the wishes of small enclaves over the greater good: "you can compare this to other Latin American countries where a small group of privileged people are able to have all the wealth and the majority of the population has to suffer every type of scarcity" (Kortright 1993). Kortright also noted that a sizable contingent of negatively affected people include residents of gated urbanizaciones who oppose the gatings, as their property rights have been violated. People buy or rent property for a variety of reasons, both physical (e.g. the ability to walk to the store) and metaphysical qualities inherent to a neighborhood, and these benefits can be nullified or negated by the gating, decreasing the value of that resident's home and life investment.

Finally in 1995 the Puerto Rican Superior Court ruled against one urbanizacion's gates and implementation practices (College Park in Rio Piedras). The court ruled that the actual implementation of the access controls broke the guidelines established in Law 21, which forbids ruining the continuity of a street. The critical ruling on the constitutionality of access controls (and especially guarded gates) held that guards cannot legally keep a register of visitors and may not prevent anyone from entering closed streets, and that visitors need not provide any information to anyone, including their purpose or destination of travel (Blasor 1995). However, compliance and enforcement of these rulings and regulations is spotty and generally nonexistent, allowing areas to flagrantly violate the laws. That same year the increasingly vocal opposition of the gatings gained traction in the political arena as Senator Roger Iglesias introduced amendments to Law 21 requiring Department of Public Works' approval of access controls, increasing the resident support requirement to 85%, and forbidding the erection of permanent barriers such as walls (Blasor 1995).

While urbanizaciones of private residences have taken the initiative and tried to construct, in a simple fell swoop, a safeguard against crime, the government tried to "solve" the problem of criminal activity in public housing with similar, and even more aggressive tactics. In June 1993 Governor Rosello ordered the National Guard to begin raids on public housing developments to oust criminal elements. In the five months following, the Guard raided 27 of the island's 360 projects. After the raids, the government began erecting fences around the housing complexes and installing checkpoint entries to control access (often restricting large complexes to a single entry).

As with the gatings, many problems and complaints arose with National Guard actions. Many residents brought up charges of harassment, illegal and unwarranted searches and interrogations, and invasions of

privacy. United States President Bill Clinton nixed a plan to use the National Guard for a similar effort in the mainland U.S. after the Defense Department warned that this military force is not trained in law enforcement (Padilla 1994). Ironically, Puerto Rican attorney general Pierluisi justified the subsequent encircling fortifications of the public housing in terms of equity with the urbanizacion gatings (which were criticized as having been drawn along class-based lines of exclusivity): "the measure is no different than what middle-class neighborhoods have done to protect themselves: fenced themselves in and placed guard houses at entrances" (Hutt 1994).

The government's actions in the public housing developments and, according to many, the closed urbanizaciones, have created a repressive environment that violates fundamental notions of a free society and equality, all in the name of controlling crime, or at least alleviating many segments' fears of crime. One journalist posited that "nostalgia for the days of authoritarian rule could exacerbate the problem even as it compromises democracy" (Larmer and Brant 1994). The concept that only increasingly tighter controls of public movement and activities can create an environment where everyone is "free" is an especially slippery slope for many Latin American countries with fragile or fledgling democratic regimes and great class polarizations.

Still, despite the legitimate complaints, illegalities, and disadvantages, many people perceive that the gatings beget actual benefits which they feel improve their lives and living conditions. Many have reported a general increase in neighborhood "livability." To describe how livability has improved in these cases, people most often describe an enhanced freedom, safety, and joy they feel using public space, and in particular, streets. For example, one woman explained that "now [post-gating], people are not afraid to walk around the neighborhood at night, children play safely in the yards, and neighbors celebrate Christmas at an open party on the street" (Blasor 1995). Additionally, people in these altered communities have reported *perceived* reductions in the frequency of assaults and shootings. Putting aside for a moment the question of actual crime rates and the disadvantages of these schemes, as far as resident perceptions are concerned, a distinct and oft observed result of the gatings has been a beneficial change in how residents perceive their relationships to their streets and neighborhoods (at least inside the gates). "Now the roads are blocked the residents are reclaiming their streets" (Roman 1992).

2.3 Form of new security-oriented development

Early forms of gated-ness in San Juan

Designing communities to facilitate defense is not new, including in the Western Hemisphere. Caribbean Spanish fort towns in the 1500s were the earliest gated European towns in the New World. In fact, within

twenty years of San Juan's initial settlement in 1519, construction of fortifications began. Old San Juan derives much of its contemporary fame and tourist attraction from its forts, El Morro and San Cristobal, and its crenellated high walls that surrounded all of Old San Juan until the 20th century. San Juan Bay was a critical port and base of operations for the Spanish in the Western Hemisphere, from which point they could monitor all shipping and trading with Europe. Only five gates regulated entry through the walls, first erected in the 1630s, and only one of these gates connected Old San Juan to the rest of Puerto Rico on the landward side. Other cities in the "New World" which had similar origins behind walls include Quebec City, Charleston (South Carolina), Cartagena (Colombia), and Panama City.

The walled cities of old were built to repel massive military attacks from outside, while the entire town populace and most of its functions were self-contained within the walls. Aside from agriculture and resource extraction, the city within the walls was *whole* and largely functioned as a singular unit. The entire spectrum of the populace lived and worked largely within the walls, all types of uses finding their place within its confines. In contemporary San Juan, the citizenry is no longer trying to defend itself as a whole from distinct packs of marauders that come from outside, but the perceived threats are diffuse and come from within. "In recent time, the problem of defending our homes has been complicated by the recognition that the enemy doesn't come from outside, but rather is present in our towns and cities" (Burgos 1993). That is, that a wall around the periphery of the city of San Juan would be irrelevant in addressing the current perceived threats of violent crime — everybody is inside. Yet people who perceive threat have maintained a fundamental desire to define a domain of "inside" and "outside" in order to regain some sense of control. People retreat to that which is identifiable as "home turf." The residential enclave or neighborhood has thus become the basic defendable unit.

The first gated residential community in Puerto Rico was the subdivision of Suchville, built in 1937 in Guaynabo. In the 1960s there was a small proliferation of gated developments, but not until the 1990s did developers begin building gated communities en masse.

Trends in real estate and impacts of fear on urban residential patterns

While acts of violence are fleeting temporal actions and trends and rates of crime can rise and fall, they have more lasting effects on both the public psyche and the physical landscape. There is significant lag time, measured in years, in public perceptions and fears of crime that persist beyond changes in the reality of crime and victimization rates. As shown earlier, despite subsiding and relatively low crime rates, fear is hard to shake. Fear influences how people shape their environment, and the built artifact remains in the landscape for a great length of time, creating lasting scars and an essentially permanent record in the city of fears that ended long ago in response to actual events that lasted for an even briefer period before that. It takes quite a while for real estate trends to pick up on changes in the public psyche and to start developing new prototypes

in response. The inertia of now entrenched interests and well-developed paradigms carries the development industry well past the end of the initial interest and yearning of the public. Concerns of yesterday drive the development of today which will become the environment and shaper of activities of tomorrow and much time to come. This time lag reality underscores the immediacy of development concerns for Tren Urbano, a significant investment with equally permanent and un-movable infrastructure. Should poor design and land use decisions be made now around stations, Tren Urbano will be hobbled for at least a couple generations.

As proof of the current strength of the trend toward closed residential neighborhoods, realtors have estimated that at least 2 out of 3 Puerto Ricans will not consider buying a house unless it has controlled access at the neighborhood or development level (Alfaro 1995). While the entirety of the housing demand market might not desire gated neighborhoods and controlled access, great pressure exists on developers to provide this "amenity." A bandwagon effect pulls in developers who see success in the market from such developments. Once the trend is established, developers are extremely hesitant to break with the proven mold and continue for some time to build what they think the market wants. But because all development assumes this form, it becomes all that the market knows – a self-fulfilling prophecy, a monopoly of design with significant barriers to entry. Gating and design for insularity has become so embedded in the development paradigm that including gates as part of a project is "standard operating procedure," according to San Juan developer Federico Sanchez-Ortiz (telephone interview, May 2001). "The market has evolved to where we don't think twice. Gates and walls are included from the inception like any other utility, like water and electricity." Sanchez-Ortiz added that he perceives "it would be a marketing problem to build without gates."

There is equal pressure for homebuyers to join the bandwagon toward gated communities. As higher socio-economic status residents gate their communities or move into new closed developments, the achievement of status becomes equated with such an accouterment, no matter its intrinsic value. Additionally, as homebuyers and owners perceive a property value premium in a gate, not having gates is seen as a liability. But even for Sanjuaneros looking for housing who still do not want to live in gated developments, the options are practically non-existent, especially for newly constructed housing. One San Juan real estate agent, Sam Melendez of Coldwell Banker in Bayamon, confessed that in Bayamon or Guaynabo, "if you don't want controlled access, you're limited to 'used' housing."

Given current and recent development trends, it would appear that the bandwagon effect among developers is so strong as to drag any publicly sponsored development along with it, with the fencing of public housing projects as a prime example. Michael King, writing in *Cite* on the new trend of gating public streets in Houston postulated that "private developers of suburban subdivisions or of urban apartment complexes will continue to market gate enclosures as emblems of 'exclusivity' and 'security,' thereby generating pressure on the public sector to compete with the private market by providing those same intangible commodities" (King 1997).

The public sector does little to stand in the way of the creation of new gated developments. The U.S. federal

government provides numerous loans and mortgage guarantees to housing projects in Puerto Rico and puts little stipulation upon the overall neighborhood design of the developments, generally deferring to local developers on such matters. Sanchez-Ortiz's company is currently developing large new residential developments in Las Piedras (outside of Humacao near the east coast of the island) and in Vega Alta, (just west of the San Juan metropolitan area), both of which possess gates and guards, and both of which receive FHA support. Upon creating new developments, developers in San Juan either have the option to surrender their prerogative to close streets and hand control of the streets to municipalities, or to keep the streets privately controlled and assume all the responsibilities and costs that come with maintaining and servicing the development (Kortright 1993). Short-sightedly, municipalites' tight budgets lead them to allow developers to make such decisions in exchange for swallowing many of the costs associated with servicing the development. With such a lucrative (and pre-determined) market for gated communities, the decision for developers is an easy one.

In their book *Fortress America* (1997), Ed Blakely and Gail Snyder categorize gated and security-oriented communities into three categories (with overlap between them). The *lifestyle* genre generally revolves around overt themes and is sold based on the amenities they provide to residents. Retirement and golf/leisure communities dominate this market. These developments typically attract people with similar interests (e.g. golf) or demographic characteristics (e.g. age). Gates do not serve mainly as crime-prevention tools in these communities, but rather preserve the exclusivity of the amenities (e.g. golf course, clubhouse) for the enjoyment of residents only. *Prestige* gated communities are those that feature few if any communal amenities other than the gates and security which surround the housing and its internal circulation. These gated developments are status symbols and their addresses are supposed to establish the residents as "successful," or at least important enough socially to warrant such privacy and protection. Simultaneously, the gates serve to protect residents' property and accumulated investments. The third category is the *security zone*, which describes existing neighborhoods outfitted with barricades by the residents themselves (rather than by developers at the inception of the development). The barricades of these neighborhoods, which Blakely and Snyder also call "barricaded perches," are built specifically because of a perceived threat. It's critical to note that for this type of fortification it is not a question of whether there exists an actual need to build them but whether the residents *feel* they "must."

Few if any gated communities in the United States are actually advertised by their developers as "gated" and definitely not advertised as "secure," because such a claim implies that it offers a hermetic security that would be an invitation for lawsuits. According to Blakely and Snyder, most gated developments slyly promote themselves using terms such as "exclusive," leaving inferences of gating and security up to the consumer, or at least to visual representations which often speak volumes as to intent. However, in Puerto Rico, a glance at the real estate section of a given newspaper will reveal that the majority of developments explicitly and prominently advertise themselves as "access controlled."

Types of controlled developments in San Juan:

There are numerous configurations and types of access controlled residential developments in San Juan. First are the retrofitted, or *retro-gated, neighborhoods* that have been partially gated or otherwise altered as a result of the implementation of Law 21 (Figs 2.1, 2.2). These are neighborhoods, in the more traditional physical conception, with sidewalk-lined streets and houses and buildings situated on definable lots. Though variation exists, many of these urbanizaciones were built with multiple connections to surrounding street networks and access to adjacent development. Some developments even created street stubs anticipating the possibility of connections to future development (Fig 2.3). The barriers erected around the neighborhood often create odd and imperfect borders. In many, houses have been left "outside" of the fortifications, and the treatment of the edges has jarring juxtapositions of public realm and layers of private fortification. In a few instances, homeowners have rejected the notion of gates and access controls, leaving gaps in the blockades and quirky situations (Fig 2.4).

Fig 2.1. Aerial view of retro-gated neighborhoods near Torrimar station.

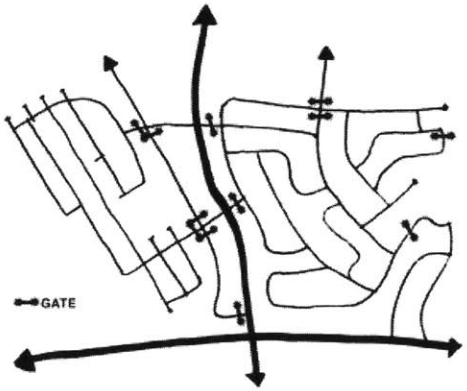


Fig 2.2. Diagram of retro-gated street network and gate placement.

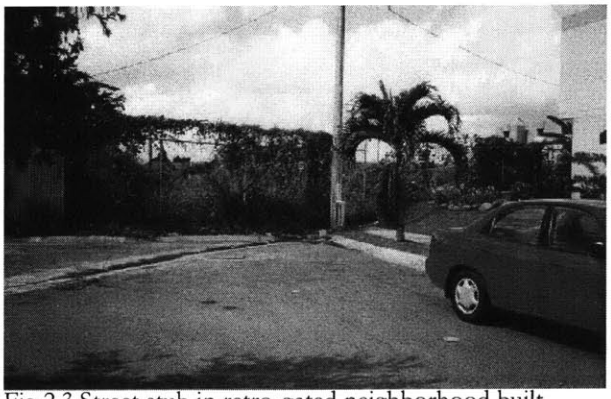


Fig 2.3.Street stub in retro-gated neighborhood built originally in anticipation of future development.

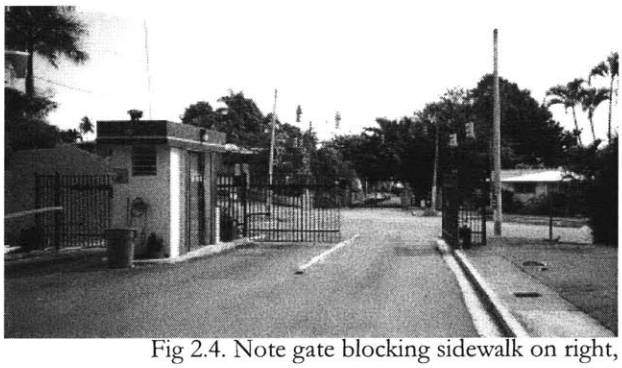


Fig 2.4. Note gate blocking sidewalk on right, but adjacent unblockaded front lawn.

More recent development has built upon the notion of the isolated neighborhood to create *mega-pod subdivisions*. These developments are conventional subdivisions that have been designed from inception as a neighborhood with private, closed, internal circulation and a distinct perimeter within which no houses are left exposed to the "outside." Street stubs of adjacent earlier development created with the intention of connecting to subsequent development are neglected and sealed off, generally with the rear of new house lots butting against the street stub (Fig 2.5). Within the confines of the neighborhood are often parks and other small community amenities (Fig 2.6). The best example of such developments is Los Paseos, in Rio Piedras. Los Paseos (Figs 2.7, 2.8) is actually a conglomeration of sub-pods, with one central entry point and an all-encompassing perimeter within which the smaller pods have their own internal circulation, walls, and access controls (Fig 2.9). All sub-pod circulation feeds into the central Los Paseos collector streets that link to the main entry. Each pod has its own name and "identity," and housing types are segregated into differing pods, including a pod with attached town-house style multi-family housing (Fig 2.10). Deceivingly, the entry design of Los Paseos creates the illusion of public access and openness at the main entry (Fig 2.11), at least for pedestrians, with its attractively landscaped, un-barricaded and uninterrupted sidewalks that extend from the public domain and connect to "public" sidewalks on the adjacent arterial and commercial development. The paving materials and landscaping even remain consistent from "outside" the development into the development.

Fig 2.5. Subdivision plan of Finca Jimenez in Cataño; note pre-existing street stubs at lower right which now end abruptly in the outer wall of the new development.

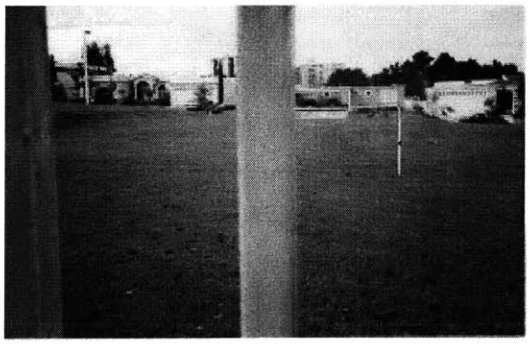


Fig 2.6. Neighborhood park in Los Paseos mega-pod, viewed through fence from "outside."

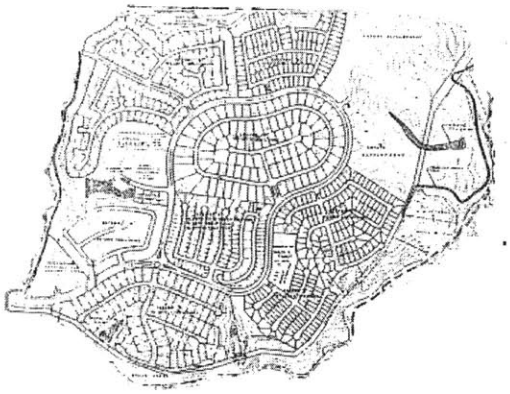


Fig 2.7. Subdivision plan for Los Paseos.

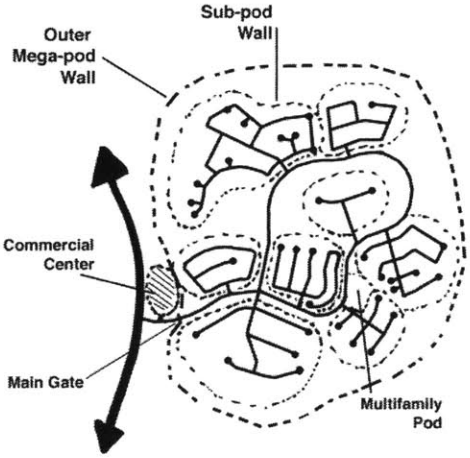


Fig 2.8. Diagram of Los Paseos; mega-pod subdivision.

Fig 2.9. Los Pasoes "sub-pod" entrance gate.

Fig 2.10. Los Paseos multi-family pod entrance.

Fig 2.11. Los Paseos main entrance;
illusion of openness via sidewalk access.

While the predominantly single-family mega-pods generally retain some conventional structure of streets defining parcels, most new multi-family developments often do away entirely with the notion of buildings sitting on definable parcels that relate to streets that form the skeleton of development. These *multi-family amoebas* take much more amorphous, free-form shapes, with combinations of towers and low-rise townhouses placed randomly across the site (Figs 2.12, 2.13). Circulation and public spaces are not much more than extruded parking lots and driveways that ooze around the buildings, not so much defining spatial relationships but filling up space like an amoeba. In general, the buildings sit in the center of the development in bunches or clusters, with the edges being defined by parking or leftover landscaped buffer (Figs 2.14, 2.15). Of course the perimeter of the development is lined by a fence or wall. By definition, these developments have no relation to larger neighborhood circulation aside from an entrance or two from the closest public street, and the orientation of their built structure and orientation do not reflect any context (including much development near Jardines and Torrimar stations; Figs 2.16, 2.17). This lack of attention to context includes shunning any potential street connections. Like mega-pods, these new developments turn their backs to and seal off existing street stubs, deliberately designing to preclude permeability between developments (Fig 2.18). This category includes the increasingly popular low-rise walkups as well as high rise towers because they share the same overall forlmess, unresponsive, and maleable layouts. (This description is not meant to include gated single or multiple towers which, while often sharing the characteristic of being set within a small sea of parking, still fit within a block structure; examples are found in Isla Verde and stretches of Condado. While apartment towers can become vertical gated communities with multiple layers of security, at the street level urban life can flourish, depending on the degree of pedestrian versus auto orientation of street-level uses).

Fig 2.12. Aerial photo of three adjacent multi-family amoebas near Jardines station.

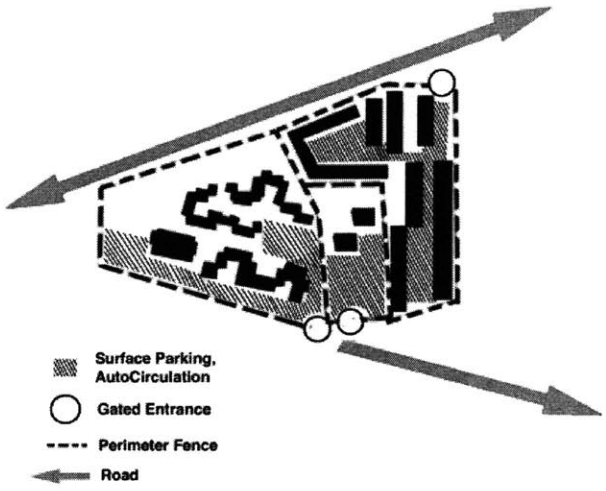


Fig 2.13. Diagram of multi-family amoeba morphology; note lack of acknowledgement of adjacency or relation to nearby roads, haphazard internal orientation .

Figs 2.14, 2.15. Mid-rise and high-rise multi-family gated amoebae.

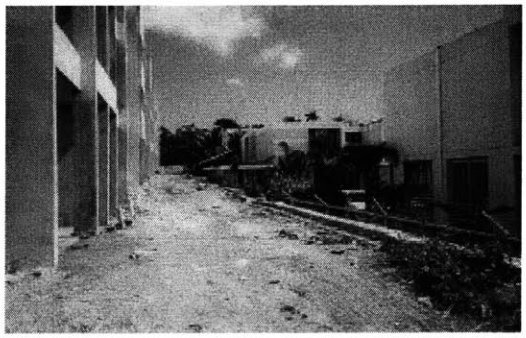


Fig 2.16. Edge condition between new multi-family amoeba and adjacent neighborhood near Torrimar station.

Fig 2.17. View of multi-family amoeba under construction near Torrimar station.

Fig 2.18. Street in existing neighborhood sealed off with wall and rear of new multi-family amoeba.

While the single-family mega-pod subdivisions and the multi-family amoebas are moving toward total dissolution of the urban fabric and away from basic building blocks that can be integrated, repeated, or expanded as part of a cohesive structure, some recent multi-family developments have made an effort to revert back to more basic urban units — the block. In one area just a short walk west of the Hato Rey station, a series of walkup developments take the form of *pseudo-blocks* (Figs 2.19, 2.20). The buildings wrap continuously around the edge of the parcel, roughly forming a square, with the interior of the "block" serving as parking area and as a private internal realm, with the perimeter lined by public sidewalks. One guarded entrance controls access from the street into the interior of the block. In all but one of the pseudo-blocks, the units on the edge are turned inward, away from the public streets to face the parking courts or internal paths, turning their backs to the streets with blank walls or stark facades with barred windows (Figs 2.21, 2.22, 2.23). Only one block fulfills the original intent of the prototype to create a more traditional streetscape, with units opening up toward the sidewalk and the public realm (Fig 2.24). The development of these pseudo-blocks was guided by a master plan which called for the blocks to be arranged within an orthogonal connective grid of public streets around the perimeter and public pedestrian paths criss-crossing the "interior" of the ensemble (Fig 2.25). The intent was for all of the units in each block to face outwards with the front door opening onto a public way, including the units bordering the public pedestrian paths. However, after the first block was built, the "intellectual and design integrity" of the plan was not followed and public design oversight slacked, so that subsequent blocks were built as they stand now, according to architect Manuel Delemos, head of the Hato Rey Association.

Fig 2.19. Aerial view of pseudo-blocks a couple blocks west of Hato Rey station.

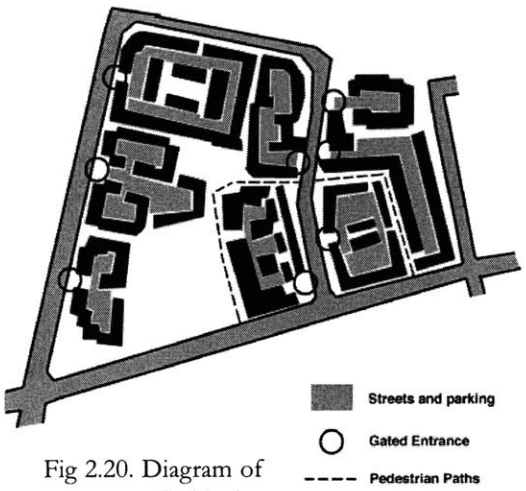
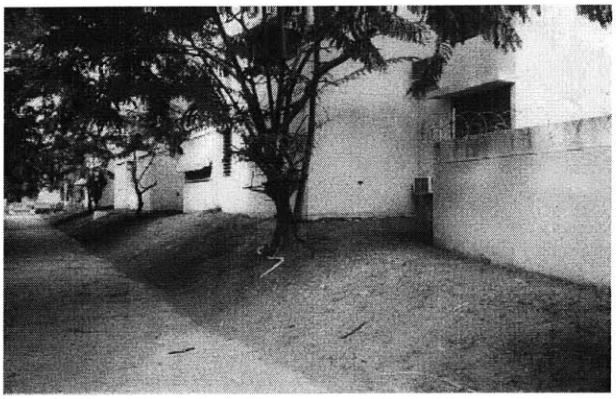
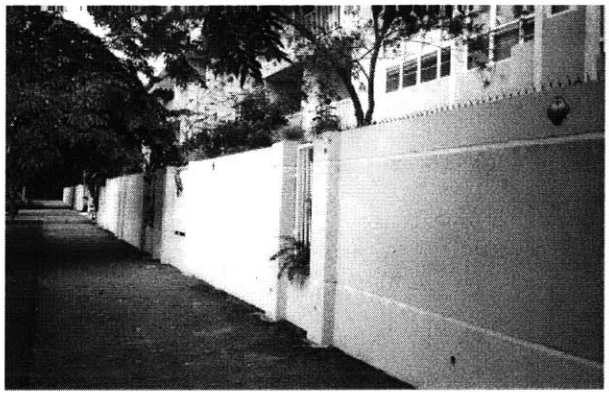


Fig 2.20. Diagram of pseudo-blocks.





Figs 2.21, 2.22. Public sidewalk view of pseudo-blocks turned inward.

Fig 2.23. Internal path of pseudo-block.

Fig 2.24. Sidewalk-facing pseudo-block built according to the master plan.

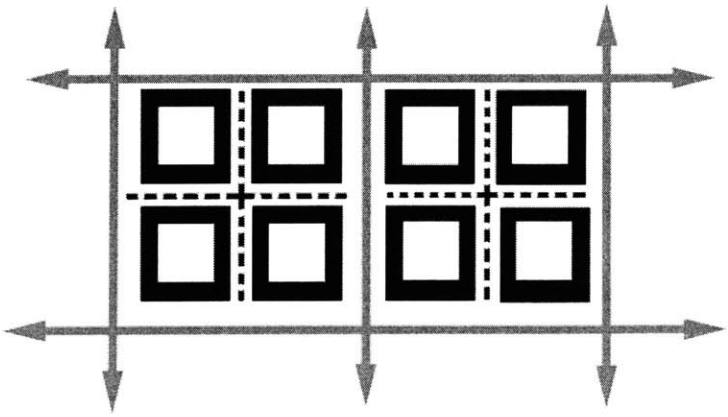


Fig 2.25. Design intent of pseudo-block master plan; units to wrap around internal parking courts with all units facing outward, either to public street or to mid-block pedestrian paths.

Chapter 3

Implications of Gated Development and Access Control for Tren Urbano and San Juan

"As the basic skeletal structure of communities, streets both divide and connect urban space. They affect environmental interaction by dictating the means of access between home and other places. They determine where residents can go and what they observe and interact with along the way, providing, in a sense, public windows to a shared world... Street patterns significantly shape a community's self-image and sense of place." — Michael Southworth & Peter Owens (1993)

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The prevalence and popularity of gated communities presents several fundamental challenges to the success of Tren Urbano. These issues range from structural urban design questions of the viability and quality of the pedestrian network to the ingrained fears of residents of walled enclaves to an urban sociology shaped by a landscape of disassociated gated fragements. Fear of crime is a problem in itself in that it leads to spatial and social avoidance, but these behavioral and perceptual factors manifest themselves physically, impacting not just those who are fearful but the functionality and patterns of the entire city. The development of Tren Urbano is part of an effort to redefine and reshape San Juan along the precepts of "smart growth," sustainability, and the "livable city," where compact urban centers and neighborhoods are hubs of activity and social life, connected by stress-free, efficient, and clean transportation. But "there can be no revitalization nor renaissance of city centers unless they are regarded as safe; safety being a necessary — although not a sufficient, — condition of revitalization" (Tiesdell and Oc 1998). In San Juan the problem is not so much the conception of a dangerous city center but of an insecurity that permeates citywide, such that spatial avoidance of the city center does not alleviate the perception of risk and the fear. Given this condition, what is at stake is not just the resurgence of the city center as a focus of activity but the potential for neighborhood sub-centers to coalesce around Tren Urbano stations – and by extension, the ability of Tren Urbano to serve potential riders.

First we'll review some of the fundamental qualities of a transit-oriented urban environment, and then examine in more detail how the prevalence of gated communities detracts from, violates, and hinders the realization these principles and other qualities. Following that is a discussion of the social and perceptual conditions fostered by gated communities that potentially undermine people's acceptance and use of Tren Urbano.

3.1 Review of Transit-Oriented Development theory

Mass transit moves people from place to place, and thus the composition of those places is of key importance to both how well transit can service these places and how well the places provide the ingredients that facilitate and encourage this service. Merely inserting transit services into an auto-oriented environment will not likely reap the ridership and modal shift benefits as it might if mutually supported by transit-oriented physical characteristics, which affect both the supply and the demand for transit. Academics, planners, and architects acknowledge that the formation of ideal transit-oriented development (TOD) must consider three alliterative ingredients: Density, Diversity, and Design (Cervero, 1997). A fixed rail line, such as Tren Urbano, transports people in bulk to fixed locations. The more origins and destinations that are concentrated and clustered within a short walking distance of stations, the more convenient and practical transit becomes for a larger number of people. Walking is the primary mode of transport on one or both ends of a transit trip, and people are generally willing to walk only short distances. Studies have shown that willingness to walk to transit stations (or for other utilitarian purposes) significantly tapers off after about 1/2-mile (about 10 minute walk). Thus the larger the number of residences, workplaces, or other attractive destinations that are clustered within 1/2-mile radius of a rapid transit station, the more attractive and practical the use of transit becomes to a larger group of people. Rapid transit of such intense capital investment also requires a sufficiently reliable critical mass of passengers to justify the investment, infrastructure, and service. Studies have shown that, controlling for other factors, a ten percent increase in residential or employment densities will yield a 5-8 percent increase in transit ridership, and that the biggest proportional gains in ridership come from moving from low to moderate levels (about 15 units/acre) of density (Cervero 1998).

Not only does a critical mass of origins and destinations need to be clustered around stations, but these activities need to be diverse. In order for people to feel comfortable giving up the flexibility of a car for transit, they must feel able to combine multiple destinations and fulfill numerous purposes along the way. This "trip chaining" ability is critical on both ends of the trip. While at work people want the flexibility to run errands or have a variety of lunch and entertainment options. On the way to transit from home in the morning people like the ability to pick up coffee and a newspaper, or drop off dry cleaning or children at daycare; while on the way home in the evening the presence of convenient retail outlets like grocery stores can permit transit riders to pick up supplies for dinner. The finer the grain of land-use mixture, that is the more the uses are integrated vertically and horizontally, the greater the synthesis. And the more potential transit riders perceive a diverse panoply of stores, services, and amenities in station areas, the more confidence they will have in their ability to satisfy the days needs and desires, thus opting to take transit instead of driving. The attractiveness, productivity, and practicality of uses mixed together are greater than merely the sum of the individual uses standing in isolation. Mixing land uses has further cascading benefits including the ability to share parking (or have no parking at all), reduce road capacity, and yield more balanced transit directional loads.

The achievement of sufficiently high densities of residential population has garnered the lion's share of scrutiny as the primary obstacle to creating transit-supportive communities in the United States, and rightfully so. It is often the case, however, that new development is indeed characterized by higher, potentially transit-supporting, densities, including much current residential development in San Juan. Developers often tout their developments as "mixed-use," when in reality they are merely "multi-use" lack real synthesis because of the coarseness of the mixture. The more disjointed and coarse the mixture, the less symbiotic the uses behave and the less each use adds value and users/customers to the whole. This is because good design is the more neglected member of the TOD trinity. As a result, development around stations ends up as insular enclaves or "chunks" of development, which creates pedestrian- and transit-unfriendly layouts and environments. "Mixtures" of land uses are executed in rigid, blocky fashions, with commercial and civic activities only tangentially related to the inward-looking, residential "communities" that feature totally closed access and circulation. All this fails to create the synthesis that characterizes transit-oriented mixed-use. Potential transit users have little ability to trip-chain or take advantage of the resources of a station area. "Sprawl" is as much a qualitative description as it is quantitative.

Anne Vernez Moudon and Paul Hess at the University of Washington identified suburban "clusters" around Seattle which exhibit many of the rough statistical characteristics of a potentially successful transit-supportive community, but little of the qualitative structure that would allow them to function properly as such: "At the neighborhood level, the clusters offer a compact land use program that approximates that of established neighborhood planning models. However, their burgeoning forms remain primitive versions or imperfect realizations of neighborhoods, preventing them from fully realizing their potential" (Moudon and Hess, 2000). The "potential" to which Moudon and Hess are referring is the potential to support mass transit. The morphology of neighborhoods truly has an impact on their function as transit-supportive and cohesive units, especially as the pedestrian network is affected (Handy, 1996; Cervero and Radisch, 1996).

3.2 The Pedestrian Realm: Connectivity, continuity, and impacts of fragmentation on pedestrian travel

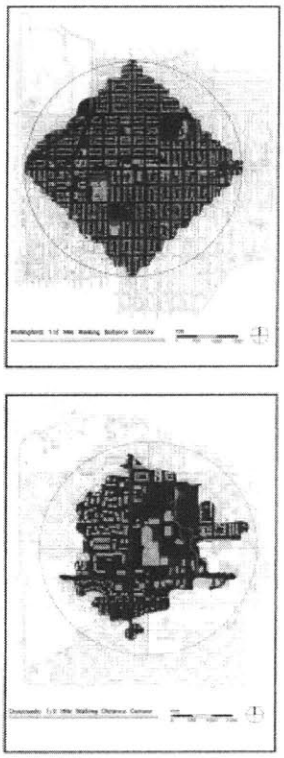
Good urban design is a more subjective issue than density, but certain fundamentals must be followed, and some can even be measured. Creating an engaging and accessible pedestrian-oriented environment is the cornerstone of good transit-oriented urban design; the pedestrian is the building block of the transit system. Furthermore, whether the transit system becomes a naturally integrated element defining the structure and patterns of urban life depends not just on facilitating pedestrian access directly and only to transit stations, but on **fostering a culture of walking**. Design of the pedestrian realm which can foster such a culture depends on the essential skeletal structure of the pedestrian network and the scale and quality of urban fabric, qualities we will call **connectivity of access** and **continuity of development**. Connectivity is a broad term that describes the intensity, completeness, and complexity of the travel network. It is critical for the success of transit to establish a rich pedestrian network, which determines how many destinations a person

can reach in a reasonable distance (safely). Continuity of development is a fuzzier concept that describes the degree to which each building or development unit is integrated with its neighbors to create a seamless whole, rather than strewn haphazardly across the landscape with jarring gaps or isolated and insulated from nearby development. Good continuity creates a coherent network of "paths" and "places," which serve to orient pedestrians and serve as foundations for the development of mental maps and even emotional attachment to places. In recent years there has been a significant resurgence of discussion on the impact of street patterns, both on defining a location's "sense of place" and on shaping the ways (and amounts) we travel. The planning and architectural movement of New Urbanism has specifically promoted the concept that a dense connective grid of streets, as opposed to the more contemporary conventional hierarchical system of dead-end cul-de-sacs, collectors, and arterials, creates a more refined sense of place and has significant transportation benefits. Street patterns are determinants of both an urban area's "legibility," how well one can "read" the layout and configuration of a city and recognize its distinctiveness, and an urban area's "accessibility," the "intensity of the possibility of interaction" which depends on the quantity, variety, and proximity of activities and the connectivity of the transportation system (Handy 1996).

As opposed to a sparse branching "suburban" movement network, a dense inter- and intra-connected network with a significant amount of redundancy first and foremost shortens distance between two points to more accurately reflect the Euclidean distance (bird's flight) rather than demand lengthy circuitous routes and backtracking detours. Paul Hess conducted a study of two neighborhoods in Seattle, Washington — Wallingford, a traditional gridded neighborhood, and Crossroads, a suburban network of cul-de-sacs and curvilinear roads. He calculated the directness of pedestrian routes in the gridded neighborhood to be 1.2 times the Euclidean distance, and those of Crossroads to be over 1.7 times the straight-line distance (Hess 1993). Pedestrians are most concerned with convenience, comfort, continuity, speed, and economy (Sleight 1972), and the idealized advantages of walking over other modes include predictable travel times, continuous availability, ubiquitous and easily maintained routes, and free, non-polluting, non-energy-consuming travel. Walking's biggest disadvantages are weather, dangerous autos, slower speeds, and limited cargo capacity (Fruin, 1992). Thus, walking trips are very sensitive to distance and most evidence suggests that the limit to which most people will walk for daily trips is one-half mile. One study showed that 70% of Americans will walk 1/10th of a mile for normal daily trips, 40% will walk 1/5, and 10% will walk 1/2. Average amenable walking distances are even shorter under unpleasant walking conditions, though can range higher under attractive conditions, evidenced by a USDOT study in 1988 in San Francisco that found the average walking trip to be over 3/5 of a mile (Berman 1996). Even this upper-end figure suggests that walking trips are very elastic under one mile, and thus pedestrians are very sensitive to barriers or routes that force them even a couple blocks out of the way.

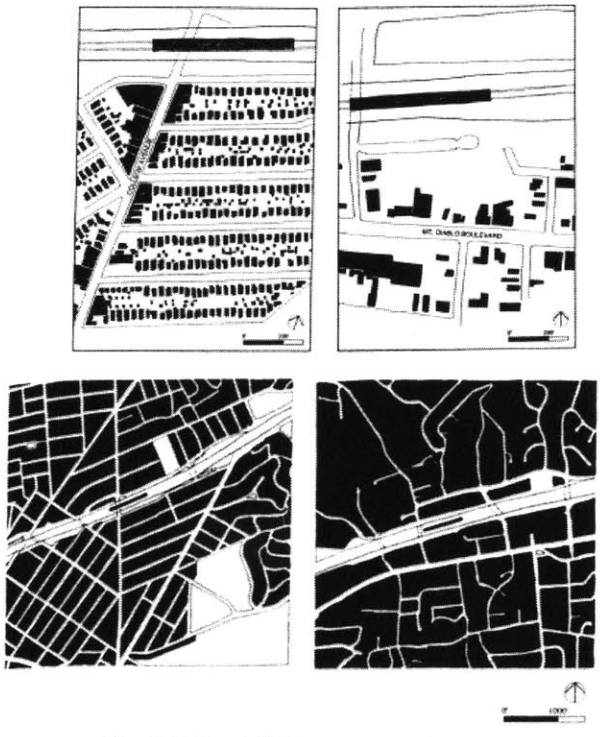
There are numerous quantitative techniques suggested in the design literature for assessing the connectivity of pedestrian access and grain of street networks. They include such measures as route directness, sidewalk completeness, mean distance between neighborhood or development entry points, the "walking shed," average block size, cul-de-sacs per road-mile, and number of intersections per square mile. Hess (1995)

introduces the concept of the "walking shed," or area reachable from a given spot by a half-mile walk. This measure is very sensitive to connectivity and density of the network and can reveal significant barriers to walking (Figs 3.1a, 3.1b). The walking shed for Wallingford, the highly-connected neighborhood Hess examined, is regular in shape, covers 67% of the area and includes 73% of housing units within a half-mile radius (the center point of each measure was the main intersection of each neighborhood's commercial district). The Crossroads walking shed is irregular, has many barriers, and covers only 45% of the area, including only 49% of housing within a half-mile radius. From this calculation we can also figure the "effective density" of each network, or the efficiency of the network, by dividing the number of houses within each walking shed by the total area in the half-mile radius (both neighborhoods have similar gross densities, Wallingford at 7.0 du/acre, Crossroads at 6.6 du/acre). The effective density of Wallingford comes to 5.1 units per acre, Crossroads at 3.3 units/acre. Not surprisingly, Hess' study found much higher pedestrian flows into the central commercial district in Wallingford.



Figs 3.1a,b. Walking sheds in highly-connective (top) and fragmented fabrics (Hess 1997).

A study by Handy (1996) compared the shopping-related travel behavior of residents in two traditional neighborhoods in the San Francisco Bay Area with comparable local neighborhoods that featured suburban street networks. She found that residents of traditional neighborhoods with dense interconnected street networks walked more often for shopping trips than residents of suburban-style street networks. However, Handy was unable to determine whether these walking trips replaced or were in addition to auto trips. Building off this question and adding a transit dimension, Cervero and Radisch (1996) compared the travel behavior of residents in two other Bay Area neighborhoods of comparable demographics, situated around adjacent stations on the same rail transit line with similar levels of freeway access. One neighborhood (Rockridge) has a highly connective fine-grained street pattern and the other (Lafayette) has a sparse hierarchical street network. (Figs 3.2a,b,c,d) Statistical analysis of total non-work trips showed that Rockridge residents do substitute



Figs 3.2a,b,c,d. Built pattern and street structure around rail stations, Rockridge (left) and Lafayette. (Cervero and Radisch 1996)

internal walk trips for external car trips. A look at work trips showed that while commute rail modal share was similar for both neighborhoods, the two neighborhoods differed significantly in access mode to the rail stations, with Rockridge showing a 20% higher share of walking. (The similar trip-to-work rail share suggested to Cervero and Radisch that regional factors were more important in determining rail mode choice for work — underscoring the need to cluster workplaces near transit region-wide.) Additionally, Rockridge exhibited a higher share of non-auto work trips, including bicycling, walking, and bus, indicating that, even if trips were not tied to the rail system itself, that intra-neighborhood trips were further influenced by the form and presence of an accessible diversity of uses concentrated around the station.

A dense inter- and intra-connected network with a significant amount of redundancy produces other important qualities that pedestrians value that are not related strictly to travel distance. Such a network contains almost limitless alternate travel routes. Connections are essentially defined by intersections, and intersections define the route options available to any traveler. The number of intersections in any given acreage of city land (i.e. the density of intersections) defines the number of potential route options. Every intersection, a crossing of two public paths, presents the traveler with a choice. Humans have an innate need for a sense of untapped potential, exploration, and "free-wheeling"-ness. People get bored of travelling the same routes repeatedly (for places near one's home, that is likely to amount to over 500 times each year), and like to match their trip route to their mood. Additionally, people get satisfaction from making decisions based on the many routes available to them – they like to exercise judgement, experience, power of observation, and intuition to find their way successfully to a destination. For pedestrians, a multiplicity of routes also allows a matching of route to trip purpose or fitness (Kulash 1990). In a sparse, poorly connected network, variation is not only impossible, but the only way to improve one's travel time is to start one's journey at a different time. The ability to explore, for the sake of exploration or in order to find and utilize alternate and varied routes, boils down to connections, especially our confidence in the existence of connections and in the completeness of the network. What people seek is freedom and choice, and fewer or lost intersections diminish both of these (Jacobs 1993). Additionally what we seek is what Ronald Christ (1995) calls "functioning anarchy" of a system – an increase of the intrinsic functioning of a system by its many actors accompanied by a decrease of extrinsic power and control. Along these same lines, Jacobs adds that patterns with fewer intersections and bigger block footprints tend to favor larger actors (in terms of bigness and wealth).

The numbers of individual blocks (correlated to the number of intersections) in any given area of a city attests to "the physical nature of city scale, visual and spatial complexity, sheer numbers of things in one place or another, amount and size of spaces, numbers of individual choice points available to people," even the intimacy and complexity of activity of an area (Jacobs 1993). We can compare street patterns of equivalent absolute sizes (Jacobs used one-square mile) of different cities, or the same cities over time, to judge scale of place, see the degree of freedom and choices available to travelers, and see if one can really sense and identify a "place." A comparison of the street and block patterns of Old San Juan with that of the area around the Jardines Tren Urbano station in Bayamon shows a dramatic difference in the grain, street connectivity, and block size (Figs 3.3, 3.4).

Fig 3.3 Old San Juan street and block grain.

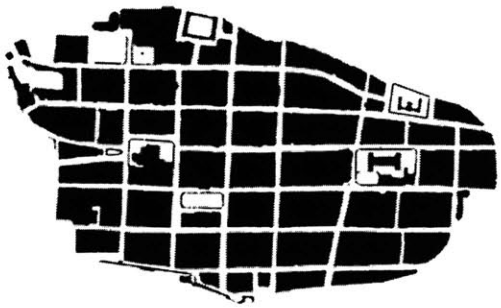


Fig 3.4 Jardines Tren Urbano station area street and block grain (station just right of center at open plaza).

Impacts of gated developments on pedestrian accessibility

Gating the existing urbanizaciones has degraded the San Juan pedestrian environment (and the "public" realm in general), and the continued proliferation of new insulated residential complexes has intensified and concretized many of these anti-pedestrian trends. Functionally, such design trends have fragmented the pedestrian network. The simple act of placing gates across sidewalks has numerous and severe ramifications on the connectivity of the pedestrian network. In spite of the law which prohibits the construction of architectural barriers across sidewalks, ARPE (Administracion de Reglamentos y Permisos) has permitted gating plans that close sidewalks, disregarding the fact that the intention of Law 21 was not to close sidewalks as access ways (Kortright 1993). Many implementations of the Law 21 gatings, through the intrusiveness of the gating equipment installations, have rendered sidewalks all but useless, even if remaining "open" to pedestrians (Fig 3.5). This especially creates serious obstacles for people with disabilities, such as those who use wheelchairs. Pedestrian access into developments, both new and retrofitted, is often seriously degraded or eliminated entirely. In some new developments, the pedestrian access into the compound is relegated to an out-of-the-way, unseen gate, with the ceremonially glorified "proper" entrance serving automobiles only. The results essentially degrade the pedestrian to lower-class status forced to endure an undignified experience. In the example in Fig 3.6 the only pedestrian entrance to this new multi-family amoeba has been shoved off to the side through an almost invisible gate, which leads into a corner of the development filled with utility boxes and garbage cans. In some other gated developments, any semblance of a pedestrian entrance is done away with entirely, leaving the only entrance as a driveway (Fig 3.7). Some developments have pedestrian gates, but the fact that they are generally locked eliminates their practical use for anyone but residents, and even residents must carry keys or memorize codes. This presents a problem when residents lose keys or

Fig 3.5. Gating accoutrements render the sidewalk almost impassable, despite being "open."

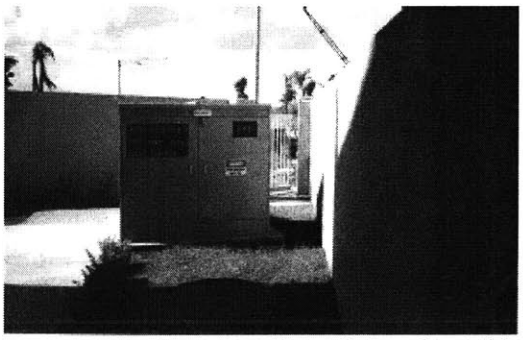


Fig 3.6. Degrading and invisible pedestrian entrance (and the *only* pedestrian entrance!).

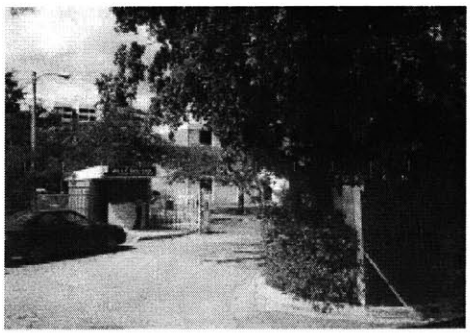


Fig 3.7. No pedestrian entrance, only driveway.

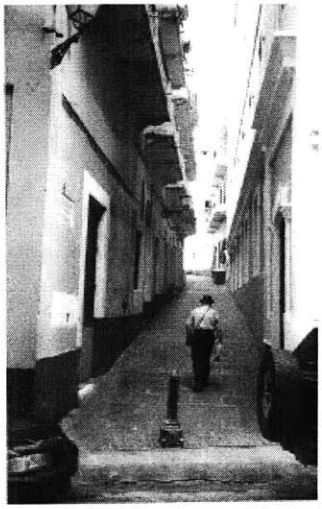


Fig 3.8. Old San Juan mid-block passejo.

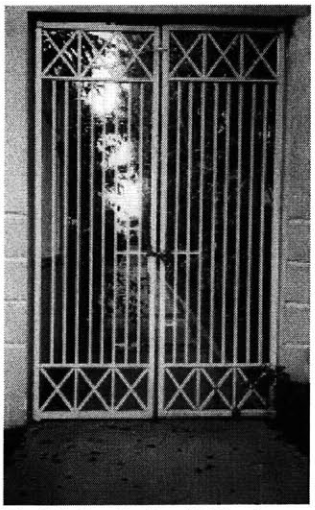


Fig 3.9. Locked mid-block pedestrian path in between pseudo-blocks.

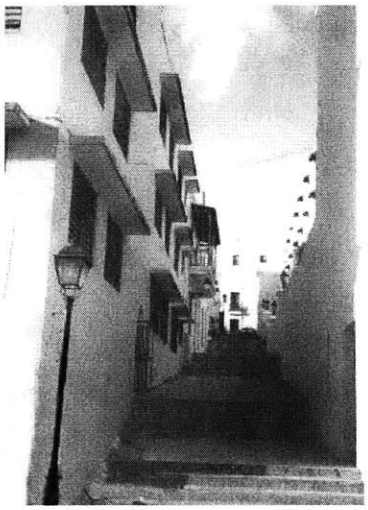


Fig 3.10. Old San Juan mid-block passejo.

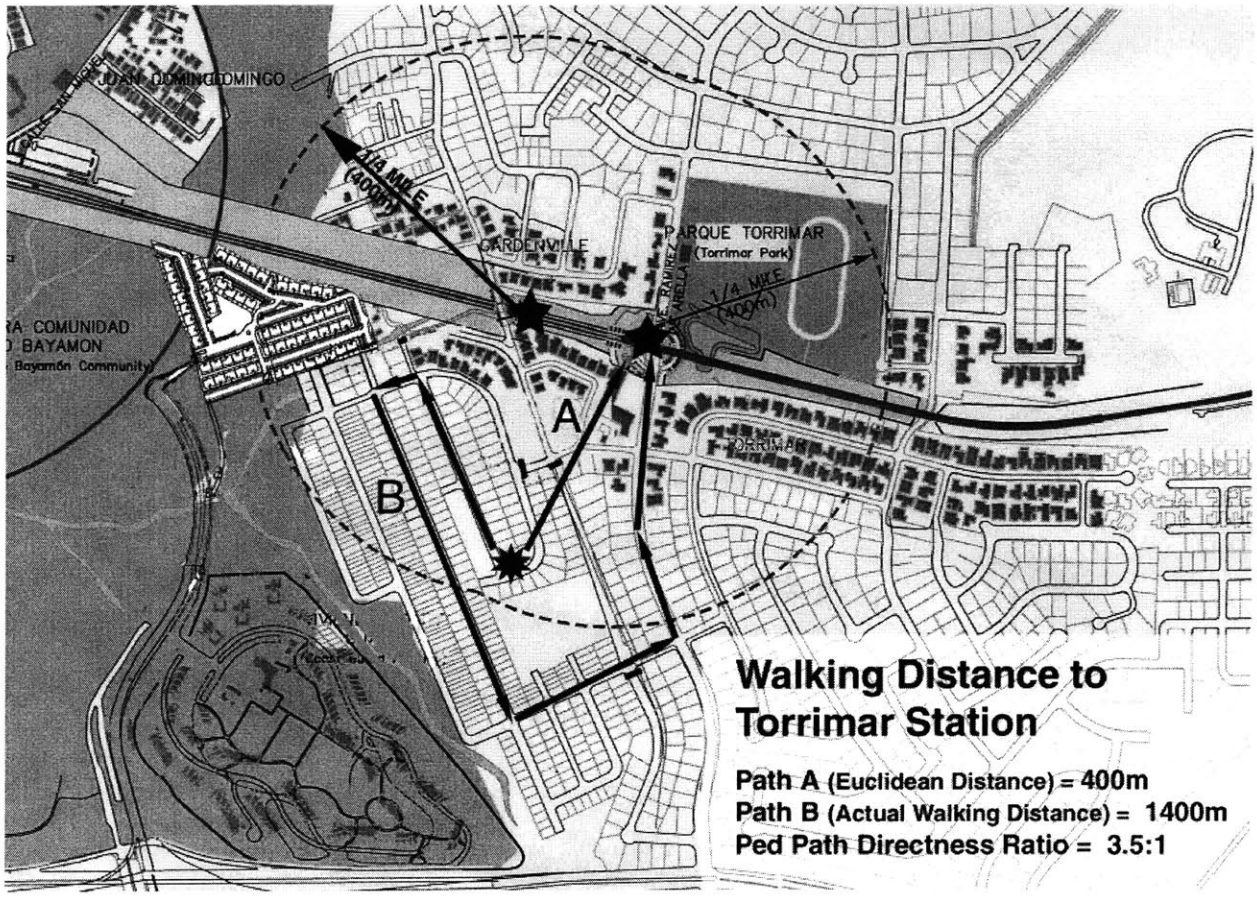
forget codes, and heated intra-development controversies have arisen over the disbursement and sharing of keys and codes among family members, friends, and other non-residents.

Distances which pedestrians must walk in San Juan have been lengthened, rerouted, and detoured substantially. A tour of the Torrimar and Jardines station areas where Tren Urbano construction is underway, reveals a blocky pattern of isolated "developments" of new gated insular developments as well as established neighborhoods retrofitted for total access control, including pedestrian, across formerly public streets and sidewalks. This significantly decreases the number of people who live within tolerable walking distance of all destinations, such as transit stops, shops, and parks, pushing actual distances farther up and even out of the range of acceptability. This has created a series of superblocks of great circumference, with singular access-controlled entries into the developments spread far along periphery and no links between the abutting developments. There is now a **lack of shortcuts**, forcing people to take what is often a longer or less pleasant route. As a good model, Old San Juan exhibits numerous pedestrian passejos that cut through blocks, linking two streets and providing shaded, quieter, and more intimate short cuts. They enrich the pedestrian network and reduce the scale of the neighborhood structure (Figs 3.8, 3.10). As describe earlier, pedestrian passageways were planned to line the borders between the walkup pseudo-blocks (near Hato Rey), forming a cross on the interior of the larger superblock. Unfortunately all but one of the pseudo-blocks turned themselves inward, surrounding their borders with high fences, blank walls, and even barbed wire, rather than having units open onto the passageways with doors, porches, windows, and balconies. The result was that the pedestrian passageways, now lined by walls and often thick foliage, became unsafe and unseen "tunnels," potentially traps for crime. These walkways were soon gated off and locked, now sitting in permanent disuse (Fig 3.9). Even where there was pedestrian intent in many developments, new and old, internal pedestrian pathways lead to nowhere and are dead-ended by walls and fences, rendering them useless. They are just dead, dangling appendages of the pedestrian network (Fig 3.11). In the street and block grain diagram of Old San Juan (Fig 3.1), the mid-block pedestrian passejos do not show up, but if they did the grain of the

Fig 3.11. Uselss internal pedestrian path leading nowhere but to a fence blocking sidewalk access.

pedestrian network would appear even finer than it does. There are not only no such mid-block or public through-development passejos in the Jardines area, but one immediately notices from the diagram (Fig 3.4) that there are hardly any blocks at all (certainly none circumnavigable at a pedestrian scale)! Thus if one lives on the wrong side of a "block" from the station, what is otherwise a reasonable distance as the crow flies actually becomes a long, unreasonable trudge. Figure 3.12a shows a sample of how much actual walking distances are rerouted and lengthened substantially by the presence of gates and internally funnelling street patterns. The euclidean distance, which is well within the comfortable walking distance range to transit stations (under 1/2-mile or 833m) has been lengthened well beyond the distance that the average person is willing to walk. Figures 3.12b, 3.12c, and 3.12d show other examples around the Jardiens station of the drastic circuitousness and extra length of walking routes from nearby housing as a result of the the fragmentation created by gated developments.

Fig 3.12a. Euclidean versus actual walking distance to Torrimar station from house in retro-gated neighborhood.



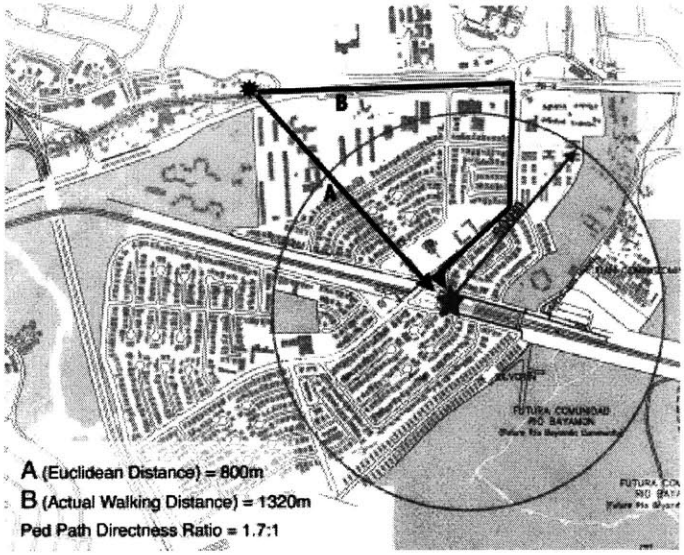
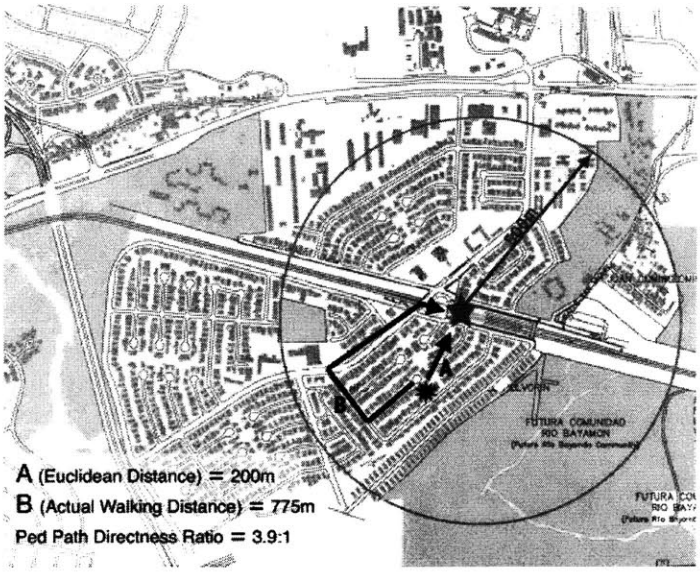


Fig 3.12b. Euclidean versus actual walking distance to Jardines station from house whose path is "blocked" by conglomeration of gated multi-family amoebas which create no public through-ways or respond contextually to adajent developments or movement networks.

Fig 3.12c. Euclidean versus actual walking distance to Jardines station from house in an ungated neighborhood, but one with a highly dendritic street network, which replicates the same pattern of inaccessibility created by gated developments.



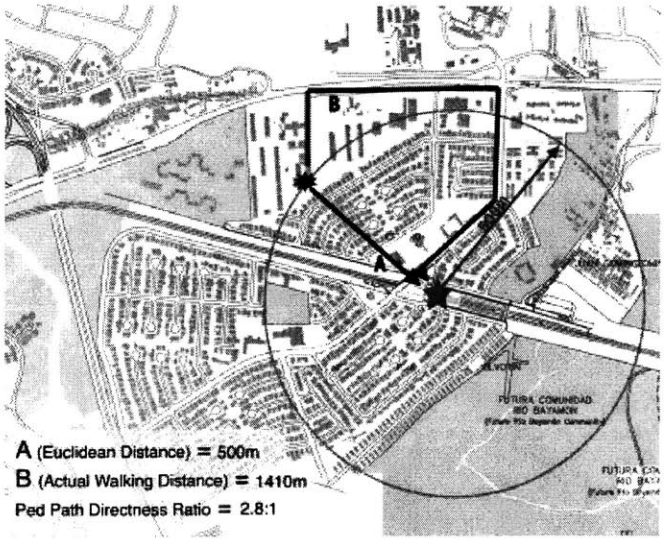


Fig 3.12d. Euclidean versus actual walking distance to Jardines station from housing units in nearby multi-family amoeba, which has only one entrance facing north, and whose southern edge is sealed by the rear of other housing.

The shortest and otherwise most walkable route from one's home often passes through neighboring developments and urbanizaciones. With the fear-induced exclusionary urbanizaciones, non-residents are re-routed to remaining "public" ways. New developments are simply designed from scratch to preclude through-access by pedestrians, with their circulation patterns and layouts intentionally unresponsive to adjacent neighborhoods, without a hint of anticipating connections to future development or even allowing and designing for "in-between" development passages (such as were intended with the pseudo-blocks). While the distance between one's home and a transit stop might be short as the crow flies, the individual now has to walk far out of the way. Being forced to take such **circuitous routes** is a frustrating experience. While on occasion people with more flexible schedules and leisure time enjoy *choosing* more scenic and circuitous routes, being *forced* to go out of one's way regularly is disheartening. The severing or non-inclusion of connections produces a drastically **lower density network** with a **dearth of route options,** reducing the opportunity of pedestrians to choose routes based on trip purpose, mood, destination, weather, health, or other factors. This forced singular routing creates a monotony of unchanging routine and repetitive scenery day-in and day-out. There is no possibility for differentiation of experience. Further, a person can only get to know their immediate neighborhood, or even just that which lies along the singular collector route leading out of their gates. The closed access, and long, circuitous routes make it difficult and unlikely that a person could explore other areas of the district or city to get acquainted with (or even exposed to) neighborhoods, amenities, and people outside of the cocoon of one's immediate community. As will be discussed in more depth later, developing such a sense of a unified city and a shared experience, heritage, and common urban interest is a vital prerequisite (or at least a hoped-for byproduct) of connecting the city with a transit system.

A fundamental design problem with the proliferation of new private gated developments is the lack of oversight and quality assurance of the standards of public infrastructure within the walls and gates. San Juan has enough problems trying to enforce zoning codes and design standards for regular development and that which abuts the public realm and rights-of-way. For instance, contrary to all existing zoning laws, commercial establishments have annexed public sidewalk space along avenues (such as along Piñero, Fig 3.13) and actually striped car parking spaces over them. Not only does this violate zoning codes, but it violates accessibility laws such as the Americans with Disabilities Act. With developers maintaining all streets within their walls as private, it is very difficult to assure that sidewalks will be maintained, that adequate and well-designed pedestrian circulation will be provided, or that pedestrian movement will be accounted for at all.

Fig 3.13. Cars parked across sidewalk along Piñero, forcing pedestrians to walk out in the busy thoroughfare.

The gates also impede bicycle access (though bicycles as transportation are not popular in Puerto Rico, they are gaining in popularity recreationally, showing promise for the attractiveness of this mode in the future). While bicycles are slightly less sensitive than pedestrians to these factors, these changes are significant – specifically the ability to choose routes with a lower volume of speeding (or congested) cars (routes which connect practically to desirable destinations without excessive route diversions).

Impacts of gated development on the pedestrian experience

Aside from the more obvious functional aspects of the pedestrian network rent asunder by current development patterns, the qualitative pedestrian experience has also been diminished by design and by use. As developments face inward toward the private realm, they turn their backsides toward the public realm. All ornamentation and attention is lavished (if at all) on the interior with little consideration given to what are now just "spaces in-between." Of course, these spaces in-between are where the public must travel, as few open cross-routes exist in this scenario. The face presented to the pedestrian is often a blank wall of considerable uninterrupted length, or possibly a sinister looking or intentionally repelling barbed iron fence (Fig 3.14). No design details are left to inspire the interest of the walker, and no activity opens directly onto the pedestrian's path. The pedestrian's realm is thus left at best an uninteresting lifeless void, at worst outright hostile. As neighborhoods are shut off and designed not to carry any through auto traffic (see next section on Traffic and Transit impacts), the remaining street become mere conduits of increasingly heavy forced flows of autos, and pedestrians must share these routes as well. The dwindling publicly accessible spaces are made progressively harsher. Streets, bordered by the walls and fences enclosing the gated communities create a "freeway effect" along the roads (Figs 3.15, 3.16). And as none of the newly built houses and few of the existing houses face public streets, tending to the beautification, maintenance, and activation of this area is ignored as someone else's responsibility, presumably the city. Little effort is made to landscape public rights-of-way, leaving the spaces between gated compounds unshaded, barren, and forbiddingly devoid of street life. Occasionally, token landscaping or shrubbery is provided for the public ways, but it hardly mitigates the harshness and neglected void that is the pedestrian environment. By tradition (and sometimes by law), the abutter of a public right-of-way is responsible for maintenance of the sidewalk, landscaping and other buffers in the public realm. Yet when this realm is hidden on the other side of a solid wall, or even a visually permeable fence, there is less incentive to maintain, improve, or beautify this space and less sense of ownership over that realm. Everything that is "out of sight and out of mind" becomes a greater public burden and expense, and is thus usually left unimproved.

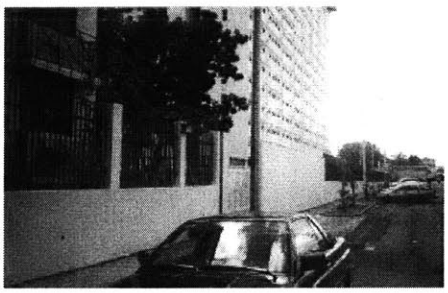


Fig 3.14. The pedestrian realm lined by barren and hostile walls, fences, and gates.

Fig 3.15. "Freeway effect" of walls along sidewalk inside Los Paseos

Fig 3.16. "Freeway effect" adjacent to pseudo-blocks.

As a result of the interruption, elimination, or preclusion of openness and permeability, the pedestrian has no choice but to be funneled along with everything else into these unpleasant routes. Such an environment invites disdain from those who are exposed to it; the people who are relegated to use it feel not just unenriched, but made to feel as outcasts — and viewed as such. This is a very important point — for car drivers who pass by and notice pedestrians trudging along in such unpleasant conditions view them as either downtrodden or unfortunate souls. Those who have autos avoid venturing into these realms on their feet, when they can speed through them by car and ignore much of the unpleasantness. "The stripped-down remnants of public space, streets and sidewalks, are redefined as the last refuge of the desperate, the 'delinquent,' and the dissident" (Flusty 1994). Those with choice don't use the degraded streets and public spaces at all. This creates a spiral of decline and further abandonment of the streets, making the situation worse for all groups. The fact that pedestrians must *always* take the same unpleasant routes adds further insult and frustration, decreasing the likelihood that others will want to share in the ritual and increasing the likelihood that current pedestrians will give up this forced experience at the first opportunity.

Freedom to move around?

One of the essential "sticks" in the "bundle of rights" that define private property is the right to exclude others from your property. The segmentation of the city into different micro-fiefdoms, both private and semi-private, effectively restricts residents' freedom of movement and bars them from utilizing, passing through, or even experiencing entire swaths of the city. While under the Law 21 gatings, the streets technically remained "public" and "open," they were effectively not. Guards would ask people to account for their identity, destination, and purpose, and only then determine the right of accessibility, issuing judgment without cause (or legal authority) as to whether someone has worthwhile reason to use the streets. These practices violate civil rights of equality before the law and of privacy, and they are effective in making streets de facto unusable by the public. One San Juan resident told a reporter that "we can technically walk through these areas but we can't *really* walk through if we don't look right"(Gordon 1998). The degrading process of being subjected to approval and interrogation "just because you want to go down the streets" is enough of a

deterrent to discourage totally law-abiding people from going through the effort to walk through certain areas. Such an atmosphere impedes such activities as spontaneously visiting friends' houses or strolling around a neighborhood.

3.3 Difficulties of sustaining transit-oriented mixed-use in gated environment

Single-use zoning became the rule of thumb in American cities in the mid-20th century, when industrialization was causing great friction and poor living conditions in older cities. Many planners and observers have noted, however, that while heavy industry and activities such as the slaughtering of cattle are not appropriate uses to be carried on in the midst of dense residential communities, most types of uses can happily exist side by side in a neighborhood, in fact enhancing it by intermingling. Also, as autos have become the dominant form of transportation and every type of establishment presumes that most people will come via auto, each use, sometimes each building, is isolated with plenty of space for its own parking lots, furthering the separation of uses. Gated developments have exacerbated and intensified this trend away from mixed-uses, a key ingredient of transit-oriented development.

According to U.S. Department of Justice survey data, "the single most common reaction to fear of crime in the United States is spatial avoidance," meaning people's avoidance in their daily movements of certain streets, parks, or entire areas of the city. This phenomena exists on the urban scale as well, with living patterns and land uses exhibiting separation as a result of fear. To deal with their fears of security, people retreat to that which is identifiable as "home turf," a level of the city structure over which they can exercise control. In this situation, the residential enclave or neighborhood becomes the key defendable unit. While the activities contained within the walls of the old city encompassed most of the activities of life, with the contemporary gated developments there is a loss of this necessity for self-sufficiency. These walled compounds are almost totally reliant on the outside for business, entertainment, food and shopping, recreation, and community services. The paranoia of crime in San Juan has exacerbated and intensified the separation of uses, most notably isolating residential developments from all other uses that depend on some form of free-flowing public accessibility. In fact the notion of the gates essentially rejects the possibility of introducing mixed-use within the gates, as allowing non-residents to pierce the veil of the gates would defeat their purported purpose. Mixture of uses is possible, but only at the very coarsest levels which negates most of the benefits that accrue from the adjacency of residences and shopping, a fundamental one being walkability.

A few graphic examples around San Juan show the increasing stages of separation of residential areas from other uses. First, is a high-rise apartment building with a small commercial building, housing a grocery store and beauty salon, situated just a few yards away. Architecturally, it is clear that the two buildings were constructed together as part of the same development. The commercial building has been outfitted with an elaborate series of fences and gates, which permit access to the commercial establishments from both

Fig 3.17. Fencing separating realm of residential area from public area; note entry doors to market from each side.

Fig 3.18. Fenced-in corridor accessing beauty salon from public parking; note residential building and parking on the other side of the fence.

"inside" of the residential compound, and from the outside. Doors from both inside and outside open into the businesses, but in the case of the grocery, the door to the inside has been blocked off and customers from the apartments must walk outside of the gates to get into the store (Fig 3.17). The elaborate system of fences has created a jail-like environment around the stores, highlighted by the fenced-in corridor along the side of the building which faces the apartments, leading from the "outside" to the salon (Fig 3.18). This scenario shows separation of uses in its earlier phases. (Of course the commercial uses have already been separated physically from the residential units and housed in its own building.)

The shopping and office center built as part of the Los Paseos gated mega-pod, is in the mid to later stages of separation of uses. It is situated near the single main (guarded) entrance to the residential portion of the development, though obviously outside the main gates and partly visible from the nearby arterial. Whereas in the previous example the commercial establishments retained a degree of adjacency and walkability from the residences, the Los Paseos commercial component stretches that walkability potential to the point where adjacency and relation to the residences is almost irrelevant and nonexistent. While the actual distance to a minority of the homes in Los Paseos is not that far, those residents would have to navigate on foot through the maze of their own gated sub-cluster within the development, out the main gate, then along a significant stretch of sidewalk (Fig 3.19). down to the entrance of the commercial parking lot (and then through the

Fig 3.19. View from "inside" Los Paseos commercial center toward main entrance; resiential area is out the gate and to the left.

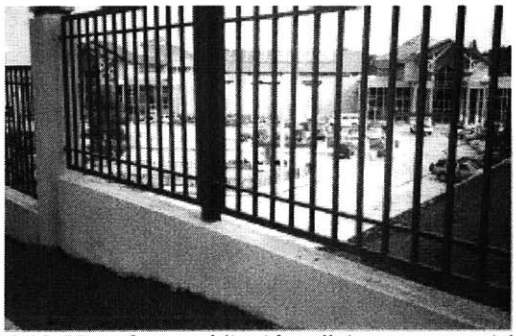


Fig 3.20. View from public sidewalk into commercial development. Edge condition between commercial and residential development is a high embankment (visible at right) topped by a high solid wall.

parking lot) to reach the entrance to the stores. The edges of the commercial parcel that abut the residential area have been carefully designed with high embankments, fences, and landscaping to prohibit any direct access, contact, or permeability between the two (Fig 3.20). As mentioned, even access from the sidewalk leading into the main development (but is still "outside") is controlled with fences. The scale of the commercial development here is such that it requires customer visits from the outside to sustain it, and this access was seen to be too much of a security risk to maintain any semblance of relationship with the adjacent residential areas. It is important to note that like the residential areas, the stores in this center appear well-appointed and catering to at least middle-, if not upper-, income people.

As evidence of the difficulty of sustaining mixed-use commercial activity in this gated setting, a study by Puerto Rico's Department of Commerce showed that many small merchants suffered great losses as a result of the Law 21 gatings. The study reported that merchants of Altamesa urbanizacion lost 20% of their sales after the gating of College Park, an adjacent neighborhood which sealed itself off. In Gardenville urbanizacion, merchants also reported significant losses after street closing. One merchant who used to regularly record $300 of daily sales between 5-8:00pm, began to sell only $60 after the street closings during those critical hours (Kortright 1993). Small merchants, who offer the types of commercial services most appropriate in transit-oriented settings, benefit from or rely on foot traffic and passersby, casual or regular, non-motorized and motorized. The restrictions on access in the vicinity of the stores reduce their potential clientele as well as their potential hours of operation. Such access changes also affect the socio-economic make-up of both their clientele and of passersby. These days small merchants must compete with large discount clubs and are very dependent on people stopping off to purchase items on the way to and from work.

Additionally, gated communities restrict the commercial activity of those non-geographically-fixed businesses or those that rely on access to neighborhoods. The viability of door-to-door sales is eliminated and businesses that rely on the distribution of written material or goods (or advertisements) to residences are significantly hindered. All of these types of activities are important avenues for small-scale and entry level entrepreneurship, and restriction on movement excalates the consolidation of commercial activity to larger scale and more established companies.

Fig 3.21. Fencing separating neighborhood from public park, eliminating all access from neighborhood.

Not only commercial activity has suffered separation anxiety from residential areas. In an effort for total control over access by the "public" into residential areas, neighborhood amenities such as parks also exhibit signs of separation. The public neighborhood park in Guaynabo in Fig 3.21 has been sealed in on all sides with chain-link fences so that access to the neighborhood has been entirely cut off. Residents of houses that are just across the street or within short walking distance to the park now have to walk great distances to get there. Literally every possible access point to the neighborhood and inch of perimeter has been considered, exemplified by the path visible in Fig 3.21 which is walled in closely on both sides by fences. Since the park is public, the main access is now from the "public" side which is near an arterial, but the park is sealed from the residential side. However it is clear from the design, amenities, and siting of the park that it was intended to be part of the surrounding neighborhood. Publicness is considered to be a security risk. Even places of religion have suffered. Where residents of one neighborhood in Cupey (near Rio Piedras) were once able to easily walk only a couple minutes to a community church located just adjacent to the development, most people began to drive to church after the closing of six out of eight streets (including sidewalks) in their neighborhood, significantly rerouting pedestrian routes. (Interview with Ivelisse Rivera-Bonilla)

Gated communities may prove **incredibly problematic to the long-term potential to retrofit the city into a more transit-oriented and cohesive place**, whether that be by introducing higher density housing, mixed-uses, or new paths of access. Even with zoning changes enacted, the gates effectively "lock in" their respective layouts (streets and buildings) and land uses, as well as their densities. A scenario of gated communities is resistant to change. Because the new developments are built with no relation to each other and with totally internal and self-referrential orientation, retrofit would likely involve major demolition and reconstruction, if not totally wiping the slate clean and starting over.

3.4 Impacts on motorized traffic and difficulties of serving gated communities with feeder transit service

A dense, interconnected network of streets has advantages for pedestrian and bicycle travel, as described, as well as for automobile traffic. For auto traffic, the first great advantage of a connective, redundant network, is that it shortens distances between any two points. In a society which consumes fossil fuels and other natural resources at an alarming rate this point is key, as for any given mode of trip making, the connective grid reduces the distance traveled. The larger scale considered, the less important this becomes, but since most trips made are under ten miles, a connective network could have significant impacts if a mile is added here and there regularly to common trips. Kulash (1990) suggested that a connective grid reduces Vehicle Miles Traveled (VMT) by 57% over the conventional suburban network design of a sparse hierarchy and limited access.

According to traffic engineer Walter Kulash, a network of small interconnected streets facilitates movement much better than a sparse hierarchy of large streets because streets have a "deficiency of scale." This is due

to the intersections (the connections): a greater number of intersections reduces the turning load of autos at any single given intersection and disperses cars among many intersections, so that the entire system can carry more traffic. Studies have also shown that overall, while traditional grid networks have roughly equivalent amounts of land devoted to autos (or rather land accessible to autos, as streets are multi-modal) as conventional suburban designs, gridded networks have a much higher percentage of land devoted to movement (streets) than to storage (parking) (Hess 1993).

The dense connective network also offers more route options and freedom of movement, so if one's primary route is unacceptable due to traffic, alternates are available. Again, full confidence that the network is complete and faith that one can find a reasonable route to one's destination are key ingredients. And to reiterate, on a sparse network which funnels all drivers for all types of trips onto main arterials, the only way to improve one's trip time is to begin the trip at a different time.

Major streets also function better in a grid, because drivers with local destinations have the opportunity to stay off arterials, and this frees up capacity for long-distance journeys (in addition to shortening distances significantly for local trips). The grid's multitudinous points of access to larger roads in sum reduce traffic by 10-20%. Vehicle hours of delay, VMT, and average trip length are all reduced under high and moderate levels of connectivity. One study, however, did note diminishing returns of connectivity, finding a threshold between medium and high levels, but showing great improvements between low and medium levels of connectivity. The optimum measure they cited as 10-16 connections per mile (Daisa, Kloster, Ledbetter 1998).

As a denser network is invariably accompanied by narrower streets, there is little difference in travel time due to slower speeds. This has the overall benefit of reducing VMT while not necessarily encouraging more auto trips due to lower travel costs (as time is significant component of travel cost). Another concern regarding the potential increase in traffic on any given street due to higher connectivity is slight due to overall dispersion of access over the entire network (Kulash 1990).

Impacts on auto traffic

Outside of Old San Juan and Santurce, San Juan was not laid out along a preplanned grid. Few cross-town streets exist and subsequent development has not enhanced the street system on an urban scale. Many older subdivisions, while experimenting with curvilinear streets and a small handful of cul-de-sacs, did provide several connections to larger public streets and alternate through-ways to opposite sides of the development. The Law 21 gatings did away with most of those connections and redundant through paths. Recent gated developments have structured their street patterns completely internally, with one entrance and exit (such as Los Paseos), or no real internal street system at all, just amorphous parking and circulation bays. The result is the diversion of all auto traffic onto a few routes that skirt the edges and "in-betweens" of developments.

Direct routes are seldom possible on the local level, causing drivers to take often circuitous and indirect routes, especially into and out of the larger gated residential developments, increasing VMT. Some of the neighborhoods that gated under Law 21 installed mechanical gates that can open using card or remote control activation, allowing cars to exit at more than the main entrance, but this is rare and expensive. **The most noticeable traffic impact of the proliferation of insular gated communities is the increased congestion on collectors and arterials**. As there do not exist many redundant parallel routes or through ways, all drivers must backtrack and use the same common routes, funneling *all* traffic onto the arterials. The resultant congestion can make travelling otherwise short distances (as the crow flies) very arduous trips: for instance it can sometimes take as much as one half hour to drive from Jardines de Caparra to PR-2, a distance of under one mile. This places incredible burden on these roads, not only making them more congested, but making them harsher and less pleasant environments for pedestrians and other activities, such as shopping. This spiral of environmental decline has been exacerbated by the Puerto Rican government, which has sought to "improve" the efficiency of the increasingly burdened arterials by taking such actions as placing concrete barriers in the middle of the road and eliminating left turns and on-street parallel parking..

With the elimination or severe reduction of through-traffic, one might think that auto traffic is no longer a problem for gated communities. But this is not so. There is little or no traffic enforcement inside the gates, as police cannot easily patrol these areas on their regular routes. The streets inside the gates have not necessarily changed their design and character just because there is lower volume, and lower volume is often an invitation for speeding, regardless of signage and posted speed limits. There are indications that speeding actually is a problem inside many gated communities, such as the presence of speed bumps (Fig 3.22).

Fig 3.22. Speed bumps in retro-gated neighborhood.

Impacts on transit

If the only available routes are on arterials, all of this funneled congestion has an incredible impact on transit if it must intermingle on these routes with private autos. All types of public and private transit are affected — buses, publicos, and taxis. The most obvious workable remedy would be to dedicate on-street lanes as transit-only lanes, which San Juan has done on a few roads, but this takes political will and auto drivers are not politically apt to give up any lanes that they view proprietarily. Aside from transit having to fight through

Fig 3.23. Abandoned bus stop adjacent to retro-gated street that eliminated pedestrian access from the neighborhood.

Fig 3.24. Unfriendly bus stop waiting environment due to gated and walled edges.

traffic on the few roads onto which everyone is crammed, gated communities create problems for planning cross-town or even cross-neighborhood transit (bus) routes. Without through-access or even through roads, routes must thus be circuitous and often cannot serve communities and various destinations most efficiently. This presents a problem both to planning or altering routes or planning and upgrading infrastructure. This is not an unheard of problem: in one island community in South Carolina there were so many gated communities that sprouted up across the landscape (and the city had not platted out public roads ahead of time), that there was no place for a needed cross-island road (Blakely and Snyder 1997).

One side effect of the Law 21 gatings was that formerly convenient and used bus stops were no longer viable because convenient walking access to them from adjacent homes was interrupted. Figure 3.23 shows a bus shelter that was abandoned after a permanent gate was installed across the street and sidewalks of this community. This was one of the litany of complaints against the access controls leveled by the Ciudadanos en Defensa de los Derechos Civiles: "in some occasions like that of Parkville Sur and Altamesa-College Park, the closing of streets involved changing public transit routes without the consultation or an impact study of the user groups" (Kortright 1993). The grouping and layout of houses within a gated enclave (thus the dispersion of the population density) does not necessarily correspond with the needs of planning for transit stops. That is, people who live within the gated community might not actually even live within acceptable or convenient walking distances of the closest possible bus stop, even if that stop is at the entrance to their neighborhood.

Not only is pedestrian access to bus stops difficult under gated conditions, but the *environment* at the stops can be unpleasant and degrading as well. As discussed earlier, the public realm and spaces "in-between" gated communities are often stripped-down and harsh, bounded by blank walls and fences. Figure 3.24 shows a bus stop adjacent to a community retrofitted with walls, fences, and barbed wire, creating a rather hostile, degrading, and lifeless waiting environment, despite the presence of a few large palm trees.

3.5 Fear of social mixing and public space

Role of public space in promoting greater tolerance and diversity

Gated communities establish more than just physical and functional obstacles to the facilitation of public transit use. A fundamental precondition of mass transit use is that people feel comfortable mingling with others of various backgrounds and classes. People need to feel relatively at ease sharing space, resources, and experiences. This must be true for the public spaces in and around stations and platforms, the public spaces and streets leading from stations to local destinations, as well as the more obvious — mixing in the relatively close quarters of a transit vehicle. Such comfort with diversity and "publicness" is especially important in order to attract choice passengers, who have other modes of travel at their disposal – more personalized and private modes, which they will use if they feel uneasy or unsafe in more communal circumstances.

Traditionally the symbol of civilization, democracy and communalism (however contradictory the latter two might be at times), the public realm — the amalgam of streets and promenades, squares and parks, public buildings and markets, – is the space where people of all backgrounds and orientations can meet, discuss and debate current events, relax, celebrate, or simply go about daily business anonymously, free and unfettered. Puerto Rico has a strong tradition of public spaces, emblematized most by the neighborhood plaza, brought by the Spanish, sprinkled throughout Old San Juan and the located at heart of all the older towns throughout the island.

The public realm is supposed to be where everyone stands on equal footing, has equal access, equal voice, and is free to go about one's business at liberty so long as it doesn't threaten the freedoms of others or the well-being of the whole. And the essence of public transit use is the spirit of communal journey destiny – the transit vehicle is a literal metaphor for "getting someplace together." All types of people make up a city; in order to live in harmony or at least reap the synthetic benefits of living in such an aggregation of human habitat, people must be able to find common ground and accept the diversity of the populace. Public space is a physical mixer of peoples; it offers opportunity for chance encounter and intermingling. The only way to learn to be comfortable with all types of people and gain appreciation, or at least tolerance, of people unlike oneself, is through exposure and mingling. Without direct exposure with people, prejudices, preconceived notions and fears tend to maintain and foment. Whether fear of social mixing precedes fear of public space or vice versa is irrelevant, overcoming one will help overcome the other.

Gates create and concretize fears of mixing

In an essay on the future of the urban public realm under the specter of fear and control, Tiesdell and Oc (1998) lay out the four *ideal* qualities of public realm: universal accessibility, symbolism of collectivity and

sociability rather than individuality and privacy; social inclusivity; and neutrality of territory (separate from greater coercive entity). Public transit idealizes all of these qualities; gated communities arguably contradict each one of these precepts. What gated neighborhoods offer is a sense of control and regulated exposure. Placing oneself in public space demands a certain amount of vulnerability. Using public transit demands an even greater "loss of control" and higher vulnerability: a person is no longer in command of their movement, must wait for the train to arrive, must sit or stand while someone else operates the vehicle, can only move about in certain preset corridors to certain stations, and so on. (Though this is not say that car driving is not fraught with such uncertainties.) The mechanics of public space appear to demand of people a forfeiture of several degrees of personal control, of being able to regulate exposure to the elements and to chance occurrences. The inherent purpose, if not always the stated purpose, of gates and walls is to limit social contact. Many urban sociologists have hypothesized that reduced social contact weakens social ties and feelings of camaraderie or connection with larger populace (Blakely and Snyder 1997). Once people retreat and seclude themselves behind gates, they are apt to develop the sense, if they don't possess it already, that they are at liberty not to fraternize with people from other parts of the city, or even from the adjacent neighborhood.

Crime and fear can cause atomization and factionalization, and San Juan is proof of that. The urban fragmentation of gated neighborhoods is the individualized (or factional) response to perceived threats. This atomization can potentially lead to distrust of those "outside" the enclave, resulting in further deterioration of the whole, and even further isolation and entrenchment of fears. With the construction of gates around a space, there is always an "inside" and an "outside." This mental construction naturally leads to identification of "inside" as good, safe, and predictable, and "outside" as threatening, uncontrollable, and mal-intentioned. The world that is outside the gates becomes fear-inducing. In the duality and opposition established by gated developments of inside/outside, good/bad, and ordered/chaotic, the privateness symbolic of gated communities equates goodness and anything that smacks of publicness in contrast is bad. Thus public streets and public spaces are bad, and certainly public transportation is bad. Professor Teresa Caldeira of the University of California at Irvine documented this phenomenon of fearing anything "public" in Sao Paulo, Brazil. However, while people begin to fear publicness, they still appreciate and desire the physical ambiance of many good public spaces. Caldeira notes an advertisement for a new gated community in Sao Paulo called "Place de Vosges" (named and designed after the well-known public plaza in Paris) which epitomizes this: under a photo of the development and its plaza is the caption: "The only difference is that the one in Paris is public."

Gates and walls are a physical manifestation of people's fears. The fear, or the perception of danger that inspired the erection of walls, is reinforced every time a resident sees these overt defensive measures. To those living "inside," the physical presence of the gates and walls serves as a constant reminder and daily reinforcement of one's fear and that danger lies beyond the walls (Blakely and Snyder 1997).

While gates can feed people's fears, concretizing or even intensifying whatever paranoia they felt, gates and walls don't actually take active steps to improve the reality "outside," leaving it be and admitting there is a

source of fear. The end result is that people in gated neighborhoods may feel comfortable inhabiting their immediate neighborhood but might still fear to go outside, which is where Tren Urbano lies. The world of gated communities is a world with sharply drawn lines (the walls themselves), gross simplifications of urban and social structure, dichotomies of black and white, peace and chaos, or "'fortified cells'of affluent society and 'places of terror' where the police battle the criminalized poor" (Tiesdell and Oc 1998). And as public transportation becomes associated as the "transport of last resort" for those criminalized poor who move about "outside," it should come as no surprise that choice riders will choose not to leave the cocoons of their cars when necessity requires them to leave the inside. The dearth of people using public space and public transit reinforces in people the fears that that "outside" realm is unsafe and undesirable. This is the "chicken and egg" scenario: to be perceived as safe, the public realm must be animated; to be animated, the public realm must be perceived as safe.

Problems of exclusivity, repression, prejudice

Gated neighborhoods and other efforts to regulate control quickly (if not inherently) tumble down the slippery slope of exclusivity, repression, and prejudice. Under the shadow of fear, normally public spaces, such as streets and plazas, are privatized and closely controlled by arbitrary judges who control who does and does not deserve entry or use of infrastructure, services, and amenities. Often, new "public" spaces are increasingly controlled and watched by guards who are often quick to quash any activity that slides out of their perception of "normal" or "acceptable." Guards have no way to judge who does and does not represent a threat or have justifiable reason to pass through a space, so guards defer to appearances, which results in prejudicial judgments and profiling. In an attempt to add structure to the world or appear "fair" or less arbitrary, access to spaces and amenities becomes predicated on class and economic status, inevitably leading to discriminatory environments of exclusivity. And in a city where it is uncommon to use transit or walk, anyone arriving somewhere or seeking to pass through a neighborhood on foot is immediately suspect as an undesirable.

There are prices that must be paid in establishing these boundaries of inside and outside and a system to determine who is permitted to be inside — including the basic joys of living in a city and being enriched by its many facets. Puerto Rican Senator Silva has defended making such sacrifices, stating that "you have to weigh interests that might come into conflict, those of personal security versus the vague right to wander the streets" (Ross 1993). Many opponents argue that these rights are not so "vague" as Silva portrays them, and have noted serious constitutional problems in the deployment of gates and the private police forces that patrol life inside the gates. Maria Kortright of Ciudadanos has challenged the constitutionality of a guard who is not a policeman stripping you of your civil rights "just because you want to go down the streets" (Ross 1993). The price of employing increasingly exclusionary measures, such as gating, to try to create total control and eliminate all potential threats is life inside a series of oppressive panoptic prisons (Tiesdell and Oc 1998). These efforts are easily taken to the extreme.

There is a fundamental distinction between a "police state" and a "policed state." The former is a socially authoritarian environment where everyone's actions are officially monitored, diverse opinions and behaviors are quashed, and all forms of access are thoroughly controlled. The latter protects the freedoms of its citizens to interact, move about freely, and express differences. Tiesdell and Oc (1998) note that private security forces have no formal training or legal pledge to uphold the public's constitutional rights: "Private police do not have the same priorities as the public police: their main concern being to protect the interest of the firms and people hiring them." And given these contrary loyalties, the question of liability over the actions of private police (e.g. in the case a private guard mistakenly shoots a guest he believed was an "intruder?") is a troubling one. To what extent will people in Puerto Rico trade their rights of citizenship for greater feelings of safety?

Image of the city — can Tren Urbano help create a coherent vision of the city?

One hope is that Tren Urbano can help create a coherent vision of the city, tying together seemingly disparate pieces, centers of activity, and neighborhoods. Currently, the San Juan metropolitan area is a place of fragments. There is little conception that all of the urbanized area forms one whole, that urbanizaciones and commercial areas and all types of places are tied together, either physically or metaphysically. In going about their everyday lives people form mental maps of the city; current conceptions of the San Juan of gated communities is one of fragments, voids, barriers, and randomness. Few actual connections link the disparate parts of San Juan. Few streets traverse the length or breadth of the city and almost none thread through multiple neighborhoods or districts. Some continuity of streets through multiple neighborhoods and districts helps in the image formation of a city bound together, as well as mental maps of how to get "from here to there." Tren Urbano will be one of the only and certainly the most overt structure linking together disparate, and until now, unconnected neighborhoods, districts, and residents of the metropolitan area.

Developing along with residents' sense of a physically connected city might come a sense of social connection and communal responsibility for the life of the city, and possibly even a sense of urbanity, of sophisticated appreciation for all that the city has to offer its residents. Los Angeles architect Steven Flusty (1994) postulates that "the evolution and perpetuation of urban culture has traditionally resulted from communal interaction within accessible common space." The movement and living patterns fostered by Tren Urbano in and around its corridors and station areas could be just that common space to nurture a shared sense of ownership over San Juan.

But on the flip side, such a conception of "urban culture" might be a prerequisite to the success of Tren Urbano and to the possibility that people will consider Tren Urbano an option (or even relevant to their view of city life). If people see the city and station areas in terms of fragments and voids or "safe haven insides" and "scary outsides," or simply not have any cohesive conception of the socio-geographical structure of the city at all, Tren Urbano will appear to snake aimlessly amidst nebulous constellations of unrelated develop-

ments. Tren Urbano itself might be conceived as a "safe" connective fiber between "safe zones," comprised of home, shopping, school, work, or recreation, but that necessitates that such destinations coalesce in a connected and accessible way around stations, contrary to the existing fragmented patterns. People might sense that a few significant attractions lie near stations, but if development is truly fragmented around stations little of the benefits and synergistic energy of "mixed-use" development will be generated. The whole of San Juan will remain barely the sum of its parts. Even worse, a city of fragments and enclaves promotes rivalries and feuds, rather than cooperation in working toward common solutions. As much as people in various communities around the San Juan metropolitan area might want to deny it and act to the contrary, everyone in the area has a shared destiny — each person is part of a regional economy and regional ecological system; people share infrastructure and services, cultural and recreational resources. The planning issues that affect people locally must be worked out city-wide. However, gated communities foster the "balkanization" of the city into factions and enclaves where people see their issues and concerns as unique and irreconcilable with the common good. One journalist has called the proliferation of gated communities "the new feudalism" (King 1997). Gates and walls represent a secession from communal responsibility and a denial of common solutions (e.g. Tren Urbano) to city-wide problems (e.g. transportation).

Secession from communal responsibility can also be accompanied by preclusion of participation in such exercises of communal action, such as using public transit. William Whyte has said that "you can't make an enclave and expect it to work like a city" (quoted in Kass 1993.) People are likely to feel responsible for and more apt to take an interest in that which affects "their neighborhood," "their city," and their domain of involvement. So, that which people define as "their neighborhood" is important. Oscar Newman posed this "scope of neighborhood" perception question to residents of gated and non-gated streets. The results showed that residents of gated streets were more likely to define their "neighborhood" in more limited terms, sometimes as only their street. Residents of "open" streets were more likely to define their "neighborhood" in broader terms. (Newman 1980, cited in Blakely and Snyder 1997) The impact of gated enclaves on people's perception of the city, is not just a fragmented and disassociated view of the city as whole, but a fragmented view and awareness of local surroundings as well.

There is evidence that the gates and walls around San Juan have already instilled in Sanjuaneros a mentality of isolation and separation. One Rio Piedras resident wrote a letter to Governor Rosello after gates were installed in an adjacent neighborhood, complaining that "people want to isolate themselves, and are concerned only with their own tranquility and safety, and have taken actions to benefit only themselves, without taking into account the wellbeing and protection of the general community." This resident prophesied that if this continues, "in the year 2000 we will be a country 'incomunicado'" (Muriel 1993).

Neighborhood Image

Gates and walls do more than shape people's conceptions of the city and relations of the pieces to the whole. The gates are also design clues that affect how "outsiders" and "insiders" view a neighborhood itself. While some view gates as a status symbol to be respected and pined after, gates and poorly designed barriers can cultivate a negative image of a neighborhood or of a housing development (public or private). Gates around an area can indicate to passersby that this must be a crime-ridden or dangerous area to necessitate such extreme defenses. These visual symbols also announce to others that the residents inside are petrified, have given up on civil society and addressing problems head-on, and are retreating to cower behind the walls. Or, in the case of less affluent neighborhoods and public housing, fencing can imply to passersby that danger lurks *inside* the fences – fences which cage in threats to the rest of the community.

Poorly designed or implemented gates or walls can cause image problems in and of themselves. The use of such design devices as unadorned concrete barriers or walls, or cheap fencing topped with barbed wire can be psychologically depressing on residents' self-esteem. These also depress others' perceptions of the dignity and quality of life of residents or the respectability and attractiveness of activities within or adjacent to the barriers. This can have a potentially deadening effect on the surroundings, particularly the immediate borders, of these devices. These image problems (of poorly designed/implemented devices or of gates of necessity) can be particularly harmful and stigmatizing for lower-income areas, further hindering investment, revitalization, or animation.

Physical constructions have a tendency to stick around long after the troubles or conditions that inspired them have changed. Once in place, removal of gates or walls is not very likely. A significant amount of inertia develops around objects in place, and people become accustomed to their presence. Walls and the lifestyle and movement patterns they require can become ingrained into people's psyches as "normal" and accepted facts of life. Even measures that are *intended* to be temporary fixes to hopefully temporary problems, can become difficult to modify or rectify. Political and economic situations change, and temporary "trials" become permanent installations in their "trial" form. For instance, in Berkeley, California, a neighborhood traffic calming scheme called for numerous traffic diverters. As a trial, the city installed somewhat unsightly (though cheap) barrel-like concrete barriers, with the intention of reconstructing them as attractive landscaped features. However, after Proposition 13 passed in California (which limited property tax increases), city coffers dwindled, making funding for such treatments unavailable. To improve the situation, some neighbors have planted flowers in barriers, but most of the concrete bollards stand as installed. As elucidated earlier, as gates and walls are erected their surroundings eventually develop and modify in response to these edge conditions and orientations. Once things around the edges of the gated enclosures are built, the fabric solidifies further, compounding the situation and further decreasing the likelihood of change.

Chapter 4

Fear, Crime, and Neighborhood Design

"Whether crime is rampant or infrequent, the threat actual or perceived, the fear itself is very real."
– Blakely and Snyder, *Fortress America* (1997)

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4.1 Fear of crime

In order to really assess the ways in which gating developments, or alternative interventions, address the root causes of residents' fears, we must pause to consider the nature of fear and its characteristics.

Crime and perceptions of fear in the U.S.

Both violent crime and property crime have been falling fairly steadily in the United States since the early 1990s. Yet fear of crime has consistently shown an opposite trend to actual statistics. While violent crime in the U.S. fell over 12% and property crime by 9% during 1994-5, crime and violence replaced the economy as the number one American domestic concern (Becker 1994, Brennan and Zelinka 1997). Security measures, such as home alarms, are ever more popular, and gated communities are popping up in more and more regions of the country. Blakely and Snyder estimate that as of 1997 there were about 20,000 gated communities, accounting for over 3 million housing units in the United States, and they estimate that 90% of all housing under construction in the country features gates of some kind (Blakely and Snyder 1997). A 1994 article in the *San Francisco Examiner* reported that 18-20% of all homes in Minneapolis have some sort of security system and of 50 random new residential projects surveyed in the greater New York region all were gated (even though most were located 30 miles from the city) (Becker 1994). While many people move into gated communities for reasons other than security, 70% of residents in gated communities said that security was very important in their decision to live there (Blakely and Snyder 1997).

Fear of crime in itself is neither a positive nor a negative force; it is the degree to which fear affects a person coupled with the accuracy of the fear in reflecting actual risk which determines the quality of its effects. Fear is "functional" to the extent that it encourages people to take appropriate precautions to avoid personal or communal harm. Thus certain amounts of fear and caution are healthy, and one can hypothesize that in certain realms "by reducing fear, we stand the chance of increasing public injury" (Warr 2000). However, fear is "dysfunctional" when it "exaggerates or underestimates the objective risk of victimization." An exaggeration of risk can lead to exaggerated precautionary and defensive measures, including the gated community

phenomenon, which can degrade the functionality of society in addition to individuals' enjoyment of daily life. Exaggerated fear can also lead to overly aggressive behavior by the fearful, such as ill-conceived crack-downs or limits on highly regarded civil liberties (e.g. subjecting people to interrogation in order to travel on public streets).

Fear of crime can have impacts on people above and beyond, or even totally unrelated to, actual harm to body and property that result from exposure to criminal events. Fear of crime is a form of crime victimization, and this form "demonstrates a potential for greater harm than traditional victimization (grievous bodily harm aside) because of the effect of long-term stress coupled with changes in behavior that affect quality of life" (Navarex 1983). In a report for the U.S. Department of Justice, Mark Warr concludes that crime and fear of crime should be treated as "distinct social problems," as addressing or mitigating one does not necessarily affect the other (Warr 2000). Fear itself can create debilitating physical, social, and economic urban problems.

Researchers make the distinction between crime and incivilities. Incivilities are "quality of life crimes" such as graffiti, littering, or panhandling, which can "provoke anxiety and apprehension among those exposed to them," but are not necessarily "criminal." (Tiesdell and Oc 1998) Much fear is indeed caused by exposure to such human "incivilities" (Lewis and Salem 1986), but the kind of fear that impels people to live in gated communities, especially in Puerto Rico, seems to be fear of violent crime.

What is fear?

Fear is anticipation of victimization from a threatening crime (Tiesdell and Oc 1998). In other words, "to generate strong fear, an offense must be *perceived* as both serious *and* likely to occur" (Warr 2000). However, while those who are fearful honestly perceive themselves at risk of being victimized, this fear is generally not related to actual objective "risk of victimization." Fear is usually found to be disproportionate to actual risk in a city's populace. Those who are most fearful generally are statistically least likely to actually be victimized. For instance, a study in the United Kingdom showed "those most at risk statistically in the UK are young males but those who exhibit most fear of victimization are women and the elderly" (Tiesdell and Oc 1998). Similarly, According to the 1999 U.S. Department of Justice Crime Victimization Study, people under twenty-five years old, black, and of lower household income are twice as likely to be victims of violent crimes than other age, racial, and socio-economic categories. Yet studies have shown in the U.S. that fear of crime is most prevalent among those groups least frequently victimized with opposite demographics (Lewis and Salem 1986).

Fear is not itself an evaluation of actual circumstances or the innate sensory experience of the environment. It is an emotion caused by an "expectation of danger." It all boils down to perception – not of the actual environment but of the perceived environment. Following this logic, Warr states that as fear is a consequence of perceived risk, "altering fear requires altering *perceptions* of risk." (Warr 2000).

What causes perception of risk?

We must understand the roots and influences of perception of risk in order to know how we can begin to shape perception. The fundamental quality underlying perceived risk is *sense of control*, specifically social control, which is comprised of individuals' expectations about others' behavior. People become fearful when they find themselves severely limited in their capacity to regulate or influence others' behavior, especially when it is questionable whether the "others" share the same expectation about appropriate behavior (Lewis and Salem 1986). A breakdown in the communal capacity to deal with threats causes individuals to become fearful, potentially over otherwise relatively insignificant issues. Aside from this key expectation, other expectations Lewis and Salem include as important to maintaining a sense of social control are the adequate maintenance of public and private areas and the regulation of access to control the incursion of threats to neighborhood integrity.

Control can be created by successful neighborhood organizing or by the sense that a neighborhood (or an individual) wields a desired amount of political power to get its requests fulfilled (Lewis and Salem 1986). Neglect by city government can cause neighborhood residents to feel powerless to deal with threats. However, as the most economically and politically influential neighborhoods often exhibit the most outward signs of fear, political clout is not likely the cause of most fear of crime.

Change often brings feelings of loss of control. All sorts of changes can cause residents' sense of order and continuity of expectations to be shaken up: demographic changes, economic changes, political changes, and urban landscape/environmental changes (Lewis and Salem 1986). *Predictability* brings a sense of control over one's surroundings and daily life, and a lack of predictability causes uncertainty and inability to properly foresee and prepare for occurrences or changes. A perception of increased *randomness* in crime (specifically in respect to location and demographics of victims), such as was characteristic during times of rising murder and carjacking rates in Puerto Rico, undermines people's perception of the ease of avoidance of criminal activity and effectiveness of precautionary measures.

Fear related to types and geography of crime

Fear of crime can be "formless," but is often tied directly to specific types of crime, as some forms of crime generate more fear than others (Williams, McShane, and Akers 2000). Certain types of crimes can capture the imagination of the public, such as carjacking and armed robbery in Puerto Rico – those crimes that combine an appearance of randomness and unpredictability with a determined violence. This inspires reactionary measures that rise in intensity in an attempt to preclude the most fear-inducing, yet less probable, threats. Such planning for worst case scenarios reduces the functionality and potential enjoyment of the everyday in preparation for an incident that is not likely to occur.

Adding to the characteristic mix of fear-inducing qualities is the psycho-geographic feeling of *invasion.* Invasion into one's personal domain, that space considered most sacred, unbreachable, and secure, evokes the most terror. That personal space can be one's body or one's home and neighborhood. Personal space in which one feels most safe and in control is where visitors are expected to act like guests and according to the desires of the resident or host. One's neighborhood and residence are the base levels of refuge for people, those places most familiar and reassuring. Hence those crimes potentially committed in one's own neighborhood cause most fear: "encountering crime on your home turf is far more disturbing than in an office building or shopping mall" (Becker 1994). Evidence of a trend toward crimes committed in residential areas or the perception that such crimes can penetrate into these areas can cause people to fortify their home territories to keep them as pure realms of control with minimal possibility of invasion. People expect a certain (though limited) amount of entropy or lack of control outside of one's personal domain. Outside of one's residential domain one feels less personal invasion because one has less personally invested in and attached to property and infrastructure, and feels like there is always someplace to retreat. There is a small degree of security in the relative detachment and anonymity of more public places, including the freedom to leave. Except for certain public places that people hold dear or are necessities of daily life, people feel less invasion of these spaces. One might feel more a sense of loss over the perceived inability to enjoy or patronize these places, but a less intense sense of invasion than deleterious intrusions into one's home neighborhood. The consequence of sensing insecurity at a public place is avoidance of that place (if possible). However one cannot avoid one's home or neighborhood.

One's neighborhood is fear-inducing to the extent it provides a context for criminal activity. (Lewis and Salem 1986) The comfort in knowing people on the street comes from the predictability and assumption that they will consciously act in a way that will not endanger you or the neighborhood. If "strangers" or visitors are *unable to perceive what is acceptable behavior* in this sensitive zone or *able to willingly disregard it*, feelings of invasion and fear will surface. The scope of activities permitted by environmental conditions, including outwardly articulated "rules" or "expectations" (or lack thereof) will define the set of potential happenings in the neighborhood. (Keep in mind that we are talking about the perception of residents in shaping the behavior of visitors, not necessarily the actual ability to absolutely foreclose on the possibility of random criminal activity.) So if those environmental conditions are vague or not reflective of community desires, the physical neighborhood itself can induce fear.

Fear-inducing invasion can also take the form of demographic invasion, rather than criminal or physical violence, which can lead to a feeling of loss of control. The invasion-succession-domination theory holds that shifts in neighborhood demographics, say from one group's dominance to another causes fear among members of the declining group, who feel that their territory has been invaded. This leads to more general fear (including fear of crime), and though Puerto Rico has undergone tremendous economic and socio-geographic changes in the past fifty years, fear of crime there seems not to hinge per se on such changes.

How is fear generated or manipulated by society?

Fear is not strictly generated from individuals' observations and direct experiences of their own neighborhoods, environments, and actual criminal acts. Our perceptions are shaped to a great degree by the messages, overt and subliminal, that we take in that are projected throughout popular culture, social interactions, politics, and even commerce. Most people's primary sources of information on crime are actually secondary sources or hearsay passed along in the form of media, entertainment, and pure word of mouth. Surveys around the United States have shown that the public obtains most of its information about crime from mass media (Warr 2000). The intensity and frequency of exposure to reports of crime, and the nature of these secondary reports, can result in a personalization and internalizing of the news.

As the nature (content) of mass media crime coverage forms much of the body of knowledge people share about crime, any skews or emphases will end up being reflected in people's perceptions of the actual situation. News coverage of crime tends to overemphasize (some say "sensationalize") more violent and rare events, giving them top billing and creating the perception that such occurrences are more omnipresent than reality. Additionally, limited print space and airtime are allocated first to "uncommon" lethal events, squeezing out attention from the more common injurious events that people face every day. This is true not just for crime, but for public concerns about health, natural disasters, or other rare and disastrous acts of man or God. "Individuals tend to significantly exaggerate the risk of rare lethal events (e.g. tornadoes, homicide, floods, fire, accidents, or botulism) while underestimating the risk of common lethal events (heart disease, cancer)... public perceptions concerning the frequency of causes of death closely match the frequency with which those causes are reported in newspaper accounts, which in turn, are glaringly at odds with reality... diseases take about 16 times as many lives as accidents, but there were more than 3 times as many articles about accidents, noting almost 7 times as many deaths. Furthermore, homicide articles tended to be more than twice as long as articles reporting disease and accident deaths" (Warr 2000). Crime occurs in inverse proportion to its seriousness, but is reported in the media that way as well: "In the U.S. burglaries occur by the millions, robberies by the hundreds of thousands, and homicides by the thousands. In news coverage of crime, however the emphasis is on 'newsworthiness,' and a key element of newsworthiness is seriousness... the number of homicide stories reported in city newspapers in one study did not closely match the actual homicide rates of the cities examined, suggesting that the amount of space devoted to crime has more to do with the "newshole" allocated to crime by editors than with the true crime rate" (Warr 2000). The non-profit organization Rocky Mountain Media Watch (RMMW) developed the "Mayhem Index" – a tool that measures coverage of crime, war, terrorism and disasters, as a percentage of total news stories. The national average in the U.S. is 43%, but in many big cities that figure averages above 70% or even 80%. This figure is compounded by the fact that these "mayhem" stories feature on the front page or first fifteen minutes of coverage, imprinting them in the minds of the viewers. (RMMW 1998) A 1998 press release of RMMW stated plainly, "Crime rates may be down across the U.S. over the last few years, but not on local television news." Studies have shown that public perceptions of event frequencies tend to match media reportage.

There is also a tendency to report trends in crime using absolute numbers rather than rates, thereby ignoring changes in population or comparative rates over time that will put numbers in perspective. At the same time that media highlights initial incidents of violence, it usually fails to highlight or follow up on the resolution of these incidents (except for the most sensational), in terms of prosecutions and resolutions in justice system, fomenting the perception that the city is dangerously running amok with little control.

The news media isn't the only industry that emphasizes exaggerated crime events and uses sensational accounts of crime to sell its wares. There are entire industries that rely on fear of crime to sell products and services. The most obvious is the home security industry, which plays on people's insecurities to sell house alarms, private guard patrols, and of course, fences and gates. As Warr says, potential customers are "frightened" into purchasing the products by exaggerations of risk, the claimed necessity of such products, and even the purported effectiveness of such products. Not only are people convinced of the products' necessity, but as Warr goes on to state, many of these products "are of questionable utility." Given some of the evidence and commentary cited and presented in this research, gated communities could arguably be included in the genre of products of "questionable utility" sold by inducing fear.

Aside from established methods of disseminating information about crime into the public, traditional word of mouth is an incredible force, especially in Puerto Rico. The passing of "first-hand" information about crime victimization of relatives, friends, or more commonly, distant acquaintances several times removed, personalizes the criminal acts and makes people feel like they have been touched or invaded personally by these events.

All of these forces influence people to tend to dwell on and develop fear over events not only not likely to occur and difficult to forecast, but events over which a potential victim has little control over preventing. The end result is that people will go through great length and expense to develop elaborate precautionary measures over these rare, though fear-inducing, events, even though more simple elementary lifestyle or daily routine changes can result in much greater preservation of life and lower cost to society. In a recent column in the *New Republic*, editor Gregg Easterbrook (2001) pointed out the discrepancy between the amount of public investment and policy debate concerning random acts of violence and the under-attention devoted to the much more common deaths of people slain by automobiles:

> "In 1999, the year of the Columbine massacre, 28 students nationwide were killed in schools, while 840 kids under age 20 were killed when struck by cars as they walked, often to school. But, although school shootings spark a national outcry and huge government spending, street-crossing deaths draw no notice and no action. Pedestrian deaths are deemed, well, pedestrian.
>
> "For the past two years Montgomery County, Maryland, the Washington suburb where I live, has seen more pedestrians killed by cars than homicides. Nationally, cars and trucks kill about 5,000 American pedestrians per year—about one-quarter the number of murders.... We'll never stop the random homicides by people who go berserk. We could stop most pedestrian deaths if only we tried."

Is fear alleviated or reinforced by prevention measures?

A common response to fear of crime is to engage in "prevention" measures. What is unclear is whether such measures actually alleviate or reinforce the fear. There is contradictory evidence in the research literature about such effects. In *Fear of Crime*, Lewis and Salem (1986) report that "people who engage in victimization prevention report more fear and less control over crime than those who work with community organizations to prevent crime." For reasons previously elucidated creating visual physical defenses, such as gates and walls that are highly charged with symbolism, could actually reinforce one's fears, as residents must confront these barriers multiple times a day, every day. There is the possibility that only those most fearful self-select to live in gated communities, and that studies will thus continue to report higher levels of fear among these residents. But as has happened in Puerto Rico, once such "amenities" begin gaining in popularity as fear and paranoia spread, all or almost all of development will take this form. People are left with few or no housing options other than developments that sport such designs, eventually forcing them to accept or at least internalize the necessity and worth of such devices. Internalized along with the gates is the culture of fear that they represent.

Since fear is a consequence of perceived risk rather than objective risk, practical public policy to control crime does not necessarily get at the issue of mitigating fear. Given the long lag time between actual events and public perception, as well as the propensity of media and market forces to exaggerate risks even during times of relative calm, reducing actual risk might not reduce fear for many years, if at all. Most importantly, such objective strategies might not even be noticed or appreciated by the public. Residents seek gates, then, because only the erection of symbolic gestures, which to them *represent* protection from crime, will be noticed, appreciated and effective at reducing fear. Warr says that "even if they are fraudulent and unnecessary, such products may actually function to reduce fear among those who decide to invest in them" (Warr 2000).

4.2 Defensible Space and gated developments

Measures to address crime can focus on any or all of the three 'minimal elements' of all direct contact victim crimes: a motivated offender, opportunity, target/victim (Tiesdell and Oc 1998). These three elements can be addressed by three fundamental strategies: 1) corrective, 2) punitive, and 3) mechanical (Carter and Hill 1979). Corrective strategies address long-term root problems and societal structures that lead to higher crime rates, such as poverty, drug treatment, unemployment, and engagement of youth. Punitive measures seek to reduce motivated offenders hypothetically through threat of punishment. Mechanical strategies focus on the act of crime itself, seeking to hinder or discourage, through physical design or other techniques (such as land use programming) the potential initiation or successful completion of criminal acts.

Of course reducing actual crime by addressing the structural economic and prevailing social conditions that create environments leading to criminal activity and distrust should be necessary and of highest priority. But

ignoring how the constructed and designed physical environment exacerbates or facilitates such problems, or to the contrary – how it might be able to mitigate the actual threat and/or the perception of threat is necessary. The physical environment can also encourage or facilitate behaviors or sentiments which will break down some of the elements of fear. Fear is a product of many forces, and as we have explored, is not necessarily related to actual crime activity or risk of victimization. Warr concludes that "manipulating environmental cues to danger offers a concrete and potentially powerful means for regulating public fear of crime. This is perhaps more feasible than altering established practices of news coverage or de-emphasizing crime in popular entertainment" (Warr 2000).

Principles of Defensible Space/CPTED

In 1972 architect Oscar Newman published *Defensible Space*, setting forth several urban design principles for residential environments, that he purports when violated, facilitate both criminal activity and increased fear. He studied public housing developments around the United States, focussing most of his scorn on high rise, anonymous super-block projects based on the "tower in the park" design model. Newman's ideas have been further subsumed into a broader design philosophy called Crime Prevention Through Environmental Design (CPTED). The fundamental principles of defensible space/CPTED are: natural surveillance, territorial reinforcement, activity support, natural access control, and image. The principles are intended to promote a physical environment that reinforces, rather than contradicts, natural tendencies of human perception and community control. Newman defined defensible space as "a model for residential environments which inhibits crime by creating the physical expression of a social fabric that defends itself" (Newman 1972). Rather than acting directly against crime itself, the physical changes suggested by these principles are intended to promote social defense. Many studies have shown social integration (what many call "community") to be effective at mitigating fear of crime (if not crime itself) and that these principles are meant to either augment the level of social cohesion, if not at least allow existing social ties to express themselves more outwardly and fully (Taylor, Gottfredson and Brower).

Natural surveillance/animation/activity

The first, and arguably most famous, principle of defensible space/CPTED is natural surveillance, which builds off of Jane Jacobs' (1961) concern for having "eyes on the street." Through the judicious placement and orientation of physical features and activities in a way that maximizes visibility from the normal flows of activity, a sufficient amount of constant attention keeps unlawful activity in check and fears low. "Instead of relegating the responsibility of streets to others, it is assumed by residents in the natural flow of everyday activities" (Newman 1972). Natural, casual surveillance is the product not just of architectural design, but of creating a sufficient density of people in an area, essentially creating enough "eyes." The animation of space is achieved on the supply side by increasing the range and density of activities in a space, and on the demand

side by broadening the range of people using the space (Tiesdell and Oc 1998). Jacobs observed that exacerbating the lack of natural surveillance and space animation is the separation of land uses and activities from each other, a practice that has become common in development, even enforced by zoning regulations.

Proper surveillance and animation engage the complementary elements of stationary activities and movement, of fixed eyes and passing eyes. Streets and buildings defend and surveil each other, it is a two-way affair.(Newman 1972) However, while increasing the concentration of activity into particular areas or "corridors" can provide the necessary density of people in certain places (Tiesdell and Oc 1998), researchers have suggested that there is actually a "critical intensity zone" of pedestrian activity, below which not enough "eyes" are present and above which too much chaos and crowding disables effective surveillance (Carter and Hill 1979).

Territoriality

Territorial reinforcement is the process of manipulating people's perceptions of their relationship to the environment to foster and denote ownership of space. Territoriality works two ways, affecting the perceptions of both residents and of visitors. Space that appears well maintained, controlled, and looked after, signals to others that someone is watching over this space and that usurping or breaching this space for suspicious activities is likely to be recognized and not tolerated. Creating proprietary feelings by residents or other intended space users toward a space might make them feel more responsible for looking after it, apt to occupy, use, and defend it, as well as easily identify inappropriate users. Both real and symbolic barriers including building entries, landscaping, pavement, architectural elements, signs, and sometimes even fences, can create such "zones of influence." Also contributing to conveyance of an appearance of ownership is good maintenance and management. Anonymity of buildings and space leaves ownership ambiguous and control ambiguous, certainly in the minds of visitors, and possibly also in the minds of residents. Newman suggests that as "people begin to think of the street as an extension of their front lawn" and extend their "areas of concern" they are more likely to inhabit (animate) the space, watch over the activity that passes through it, and set the tone for overall quality of the environment. On the flip side, according to Newman, that is the less that residents extend their domain of concern, the higher will be crime and fear of crime, as residents cede control, supervision, and inhabitation of the space to others, who often engage in activities which induce fear among the residents.

The "language of symbols," described by Newman (1972), provides "interruptions in the sequence of movement along access paths and serves to create perceptible zones of transition." One of the fundamental zones of transition that should be clearly defined, according to Newman, is that between hierarchies of public and private space, signaling to people not only the need to "justify" their presence and giving residents and "justifiable" space users the ability to perceive "intruders." But even more importantly, such signals indicate a change in the notion of acceptable behavior that goes along with changes in types of space –

indicating what those appropriate behaviors might be, and that other types of behavior will be noticed and disapproved of, or outright inhibited (by design). *This ability to define the range of activities and appropriate behavior in space is the critical link back to the source of fear of crime – sense of control.* If there are no signals indicating changes in behavior appropriate to the space, resident are likely to feel that visitors can and will abuse their presence and that they have little ability to stop or influence such behavior. Residents then feel vulnerable, as if their home environment reflects the whims of visitors, rather than their own neighborhood gestalt.

"Activity support" is also a sub-principle of surveillance and territoriality. The placement of certain "sanctioned" activities adjacent to spaces will serve to identify that space with the activity, thereby extending its influence and animating the space. Also the juxtaposition of "safe" land uses with complementary or "unsafe areas" might provide a sense of security by adjacency.

Access

Natural access control, through the judicious placement of entrances, exits, fencing, landscaping, and lighting, does the obvious – limit access to sensitive areas (in an absolute sense) to points that can be better monitored, or merely in ways that complement other activities. But access control need not be thought of just in terms of cutting off access, but in more sophisticated terms of altering paths of movement and regulating levels of flow — the end goal being not necessarily the cessation or diminution of public access but of shaping the public's images of the area and relation to it. According to many theorists, most crime is oriented toward locales rather than specific victims. Criminals, whether casual and opportunistic or professional and determined, make evaluations of potential activities on the basis of factors relevant to their interests (Carter and Hill 1979). Those interests can include ease of accessibility and escape, levels of surveillance and activity, and potential payoff, among others. The authors of *The Criminal's Image of the City* observe that like potential victims derive fear from perceived risk, a "criminal behaves relevant not to an objective environment, but to a perceived one" (Carter and Hill 1979). Potential criminals perceive the landscape based on observations from paths of movement that they frequent or are familiar with. Along these lines then, altering paths of movement can hinder the formation of images in a potential criminal's mind of targets and their connections to the rest of the city. Access control can also help bolster the other CPTED principles, by shaping an access pattern and qualities of circulation that residents feel comfortable with.

Image

Lastly, Newman emphasizes the concept of "image." In his focus on mid-20th century public housing projects, he decries their institutional look. This look "brings their vulnerability to the attention of others." Additionally, their design sets them apart from the rest of the urban fabric, and along with the fact that these projects house a concentration of low-income families, the projects develop a stigma that depresses the self-

perception of residents as well as attitudes of the general public towards them. Further, an image of a community in chaos or under siege is likely to lead to further decline as people take such perceived conditions as a signal of the residents' ambivalence or general lack of control. Lewis and Salem (1986) contend that intruders "believe they reduce their chances of being caught or even identified if they operate on streets where potential victims are already intimidated by prevailing conditions."

Gated developments and defensible space

Unfortunately, most defensive physical designs or neighborhood retrofits tend to emphasize and latch onto the "access" component of the defensible space model, partially because this aspect seems easiest to apply physically (especially to existing neighborhoods) and symbolically is most potent. The concept also provides the "easiest answer" – just keep out the "problems." But as Blakely and Snyder (1997) point out, "the presence of gates themselves does not constitute defensible space." The conception of access control as "fortification" is a misunderstanding of the principle and its intentions, which is certainly not "exclusion" of people or groups of people, but is encouragement of interaction by defining space and the perceptions of its users. Newman himself carries forward this concept: "people are able to distinguish neighbors from intruders, not by isolating homogenous populations (which leads to prejudice) but by design." While the concept of defensible space, including the notion of access, was intended to *enhance* social interaction by creating a more comfortable environment for residents to interact among themselves *and* with non-residents, sealed off gated communities certainly don't do the latter and questionably do the former. When asked about the situation in Puerto Rico, Newman remarked that "we never use guards or booths or close access to the public, because it's one thing to enhance the quality of the environment and get people to interact... what people in Puerto Rico try to have is zero crime. To gain that you need to have a private jail — that's the price" (quoted in Ross 1993). A proper balance needs to be found between the perceptions and preferences of the residents and of the greater urban populace: "you want to create a development where people feel safe but it does not look like a fort" (Gordon 1998).

Gated communities violate the other principles of defensible space in several ways. As discussed, defensive internally-oriented developments largely turn their backs on the public realm and the streets. Activities flow only directly into the private realm, with the borders of the developments guarded by high walls, fences, thick foliage, or simply large distances, sucking any animation away from public streets and making natural surveillance impossible and *de*-animating the public realm. The "freeway effect" reduces not only the surveillance but the territoriality of streets. Primarily, the only eyes left to surveil street activity belong to drivers. First, drivers tend to monitor only what's going on in the road itself, especially at higher speeds. Second, drivers are not very apt to feel territorial or responsible for the areas through which they drive without stopping, especially as these areas are increasingly lifeless. Drivers are primarily just "passing through" in their enclosed vehicles, largely detached from the outside realm and surrounded by radio, climate control, and other comforts that strive to redefine the interior of the auto as a separate, unique environment from the outside.

While gated communities can potentially create a sense of domain immediately within the gates, it withdraws or negates residents' sense of territoriality and attachment – a feeling of the surrounding area as "part of my neighborhood," from the area outside the gates. Blakely and Snyder cite a study by Newman in which he surveyed residents' "neighborhood" perceptions on gated to non-gated streets. He found that residents of gated streets were more likely to define their "neighborhood" as only encompassing their street, while residents of "open" streets were more likely to define their "neighborhood" in broader geographical terms.

There is a vast difference between the type of community territoriality and surveillance created by natural neighborhood activity and the surveillance and monitoring assumed by authorities and agents of the propertied class (Newman 1972), the latter of which is manifested in mechanisms of control of gated communities. Defensible space is meant to enhance community-based empowerment and grassroots neighborhood engagement, whereas a system of gates and guards actually permits residents to withdraw their concern and participation and not engage in community building because these "duties" are assigned to a surrogate force.

Gated communities and "sense of community"

In fact there is little evidence that gated communities foster any increase in neighborhood participation and sense of "community," though this is difficult to really measure, and various urbanists, anthropologists, and sociologists consistently use differing criteria. The most common measures of the vague notion of community are informal social interaction, formal social interaction, and participation in neighborhood-based organizations or activities (Wilson 1995, Blakely and Snyder 1997).

Once established inside the gates, residents' desires for "maintenance-free" lifestyles swamp the seemingly contradictory desires for increased community interaction. Residents exercise their right and increasing ability to opt out of formal and informal communal activities, responsibilities, and engagement. The gates undermine increased senses of communal responsibility and participation and create communities of "limited liability" (Wilson 1995).

For example, while the residents of a retro-gated neighborhood in Cupey (south of Rio Piedras) used rhetoric about coming together as a family, increasing neighborhood cohesion, meeting neighbors, and using public space, community life and neighborhood participation are not particularly intense and public space is scarcely used, despite a short burst of such activity immediately following the gating (Ivelisse Rivera-Bonilla, interview April 2001). While it is certainly possible that the rhetoric of "community" is just that – insincere or hollow rhetoric that masks true motivations of certain individuals to tug at the heart-strings of other residents and to convince politicians that the means justify the noble ends, the imagery and promises are potent and must find traction in underlying concerns of many people.

Surveys by Blakely and Snyder (1997) show that homeowner associations in the U.S. (which they used as a surrogate for gated communities as the two are highly correlated) don't have significantly higher levels of community participation than non-homeowner neighborhoods. A study by Georjeanna Wilson at the University of California at Irvine (1995) looked at the effects of perimeter fencing and guard gating on both sense of community and fear of crime, comparing gated communities with public housing. Public housing showed higher measures of community and no effect on sense of increased personal safety. Gated communities showed a decrease in sense of community and no increase in sense of personal safety. While the gates had no effect on perceived personal safety in either situation, both scenarios reported that gates were positively correlated with feelings of "community safety."

What does this "community safety" indicate? It possibly shows that people seek feelings of safety that are more than just personal, that they want a sense of belonging to a public domain comprised of more than just their own house or apartment. People seek a fulfillness that is created by more than just a house and a driveway. People want to know that there are pleasant spaces available and convenient and that feel special to them, where they can interact with family and friends, and spaces where this activity doesn't feel threatened. While people don't necessarily want to be obligated to participate in neighborhood organization, they feel more comfortable and secure if that neighborhood and *community structure* is there. It is reassuring to be able to identify oneself with a neighborhood, rather than lost and unsure of one's place in the formless morass of a nebulous urban metropolis.

This sense of the growing formlessness of modern San Juan and accompanying unease turned up in conversations that Rivera-Bonilla had with residents of the retro-gated neighborhood in Cupey. Residents expressed discomfort with the lost sense of definitions, boundaries, and real "places" with which one could identify and grow attached as a result of the undifferentiated and "place-less" urban sprawl that has grown throughout San Juan. The desire for gating, to find some *sense of boundaries and differentiation*, in part grew out of the low quality of development that has been spreading. A sense of neighborhood structure, physically and socially, ("community") is increasingly seen as a balancing antidote (or complement) to the impersonality of modern life.

4.3 Evidence of the effectiveness of gates on crime and fear

Effects on crime and fear of crime of gating

While the National Guard raids on the public housing developments were very dramatic and bold (and controversial), the results were inconclusive. Some residents reported feelings of relief, as if a heavy weight had been lifted from their lives. One resident exclaimed that while before she was too scared to even venture much outside of her apartment, "now you have freedom – you can even leave your door unlocked" (Hinojosa

1993). Another man said he perceives that "the drive-by drug market that had been there for 20 years is finally gone." But this perception hasn't been shared by all. What the raids might have succeeded in doing was just re-locating the negative activity. One observer went so far as to say that "the public housing raids have actually spread and intensified the drug problem" (Padilla 1994). While crime in general was receding during the time of the raids (Rosello's first year as governor), the serious, though rarer, lethal violence that struck fear in most people's hearts did not subside simultaneously: "The murder rate hasn't gone down [as a result of the raids], but has increased" (Hinojosa 1993). Some claim that the crime has spread to rural towns and formerly isolated areas, partly as a result of increased crackdowns in San Juan and the relative "mobility" of this activity.

Since the time of inception of Law 21 and the start of the gated community boom in the early 1990s, the crime rate in Puerto Rico has been falling steadily, including violent crimes. The murder rate reached its peak in 1994 and has been declining steadily since then. In a year 2000 ranking of U.S. states and territories released by the FBI, Puerto Rico placed 25th, between the states of Pennsylvania and Washington. Violent crime decreased 56% between 1992 and 1999, with 1999 posting the seventh consecutive year in which the crime index declined. However, none of this necessarily indicates that gated communities played any role in influencing the declining rates (especially violent crime) or preventing crime from occurring. Statistics show that crime has been decreasing island-wide, including areas where gated communities are less prevalent, outside of the San Juan metropolitan area.

Acknowledging the overall decline in crime during this same period, a look at the crime rates in gated communities themselves (before and after gating, or comparatively with adjacent and comparable un-gated communities) would shed some light on their effects locally.

Evaluation of limited crime data of controlled access neighborhoods

To evaluate the actual effect of access controls on crime, the Junta de Planificacion conducted a study in December 1993 of crime rates in three randomly selected retro-gated urbanizaciones in Rio Piedras, looking at crime rates before and after gating. The neighborhoods had been gated in 1991 and the study compared crime data from 1990, 1991, and 1993 (no data was apparently available for 1992). The only noticeable major difference in incident rates was a decline in auto theft. Escalamientos went up in all cases and there was no statistically significant effect on robbery or violent crime, such as murder and aggravated assault. Quite strangely and seemingly totally contradictory to its own explicit findings, the report declared the gatings a success vis-à-vis crime prevention and went on to recommend the expansion of the use of controlled access for this purpose!

In her letter to the Junta regarding access control, Maria Kortright of Ciudadanos cited an examination of crime statistics garnered from the Puerto Rican Police which showed that armed robbery, carjacking, and

murder all went down in gated urbanizaciones in the same proportions as they did overall on the island. (Kortright 1993)

Growing numbers of studies in the United States have confirmed this recognition that gated developments generally exhibit the same crime rates as those outside the gates. Blakely and Snyder (1997) conducted a review of crime rates in gated and ungated developments in Orange County, California, concluding that there was no noticeable difference. Another study of six police districts in Los Angeles (three predominantly gated, and three ungated), looked at crime incident maps and quarterly crime reports for 1988-1993. The study indicated that fluctuations of rates for all categories of crime within the gated districts were statistically similar to those outside (Flusty 1994).

In fact, to many residents of gated enclaves, actual crime rates inside the walls are inconsequential once the walls are erected. In the retro-gated urbanizacion in Cupey studied by anthropologist Ivelisse Rivera-Bonilla, the homeowner association which made it a habit of reporting neighborhood crime statistics in its newsletter to gain support for the gating stopped even keeping such statistics after the gating. Not only did they stop keeping the statistics, but they stopped publishing the newsletter altogether.

There are inherent problems in trying to measure the effectiveness of the gates on both the actual crime rates in many of these areas and on the fears and perceptions of those living in these neighborhoods. The majority of access controls and gated communities have been developed in neighborhoods of above average affluence where crime rates are already fairly low (or nonexistent, in the case of new greenfield developments). Hence, the ability to assess minor or undetectable fluctuations in these already low levels is nearly impossible. This is reminiscent of the joke in which a man touts the success of a ring he's wearing in keeping away wild elephants – of course it appears to work, because the man lives in Manhattan. What, then would be the measure of the gates' success? Possibly, it would be the success of the gates in alleviating fear. Complicating such an assessment is the likelihood that people exercise self-selection in choosing to live in gated communities, especially in American cities in which gated communities do not dominate the housing market as in San Juan. Self-selection implies that people who naturally or already are more fearful than average and believe in the promise of the gates are more likely to choose to live in these developments, and that on one hand their fear levels would still be naturally higher or on the hand could indicate benefits out of proportion with the effects on a random person.

Rising incidents of crime in gated developments

Gated communities are inevitably porous and penetrable. There is increasing evidence that walls and gates are no sure prophylactics against crime. While the defenses keep out law-abiding people like neighbors walking to a bus stop, joggers, people walking to a store or local park, solicitors, or political and religious canvassers, they do little to deter determined criminals. There is a grudging acknowledgement in San Juan that crime has not

been eliminated. The neighborhood association president of Extension College Park, an urbanizacion in Rio Piedras, which closed access to its neighborhood, conceded that "the walls don't eliminate crime, but they are an effective deterrent." Victor de Jesus, neighborhood association manager of the Garden Hills North neighborhood in Guaynabo (among several others), says he perceives that crimes (notably home break-ins) have decreased (though he began managing the neighborhood after the gates were installed, and has no data), he is quick to admit that significant incidents still occur, primarily home break-ins. His sense is that crimes committed now (post-gating) are more planned. He even recalled one resident, who complained vocally to the association that she "had never been robbed until after the gates were installed." This is purely coincidental, but it shows that the promise of the gates is wearing thin for many people. According to San Juan architect Manuel Delemos, people are increasingly "catching on" to the fact that crime "can happen anywhere" and that walls and guards are no assurance of a totally crime-free environment. In an article in the *San Juan Star* a real estate agent admitted that gates really provide only "illusory security" (Ross 1993). To underscore this point, the neighbor of the current governor was recently robbed in his home in a guarded, gated community. The perpetrator, who simply hopped over a fence to get in, got away with $50,000 in the victim's Rolls Royce automobile, by driving unnoticed out of the gates behind a vehicle caravan of the governor's own security. He then ditched the car once outside for his own parked a short distance away. Such incidents are dramatic, but trying to use design to eliminate such extreme possibilities is nearly impossible.

Not only is the perception that walls and gates are effective at crime prevention being broken down, but the closely-held perception that crime necessarily comes from "outside" infiltrators (why else would walls be necessary?) is also crumbling. In fact, sometimes those who instigate the call for gating turn out to be criminals themselves. In one instance, an urbanizacion association leader who led the charge for sealing access to his neighborhood began dealing drugs out of his house shortly after the gating and was later arrested (Kortiright 1993). In a group of gated communities outside of Las Vegas, Nevada, five robberies, three rapes, three murders and a series of alleged child molestations were attributed to residents in one recent year alone (Flusty 1994).

Responses by residents to incidence of crime in their gated communities often are calls for even more restrictive control measures, under the pretense that existing measures somehow are not sufficient. Some gated community residents, shocked at the failure of their walls to eliminate all semblance of crime, seek out ways to augment even further the multiple layers of protection. One paranoid development in California went so far as to hire an ex-CIA security expert who recommended golf cart driven "ninja patrols" to secure the development's fenced perimeter (Blakely and Snyder 1997).

What is clear is that evidence of the effectiveness of gates and walls at preventing crime is inconclusive at best. These design devices might also have the effect of creating a false sense of security among residents, which in the end might nullify whatever actual effectiveness the gates might actually have on their own. As described earlier, the gates can create a "fort mentality," reinforcing in a resident the illusion that criminal activities are confined and restricted to outside the gated area. The perception that the gates and walls create a

totally safe haven inside can promote lax behavior among residents, who feel that since security is taken care of structurally at the neighborhood level, they can loosen up inside the walls at the house level, say by neglecting to lock their house doors. Blakely and Snyder surmise that what many residents seek out in a gated community is a "maintenance-free lifestyle." This notion refers not just to the provision of social activities and themed-structure for "lifestyle-oriented" residents, but also to a desire not to have to worry about looking after one's own security or having to participate in ensuring the security of the neighborhood. The gates water down an individual's sense of responsibility. Indeed "residents may also feel the devices have replaced active citizen involvement in addressing local criminal activities." (Ochia 1996) It establishes a bad precedent in general that communal and societal problems are best left to professionals and to "others," that engagement in one's community and society is unnecessary. Garden Hills in fact is *two* steps removed from their own security, as they have hired a professional, non-resident, manager to coordinate with the guard company and maintain the gates.

Residents can easily drop their guard within the development, thinking that the walls and gates are an effective screen, leading to the assumption that everybody inside the gates "belongs" there and was approved by either the guard or a resident. The guards themselves are not necessarily effective screens themselves. Most are not trained, are underpaid, and have poor judgment. Oscar Newman puts it simply: "they're putting an awful lot of faith in guys paid $5 an hour to sit at a gate." Experience in San Juan verifies this. Mr. De Jesus, manager of Garden Hills North, said that his biggest frustration is that "in the end, you're being guarded by someone who's paid less than minimum wage and has no interest in supervising people passing through the gates." In fact, the guard situation was so futile, that he had to organize a Garden Hills neighborhood "security committee" to monitor the guards' behavior and performance.

Further, gates are signals of vulnerability and beget increased feelings of insecurity and vulnerability that can metastasize throughout the area. The presence of gates continually broadcasts the notion that there must be persistent crime in the area to warrant gates or that other contextual conditions (i.e. traffic) must warrant their use. This creates pressure and motivation for neighboring developments to erect walls, as the erection of gates suddenly makes those outside the gates in that area feel more vulnerable.

Difficulty of policing

While gates and walls might promote lax behavior and a false sense of security among residents, the gates have the potential to simultaneously reduce the efficacy of actual police protection. For obvious reasons of access and connectivity, gates and internal, isolated circulation systems prevent casual or routine beat patrolling by police officers, or at least hinder it. Walls and other obstructions can block observation of criminal activity both by passing police officers and by ordinary passersby. This effect can actually give criminals free reign of a neighborhood or a house once inside. Many people fear that these configurations can also hinder police response time, or can actually prevent police from entering a neighborhood to deal with a situation. In

one actual case in Bayamon, an officer was unable to give a citation to a resident because the guard wouldn't let the officer past the gate (Kortright 1993).

Although gated developments are largely fraudulent in carrying out their implied purpose of crime stopping, they are perceived by most residents as increasing the quality of life in their neighborhoods or developments. While critics can easily question the values, motives, and symoblism of employing gates and walls to such extremes, these devices are an attempt to eke out a more "livable" urban neighborhood by finding shelter, functionally and spiritually, from auto traffic, the strongest undercurrent to the pull of gated developments. The next chapter explores the intersection between auto traffic, fear, and the neighborhood livability.

Chapter 5

Traffic Calming: An urban solution for fear *and* neighborhood livability?

What many gated community residents and potential residents have come to realize is that the primary benefit and lure of gated communities is traffic control and minimization. Blakely and Snyder reported that in the course of their research numerous gated community residents around the U.S. independently admitted to them that insulation from perceived dangerous, chaotic, unceasing, and unstoppable auto traffic is what they value most about their developments: "we live in a traffic-controlled community, not a secure community;" "we really don't have a guard-gated community, we have a traffic-controlled community." And all of the elaborate accoutrements that are ostensibly to filter out the "bad element" are really only good for regulating traffic flow: "our guardhouse might not stop real criminals, but it is going to deter young fellows from going a little too fast." (Blakely and Snyder 1997)

Besides security, gated communities promise much more in the way of quality of life benefits, which are largely or partly related to minimizing the infiltration of traffic through residential areas. Simple peace and quiet are important to many people, and a great many want streets and public spaces available and comfortable for their own use and their families' enjoyment.

A further reality is that gated communities often fall short of even fulfilling the promise of alleviating root traffic concerns, and many people believe that fast and dangerous traffic is sometimes as bad inside the gates as outside (this fact is belied by the previously mentioned presence of speed bumps inside many gated communities).

This thesis maintains that what gated communities offer most tantalizingly to residents is freedom from omnipresent and unruly auto traffic which presents both an actual danger (in terms of bringing crime as well as undermining neighborhood livability) and source of fear. The following section will further expand on this precept.

5.1 Auto traffic, neighborhood quality of life, and fear

Automobile traffic is intertwined with the various motivations guiding people's decisions to take up residence in gated developments or fortify their neighborhoods. In San Juan, there is a fairly clear concern with automobiles as facilitators of actual crime. The types of crimes that Sanjuaneros fear most – carjacking, drive-by shootings, drug traffic, even burglary, are all linked to access by auto or revolve around the culture of the auto. Neighborhoods with easy highway or arterial access are convenient stomping grounds for potential

offenders. The car as an integral tool for perpetrating a crime – for access, getaway, and even using the "car as accomplice," – is seen in the acts of drive-by shootings, or the home break-in theft of large household goods. Cars are used to access crime sites, to scope out areas for potential sites and victims, and to transport stolen goods. There is much evidence that cars facilitate "crimes of opportunity," those acts committed in passing opportune targets, either casually or deliberately because access by this means is easy. As much as Sanjuaneros love their own cars, when that car is in the hands of someone else, cars becomes a threat.

The violent qualities of these crimes are exacerbated by the fact the crimes "come by car." Indeed, cars and car traffic themselves stir up a whole host of emotional and sociological baggage. Autos occupy large amounts of space: for fleeting temporal moments in passing – in driving, in maneuvering,– as well as when idle. Space is a cherished resource, and people tend to be more touchy about the space around their houses and in their neighborhoods. Appropriating that space with a large vehicle – that generates noise and pollution, creates unsafe and otherwise unusable streets, – can feel like a serious intrusion to residents. The *senses of intrusion and violation*, factors of fear, are heightened by other qualities of traffic, like the speed and potential recklessness of drivers, who might show little regard for the environment through which they pass. A heavy volume of traffic (even a slow one) can itself feel like an intrusion. The most "antagonistic" kind of car traffic is pure "through traffic" – those drivers using a neighborhood merely as a conduit for passing through, without leaving anything in exchange. The behavior of traffic can indicate to residents that these drivers really have little regard or recognition that they are passing through someone's neighborhood. Additionally, cars bring strangers, unknown and from unknown places, and these strangers don't engage in the community they zip through. Cars create a sense of anonymity, and until someone steps out of the car and becomes a pedestrian – a recognizable person with whom one can interact, he is simply a driver. An uneasiness with unruly through-traffic is that its occupants are strangers, whom residents insecurely mistrust.

The sense of intrusion is thus compounded by feelings of *lack of control* and *lack of predictability* that can accompany traffic. Faced with the constant reality of erratic and reckless driving and cars moving regularly at speeds that are incompatible with more intimate residential environments, people feel like their environment is subject to the whims of traffic. Residents feel less than able to shape the quality and behavior of traffic in their neighborhoods, and feel that the character of the main public spaces in their communities are determined not only by someone else, but by someone just passing through. There is an inability of residents to define for their own neighborhood what qualities and patterns of use the streets and public space should have, as well as an inability to assure that visitors abide by them. The fact that people feel compelled to shut off streets completely to public use shows they have little faith, or even the conception, that they can control the quality and behavior of cars (and visitors) in their communities. When asked whether people considered less restrictive measures than gates to control traffic, Junta planner Edgar Silva responded that people's sense in San Juan is that "if you allow these streets to be open, cars will fill up and dominate the space."

Chaotic patterns of auto traffic also mirror people's fears of social disorganization and the dissolution of communal ties. As the economic and geographic organization of Puerto Rico has been, and continues to be,

dramatically altered in the course of only a few decades, people's sense of continuity and communal structure seems to dissolve around them, or at least seems to be continually shifting like a sand dune in a wind storm. Additionally, seeming breakdowns in societal norms represented by perceived rises in random violent crime is embodied in and mirrored by the infiltration of non-local and ill-behaved traffic in their neighborhoods. *The auto epitomizes the impersonality of modern life and the infiltration of traffic represents the dissolution of neighborhood structure, and as gated developments purport the ability to subdue the auto and restore tranquility to neighborhood life, these developments are a triumph over the further disaggregation of neighborhood and city, or contrary, a birth of aggregation and recognizable identity in a "place-less" landscape.*

While the infiltration of auto traffic is likely to be a significant contributor to people's fears subconsciously, it is more consciously associated with various quality of life ideals that are more explicitly sought out behind the walls of gated developments. Parents want their children to be able to play safely outside, including in the street. In fact, younger couples have been notable advocates of gating urbanizaciones for this reason (Kortright 1993). People want to be able to feel that they can walk around comfortably, without the stress or safety concerns associated with traffic. Cycling, jogging, walking a dog, rollerblading, or simple strolling are pleasures (and sometimes necessities) that become threatened by traffic. Residents can harbor much resentment if their enjoyment of their own neighborhood is nullified by people driving through who don't even live there.

When traffic comes to dominate the street environment, activity or recreation in front of one's home, such as in a front yard or front porch, becomes unpleasant, and residents must retreat inside the house or to the rear. Residents thus logically and rightfully feel robbed of the opportunity to use and enjoy an entire side of their homes and property and that they have been "jailed," in a sense, in their own homes. Gated developments offer the opportunity to be liberated from the confines of one's home or backyard to re-occupy the front of one's home, and in fact, re-occupy the "neighborhood." And understandably, some people just want simple peace and quiet.

Much rhetoric has been spoken about the desire to strengthen or regain community connections within the neighborhood. These discussions have been premised on notions of reclamation of public space; that less traffic will create a more pleasant environment for venturing outside one's house and engaging in social interactions in the neighborhood, both chance encounters and intentional get-togethers. The block party in the street is one of the activities that epitomizes such possibilities. Indeed, Donald Appleyard reported back in the 1960s that higher volumes of traffic can limit neighborliness and lead to fewer social connections in one's neighborhood. According to the community model of crime prevention, social cohesion could in turn reduce fear, in addition to bolstering principles of defensible space.

Ironically, gated developments aggravate and perpetuate the very unpleasant and unsafe traffic conditions and congestion from which people seek refuge, by degrading the redundancy and capacity of the public road network. Hence, the more gated developments that are built, the worse traffic becomes, and the more people

see the necessity of seeking gated developments, in a potentially unending downward spiral. And the more that gated developments turn their backs on and degrade the public realm, the more that life within such developments seems the only palatable option.

5.2 Traffic calming: basics

Gated communities attempt to address both fear of crime and quality of life concerns, both with limited success, while creating numerous critical problems in terms of pedestrian access and circulation (including access to transit), the pedestrian experience in the public realm, mixing land uses at a fine grain, public feeder transit service, and exacerbating sociological and psychological underpinnings of city life. There are other ways to achieve the benefits sought by Sanjuaneros in their residential communities. Re-thinking about how we design streets and the auto's relationship to our neighborhood space has the potential to yield much more fruitful results, serving many of the same purposes that gates and walls do, but having none of the drawbacks of gating and designing insular developments. Following is a brief look at the basics of traffic calming and pedestrian-oriented street design, and theories of how it addresses issues of crime and fear of crime.

Traffic calming has much in common with theories of defensible space and crime prevention. There is a fundamental similarity between desires to gate one's neighborhood and desire to control "out-of-control" traffic: "the desire to shape the community into its residents' image." Robinson and Robinson (1998) note that the reasons for dealing with traffic infiltration generally run parallel to the concerns of people who fear perceived crime: safety, security, lifestyle, and street ambiance.

What is traffic calming? What is its purpose?

A broad definition of traffic calming is "changing the design and the role of the street to reduce the negative social and environmental effects of motor vehicles on individuals and on the community in general" (Lockwood and Stillings 1998). Traffic calming seeks to improve the safety, aesthetics, and accessibility of the street environment primarily for pedestrian activity, but also for bicyclists and drivers themselves. It also strives to undermine the approach of treating streets merely as conduits for motorized vehicles, which ideally make up only a fraction of the breadth of potential users of public rights-of-way. The emphasis in traffic calming is the use of physical street design changes that affect, physically and psychologically, the relation of cars to the public right-of-way. As "soft" approaches of policy, education, and enforcement don't necessarily work adequately to mitigate and control traffic, actually changing the street landscape might encourage more human scale places and facilitate more community interaction.

The benefits of traffic calming are quantifiable as well as qualitative. The most direct and quantifiable impact is a reduction of auto speeds (potentially while maintaining the same volume) and inducement of more

cautionary driving, resulting in a well-documented reduction in the incident and severity of crashes, injuries and fatalities, for all road users. Consequently, once implemented, such changes might also lead to greater acceptance by motorists of lower speed limits. Traffic calming shifts the transportation focus from vehicular *mobility* to more inclusive *accessibility*, by creating a physical environment more adapted to the needs and movements of pedestrians. Such schemes certainly enhance accessibility to transit stations and services through making the journey on foot not only possible and safer, but more pleasant. Traffic calming can even aid in facilitating transit operations, such as using curb bulb-outs to facilitate bus loading. This allows buses not to have to pull in-and out of traffic at stops, and creates a situation where buses then define the flow of traffic, rather than cars. Calmed streets are also more appealing for bicyclists. For residential neighborhoods, traffic calming is especially effective at reducing volumes of non-local cut-through traffic by making them less convenient. The change in street environment created by lower volumes of autos and more "well behaved" drivers, encourages more street activity of all types. Such streets create an environment more appropriate and safer for activity by children, the disabled, and the elderly.

Traffic calming enables communities and municipalities to shape traffic qualities and patterns toward those more appropriate to different settings - such as residential or shopping. On commercial streets, such changes have created better shopping environments (Lockwood and Stillings 1998). In residential areas, traffic calming can become a source of neighborhood pride and social organizing. Designing, planning, and maintaining traffic calming enhancements can get communities involved in beautifying their neighborhoods, taking control of public spaces, and setting the tone for activity in the neighborhood.

Types of traffic calming devices and design strategies

There is quite a number of traffic calming design devices, but they can effectively be divided into six categories based on function and the way they physically affect street space.

1) *Devices that affect road space laterally ("horizontal deflection").* These serve three purposes: 1) Alter drivers' perceptions of the width, straightness, or continuity of the road and break up their line-of-sight. By constricting or shifting the through-moving space laterally, drivers are forced to slow down, drive with more caution, and take more careful note of the "obstacles" they might encounter. 2) Facilitate easier street crossings for pedestrians. Pedestrians have shorter crossing distances and can more easily be seen by oncoming traffic. Some devices in the roadway can give pedestrians physical refuge while crossing the street. 3) Reclaim right-of-way space for non-motorized activities, either passive or active. Shifts in the distribution of right-of-way space, gives more space to pedestrian activity as direct extensions of the pedestrian realm (the sidewalk), or at least reduces the width of road available for freely-moving cars. The devices can be landscaped or used for placement of amenities, such as benches and tables or children's play lots. Examples of these types of design devices and strategies include:

• widening sidewalks, narrowing traffic lanes/streets

• curb bulb-outs/chokers/neck-downs(at corners or mid-block;)
• chicanes (also: alternate parking)
• intermittent raised medians, other objects in the road space (trees, art, etc.)

2) *Devices specifically affecting intersection behavior.* This is really a subset of Category 1, and includes:
• the first two devices of Category 1
• traffic circles/roundabouts
Whereas all of the Category 1 designs are intended to affect cars' movement and perception as they travel linearly down the length of a block, this category affects their movement as they proceed through intersections, either turning or continuing straight. The intent is to substantially reduce speeds as drivers approach and proceed through the intersection with caution. Deploying any of the Category 1 devices at street corners will create tighter turning radii, having the desired effect.

3) *Devices that direct flows of motorized traffic.* The main purpose of these devices is to divert traffic onto alternative routes, thus "protecting" certain streets from through traffic. While they certainly reduce volumes on specific streets or groups of streets, they will tend to reduce traffic speeds only on those streets nearest the closures. Designs can allow for through pedestrian and bicycle access, as well as emergency vehicle access. They can also be landscaped or treated creatively, possibly creating even more contiguous space for neighborhood activities than do Category 1 designs. The devices include:
• street closures/cul-de-sacs (full or partial; street end or mid-block)
• diverters/barriers (direct traffic diagonally at intersections)
• median barriers (at intersections)

4) *Devices that are placed in the road itself and are meant to be driven over ("vertical deflection").* The purpose of this category is to slow vehicles, primarily by force, but also by changing the look and feel of the road surface to heighten driver awareness. Exceedingly fast moving vehicles will find their cars damaged by such devices as they pass over them. This category itself has three types of devices:
• humps/cushions (these only affect vehicular movement)
• speed tables/raised crosswalks/raised intersections (these affect vehicular movement, but also serve to provide smoother pedestrian connections as they extend the pedestrian space on the same plane as the sidewalk)
• rumble strips/surface treatments

5) This category consists mainly of "soft" changes, which are not focussed on changing the infrastructure of the street, but of altering *the configuration of cars on the asphalt, in motion or in stasis.* The main effect of these is to slow traffic and induce caution through increased "friction" of cars in motion passing in close proximity to oncoming or parked vehicles.
• on-street parking: diagonal, parallel
• two-way streets

• "key" streets (two way streets not wide enough for oncoming cars to pass each other abreast; one must wait, or possibly back up, for the other to clear the narrow stretch; this effect can be created on wider streets with devices from Category 1)

6) The final category does not encompass a set of devices per se, but a strategy: the *shared street*. The use of multiple of the above-mentioned devices and a comprehensive deconstruction of the traditional street as "thoroughfare," seeks to transform the street into a more habitable and comfortable space for a diversity of activities. From a segmentation of space for the movement of vehicles and the movement of pedestrians, the street becomes a "woonerf," Dutch for "living yard," where through-movement is de-emphasized and activity in public realm in celebrated. Cars are forced to move closer to the speed of pedestrians and there is little delineation between pedestrian and vehicular space. The physical changes that create this environment, aside from the elimination of the elevated curb, is the placement of various neighborhood amenities, such as trees, benches, gardens, or playsets, in the street space. Car parking arrangements are also addressed more creatively in a woonerf scheme, also called "Verkehrsberuhigung" in German and "home zone" in the UK, with autos grouped in designated locations which seek to complement the other elements of the design scheme to encourage use by residents of the entire width of the space. Note that this concept does not necessarily imply the dissolution of the traditional built fabric of the neighborhood or undermining the direct relationship of building to street, which are important in maintaining residents ownership of street space.

5.3 Traffic calming, fear, and crime

There are three distinct theories of traffic calming as it relates to crime prevention:
1) the *opportunity theory* emphasizes access control, not as access supports defensible space, but as it restricts a criminal's movement sphere.
2) the *defensible space theory* emphasizes social control, natural surveillance, and territorial attitudes that result from changes in community relations and activity patterns.
3) the *investment theory* holds that the mere showing of concentrated investment and attention on a particular area will deter would-be criminals from using the space to operate.

Opportunity theory - access and the criminal's image of the city

Restricting automotive mobility and decreasing neighborhood permeability (by auto) can potentially affect motivated offenders in two ways – by affecting his image of the activity spaces around the city and by reducing the number and viability of entry and escape routes. As explained earlier in Section 4.2, criminologists maintain that criminals develop an "awareness space" of travel paths and nodes of activity as well as opportunities for legitimate and criminal activities based on ease of movement and routine activity, and from this overall mental template a person hones in on "action spaces." Supporting this theory are two studies: one

that showed a positive relationship between the number of access lanes on arterials and the rate of burglary in adjacent neighborhoods (Robinson & Robinson 1998), and another in Miami that showed property crime declining with distance from a major thoroughfare (Ewing 1999).

Secondly, a traffic calmed neighborhood could be perceived as too risky for a criminal to do business in. A neighborhood street system need not be closed off, internally-oriented or confusing to warrant this perception, as using physical traffic calming devices make it difficult or impossible to speed away. Further, calming generally reduces overall volumes of neighborhood traffic by reducing cut-through, non-local traffic. This increases the likelihood that a criminal's automotive movements would be more noticed, and as he might be identified as a stranger, his movements would be increasingly scrutinized.

Space animation — "eyes on the street" and creation of pleasant space

Decreased volumes of vehicular flows and lower, more cautious speeds as a result of traffic calming can result in additional street usage by residents and others. Creation of safer, more pleasant street environments has numerous effects. First, the increased amount of pedestrians, bicyclists, and other users of public space will increase the natural casual surveillance of the neighborhood. Even if actual pedestrian volumes do not increase substantially to constitute regular natural surveillance, the reasonable expectation that pedestrians or cyclists are apt to wander by at any moment might deter would-be criminals from acting with the fear of getting caught in the act, as well as making residents feel safer in using streets, even if alone. Superior space animation is achieved not just by increasing the absolute density of people out walking around, but by broadening the range of people using space. Whereas before, only very hardy people or those without other transport options might use the streets, traffic calmed streets provide opportunity and attraction for elderly people, parents with children, and others who didn't otherwise feel comfortable or see worth in using public space. Calmer streets open up opportunities for people to use space as they haven't before, or maybe ceased to do as traffic worsened.

Many people fear not having choices or freedom, that they are forced to make certain "choices" in which if they find themselves threatened there will be no option to opt out. As traffic calming increases (in a sense) the viability of other transportation options (e.g. walking) it enhances feelings of freedom and choice. But in a more specific way, it increases mobility in the street environment and alleviates some of the concern of not being able to avoid threats that present themselves in that environment — a suspicious individual following someone on the sidewalk, for example(Tiesdell and Oc 1998). As traffic calming liberates a person to easily cross roads or use the entire street space more freely, people feel less restricted and confined.

As streets are changed from merely directional conduits to "places" for activity, they can become venues for neighbor interaction and communal activity. This increased interaction could hypothetically lead to greater feelings of cohesion and connectedness among area residents, leading to greater vigilance over shared space

and feelings of group support. The "community model" of crime prevention holds that this could result in both lower actual crime, but also lower fears.

It is important to note that automobile traffic does provide some natural surveillance, but that it is ineffective at higher speeds and high volumes. Only by reducing speeds and volumes and getting auto drivers to engage (or at least become more aware of) the surrounding activity, can such surveillance be useful.

Territoriality

Traffic calming also has the potential to increase resident feelings of ownership and territoriality over the public realm, including the street itself. As people are given more opportunity to use and feel comfortable using the street environment, they begin to identify with the space as theirs, individually or communally. Newman suggests that such physical changes would lead to people beginning "to think of the street as an extension of their front lawn"(quoted in Becker 1994). The extent of the street redesign scheme, its boundaries, and degree to which each street section is integrated with surrounding applications to create an overall area street milieu could truly help extend a resident's domain of concern and feelings of safety, control, and belonging from just one's house, to include one's street and ultimately the surrounding blocks.

In West Palm Beach, Lockwood (1998) hypothesized that as the traffic calming created a more pleasant neighborhood environment, existing businesses and residents began investing more, physically and economically, in improving and maintaining their properties. This resulted in more neighborhood pride, and the improvements continued to snowball, including reductions in crime and concerns of crime.

As a sense of loss of *control* over the state of the street environment in one's neighborhood is an underlying cause of fear, traffic calming brings a way to bolster a community's ability to define the type of environment they want. Even if community members were not involved with establishing the parameters of a street redesign scheme, the calming designs in place de facto put residents back in charge of the street environment, or at least feel that they are not subject to the whims of infiltrating traffic. Traffic calming physically delineates space for certain ranges of activities and marks boundaries, perceptible to residents and to visitors as defining spaces of domain and appropriate behavior. These street designs signal to visitors the intentions and desires of the residents, and could signal to potential criminals that the streets are "under the control of the residents." In tandem with instituting a greater sense of control over the streets comes a greater sense of predictability and comfort with the patterns of street activity. With cars subdued, there is a diminished expectation of cars zipping in and out, bringing safety and security issues, and that the rhythm of traffic flows can then become more familiar and comfortable (Hunter 1982).

Third theory: visible investment and organizing as deterrent

Successful experience from actual implementation suggests that is visible public display of investment makes the difference in slowing crime and changing residents' fears and attitudes toward their neighborhoods (Ewing 1999). In both West Palm Beach and Dayton (discussed in the next section) much media attention was expended on the publicizing the efforts, and the perception among the entire city populace could have been affected by this alone, inducing an alteration of visitors expectations for activity in that neighborhood. This perception that residents have taken control of their streets possibly also spreads to potential ne'er do-wells, and because people don't really know the neighborhood's exact boundaries, the entire area is positively benefited (Newman 1995).

The act itself of organizing and planning the street changes, of coalescing around an issue, can actually provide the sense of neighborhood cohesion that many are seeking and a commensurate sense of security, support, and control, rather than the actual changes themselves producing cohesion by their effects.

5.4 U.S. experience with traffic calming and crime

Traffic calming and residential street system redesign projects that have been carried out in American cities, in which one of the programs' primary explicit goals was addressing crime, have tended to rely heavily on redirecting and inhibiting existing street flows with street closures of various forms. Street closures and diverters have been used to address crime in Dayton, St. Louis, Chicago, Columbus, Ft. Lauderdale, Phoenix, Berkeley, Oakland, San Jose, Los Angeles, Bridgeport, Hartford, Maplewood (NJ), and Albuquerque (Ewing 1999, Weinstein and Deakin 1998, Gordon 1998, Blakely and Snyder 1997, Wagner 1997, Flusty 1994). (Note that some of these cities have used other calming measures in conjunction with closures/diverters; for instance Berkeley has also used speed humps.)

Five Oaks, Dayton

The most well-publicized effort to stem crime and address fears by retrofitting a neighborhood's street network has been the Five Oaks neighborhood in Dayton, Ohio. This has probably received the most attention because it was shepherded along by Oscar Newman himself, and so has been viewed as a purer attempt to manifest some of the principles of defensible space than other, less urban design and ideologically driven attempts by police and transportation departments in other cities. Five Oaks is a 10x10 block area of gridded streets one mile north of downtown Dayton, comprising about 2,000 middle-class families in a mix of single family homes and some apartments. A racially-mixed neighborhood, as of 1992 it had been experiencing a high volume of cut-through car traffic and "racing cars" associated with noticeably rising incidents of drug

trade, shootings, prostitution, and theft.

Newman led an intensive neighborhood planning effort to change traffic patterns, install "symbolic barriers," and help define the neighborhood. Ninety-three percent of residents approved the plan, which created ten mini-neighborhoods in the fall of 1992 by closing 35 streets and 26 alleys with street gates to "outside" access, plus installing 24 internal diverters and closures. The street closures consisted of brick red columns with metal gates extending across the street, and at the entrance to non-closed streets brick columns that featured the name "Five Oaks" were set as portals to mark the entrance to the neighborhood. Maintaining full pedestrian and bicycle access, as existed, was an explicit criteria of the plan.

Follow-up studies of the neighborhood have shown that definite changes occurred, in some ways more than others. Newman reported that eleven months after the changes overall crime was reduced by 26% and violent crime by 50%; crime in the surrounding communities decreased by 1.2%; and by comparison, crime increased by 1% in Dayton overall (Newman 1995). A separate study of effects in Five Oaks, looking at crime for a full two years after implementation, showed that Newman's figures are a bit exaggerated, but that there was still a positive effect. According to police data of reported crimes, all crime in Five Oaks was down 20% from 1992 and violent crime by 39%. This study did not compare Five Oaks to other non-modified neighborhoods (Donnelly and Kimble 1997). It is important to note that homicide and rape figures were essentially un-changed from 1990-1994, and several crimes, including robbery, "other assaults," auto theft, and vandalism had risen in 1994 from their drops following the first year of implementation, some hovering around pre-implementation levels.

As far as perceptions were concerned, Newman reported that 53% of residents thought there was less crime in the area, specifically that drug dealing, theft from houses and cars, and harassment were each less of a problem. Donnelly and Kimble's survey bore out similar results. A survey of resident concerns (where residents rated different types of crimes and concerns on a 4-point scale from "not a problem" through "serious problem"), revealed that drugs, violence, "noisy neighbors," and traffic decreased by statistically significant amounts, traffic being affected most (Donnelly and Kimble 1997).

The results show the most unmistakable impact was reduction in traffic, as cut-through traffic dropped 67%, overall volume in the neighborhood by 36%, and traffic accidents by 40% (Newman 1995, Donnelly and Kimble 1997). Indeed, Donnelly and Kimble found that 73% of residents felt there was less traffic. Public feedback on the changes' effects on neighborhood life quoted in articles and studies have been couched or qualified in terms of reduced dominance of autos. One resident remarked that, "Traffic is absolutely nil. My wife and I sit on our porch in the summertime and say, 'This is the next best thing to living in the country'" (Blakely and Snyder 1997). A local police officer commented that "on a warm night earlier this spring, children and families had almost entirely supplanted cars on the tree-lined streets. Two summers earlier, families avoided the streets for fear that cars would screech away at high speeds from drug deals" (Brownstein 1994).

What isn't clear is whether any of these perceived benefits were the result of increased social integration and "neighborliness." Donnelly and Kimble reported no significant changes in measures of neighborliness, neighborhood involvement, or territoriality, though familiarity with neighbors increased. However, they note that Five Oaks was already fairly cohesive when its problems emerged and had a "strong, pre-existing neighborhood association." Additionally, Donnelly and Kimble hypothesize that the short time frame of observation was not sufficient allow neighborly bonds to grow. Nevertheless, both Newman and Donnelly and Kimble found that close to two-thirds of residents felt quality of life in Five Oaks improved after the changes. And as evidence of an overall improved image of the neighborhood citywide, Newman reported that after eleven months, housing values in Five Oaks were up 15%, compared to 4% in the region, and there was a 55% increase in housing sales.

Other attempts at street closure and crime: Divisive Gates and Unsightly Barricades

While using street gates as a form of street closure was reasonably popular in Dayton, this specific form of traffic calming has stirred much more heated controversy in other cities. The proposition of street gates flamed class and racial tensions in both Los Angeles and Houston. In both cases, crime was suggested more subtly than in Dayton as a rationale for traffic control, but its mention served as a rallying cry for opponents of the gates to claim racism and elitism.

In the mid-1980s residents of the wealthy Whitley Heights neighborhood, located at the base of the Hollywood hills, began to organize against a rise in car traffic, use of their neighborhood for commuter and commercial parking, and a concern of a seemingly parallel rise in opportunistic crime (i.e. vandalism, theft). Many observers perceived this to be a snobbish snub at the less-well off neighborhood situated just below it. In 1986 the Los Angeles city council approved a plan for street gates to control the flow of traffic. As soon as the gates were erected a group called Citizens Against Gated Enclaves (CAGE), primarily made up of residents of the adjacent neighborhood, immediately filed a lawsuit. The California Supreme Court ruled in CAGE's favor, stating that gates were illegal and could never be closed because the California Vehicle Code stated that public streets must remain accessible to the public. Judge Woods strongly admonished, "Although we understand the deep and abiding concern with crime prevention and historic preservation, we doubt the Legislature wants to permit a return to feudal times with each suburb being a fiefdom to which other citizens of the State are denied the fundamental right to access to use public streets within those areas." In 1994 the gates were removed, having never been closed (Blakely and Snyder 1997).

Houston, which used street gates in the context of its general traffic calming program, quickly tried to downplay any explicit connections to crime prevention. In his first term, Houston Mayor Bob Lanier first proposed street gates as an offshoot of his Neighborhoods to Standard infrastructure upgrading program in

an effort to "compete with the suburbs" in terms of neighborhood quality of life. The city incorporated the concept into its Neighborhood Traffic Project (NTP), which began in 1994, using street gates, diverters, one-ways, and speed humps. Problems brewed as a result of NTP language suggesting that street gates could reduce crime because the pattern of gate implementation reflected geo-racial boundaries. Of 16 NTP projects, 11 included gates. Journalistic recounts of the controversy posed that "few Houstonians could argue with a plan that promised to alleviate traffic problems; but yoked to undemonstrated assumptions about criminal activity, the NTP generated political controversy." The city soon removed language suggesting crime prevention as a goal of the program from its literature. Nevertheless, formal complaints of racial discrimination were filed with the city as well as with the U.S. Department of Housing and Urban Development (HUD). HUD responded strongly and negotiated with the city to end the use of gates in traffic control. The gates have been replaced by "less intrusive" speed humps and curb bulb-outs, which have begun to gain acceptance (King 1997).

Several cities, including Los Angeles and Bridgeport, Connecticut, have experimented with non-gate forms of closure in overt efforts to address crime. Driven primarily by the police departments, these projects have tended to be in lower-income areas where crime, especially heavy drug traffic and car-based gang warfare, is a problem. As the focuses have been more narrowly focussed on reducing criminal activity and not more broadly on improving the quality of life of the neighborhood, the instruments used to implement the projects were fairly cheap, bare-bones concrete barriers. While crime rates certainly improved in these areas, the barriers have been greeted with a great amount of scorn from locals because of their aesthetic symbolism and seeming demonstration of lack of serious commitment and investment to improve these neighborhoods.

The Los Angeles Police Department (LAPD) began Operation Cul-de-Sac in 1990 in a 31-block area of the department's Newton Division (Pico/Union area). Streets were blockaded with sawhorse barricades, steel fences, and a few concrete planters. The LAPD reported that after a short time "some crimes" decreased by about 15% and drive-by shootings were eliminated, but the overall reduction in crime was not significantly different than nearby unbarricaded areas (Flusty 1994). The boundaries of the project coincided with statistical administrative boundaries, rather than any perceived or popular conceptions of what composed the "neighborhood."

The Phoenix Project in Bridgeport covered ten square blocks and used more than two dozen inexpensive concrete barriers ("jersey barriers," the type used on highways and for temporary roadwork) to create residential loops, each composed of less than one hundred families (Ochia 1996). A drive-through drug trade was flourishing in the neighborhood: "All day long, spiffy sedans would speed in from Interstate 95 and the suburbs, straight down Pembroke Street to the open-air crack markets." While drug dealing and associated violent crimes did decline and the barriers were seen as a success, a large number of residents and merchants were eager to see the barriers removed, as they considered the barriers "eyesores" and "ugly symbols of a troubled past and evidence of ethnic discrimination" (Halbfinger 1998). No in-depth studies are available to date on either the Los Angeles or Bridgeport experiments.

Non-closure traffic calming and crime

A couple cities have indeed used other traffic calming measures to address issues of crime. In the City of Berkeley, California, fully two-thirds of the speed humps in the city (or 105 out of 156 covering 99 blocks) were installed as part of the Berkeley Police Department's Special Enforcement Unit (PSEU) program to reduce drug dealing, drive-by shootings, and reckless driving. According to a report issued by the city in 1998, evidence of reduced crime is scant and mixed. Some anecdotal evidence suggested that humps have made a positive impact in some cases, but often in conjunction with other neighborhood improvement measures. But conversations with PSEU staff and some limited data indicate little or no impact of traffic calming on the amount of criminal activity on a street – drug-related crime went up on some humped-streets and down on others (Ewing 1999). Regardless of the data, public opinion of the humps in Berkeley is generally favorable, with over 50% of residents supporting further hump proliferation and an additional 25% indifferent. Resident perceptions and concerns of crime in speed humped-neighborhoods are unknown as are any concurrent changes in use of public space or neighborhood interaction. However, a study by students at the University of California at Berkeley indicated that humped streets produced some "neighboring" and public space benefits, but significantly less than other more creative and aggressive calming designs in Berkeley, such as a "slow street" (which uses chicanes and other devices).

In the West Palm Beach, Florida, neighborhoods of Old Northwood and Northboro residents were concerned with drug dealing, prostitution, and speeding, which all combined to make an unpleasant and perceived unsafe area. The city initially used street closures, but these led to "problems" (Lockwood and Stillings 1998). The city hired a new traffic calming planner, Ian Lockwood, who shifted the city toward a more complex array of measures, including circles, road-narrowing designs, raised intersections, chicanes, and humps. According to statistics provided by Lockwood, arrests for prostitution dropped from 100 in 1992 to below 20 in 1997, and drugs and narcotics arrests dropped from 38 incidents in 1992 to less than 15 in 1997. Anecdotal evidence also shows that residents are taking "ownership" over traffic calming elements and using public space more as a result of the changes. Residents plant, prune, and decorate landscaped bulb-outs, circles, and islands for holidays, even running electric cords from their homes to light the islands at Christmas time. A local journalist touring the area in 1998 spoke to one resident who "was outside watering 'his' island. He said that people used to crash into parked cars and the neighborhood was once so bad that 'every block had a crack house.'" Now parents and children spend time outside in the streets rollerblading, jogging, and gardening. Additionally, home sales are up and residents have even volunteered funds to the city for the purchase of decorative streetlights (Shea 1998).

Overall, reviews of the effectiveness of traffic calming to prevent actual crime and to enhance resident perceptions of their neighborhoods have been limited and relatively inconclusive. Most published evaluations of "traffic calming" in this context have been limited to street closures (either barricades or street gates). In addition to the above examples, a couple other efforts have been written about. A study of crime in neighborhoods in Ft. Lauderdale, Florida, showed no drop in serious crimes after the streets were closed in 1988. Only

prowler calls and traffic incidents declined" (Szymanski cited in Ewing 1999). Another Florida study of two neighborhoods found that streets closed benefited no more than nearby 'control' streets that remained open during the period examined (Ramirez cited in Ewing 1999). Taken on face value, this might be evidence of negligible effect. But remembering the theory of adjacency and the potential influence of one neighborhood's image on its surroundings (as has been alluded to by Newman as a spin-off effect in Dayton) one would have to compare the trends of the experimental neighborhood longitudinally to its neighbors *and* to the city as a whole. A 1997 study of a traffic modification program in a St. Louis neighborhood showed a lower rate of increase in crime (in almost all categories) than in a nearby control neighborhood (and compared to city averages). Project Quiet Street (a component of Operation Safe Street), implemented in 1984 using stone traffic blockades with flower boxes, resulted however in no perceptible difference in reported rates of fear of crime than in the adjacent control neighborhood. However, the study did not compare rates of fear in either neighborhood before *and* after implementation. There has been little study available of the ways in which non-closure methods of traffic calming have affected concerns of crime, either alone or bundled with other measures of neighborhood activity and quality of life.

To look more holistically at the potential confluence of both fear of crime and quality of life benefits of traffic calming efforts (of both closure and non-closure oriented tactics), the next Chapter looks at some neighborhood street re-design programs in Chicago.

Chapter 6

Case Study: Chicago's Community Security Infrastructure Program

"And so, when you cul-de-sac, you don't get the burglars driving by. You don't get the armed robberies. People know who is on the street. And then on the weekends, people can use the street, so it's not a thoroughfare. People can go out there. Kids can play." – Chicago Mayor Richard Daley (quoted in Kass 1993)

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6.1 Rationale for examination of Chicago case studies

The extent to which traffic calming and street redesign efforts have shown to indeed lessen crime and/or fears of crime, as well as provide sought-after neighborhood quality of life benefits, could provide a new model for San Juan to follow as development occurs, especially around Tren Urbano stations. Rather than resorting to patterns of enclaves and walled self-isolating developments, "less restrictive measures" of traffic calming that force autos into a more submissive role in neighborhoods, while enhancing the neighborhood environment and making people feel safer engaging in pedestrian street life, could encourage and lure people to live in a more connected context. In order to test these hypotheses, it is necessary to examine neighborhoods that have undergone extensive street redesign efforts and evaluate the changes in behavior and attitudes that have taken place.

Chicago presents a unique opportunity to study these effects. Their program, initially dubbed the Community Security Infrastructure Program (CSIP), was initiated in 1993 specifically to address the issue of crime. No other city in the U.S. has engaged in such an expansive effort of traffic-oriented street infrastructure redesign in the context of crime and fear of crime. As described, several cities, such as Los Angeles and Bridgeport, Connecticut, have undertaken related projects with relatively minimal investment in a few neighborhoods, but information on these is spotty and many of the interventions were temporary and less than wholehearted. Additionally, many of the other cities cited, such as Dayton, have used actual gates and other symbolically less- desirable barrier devices. The maturity of the Chicago program, time elapsed since the first neighborhood renovations, relative wealth of existing literature (primarily newspaper sources), and availability of individuals in Chicago willing to share their perspectives, make Chicago an appropriate and logical choice to use as a case study. To date there are no published studies of the results of these traffic calming efforts in Chicago.

6.2 Methodology

In researching CSIP and assessing the results, I conducted personal interviews with engineers and planners at the Chicago Department of Transportation (CDOT), local Aldermen and their aides, and residents, located through referrals by Aldermen, community groups, and "on-the-street" interviews. Additionally, much local press coverage, spanning several years, especially of the North Beverly project, provided insights into the diverse perceptions of residents, controversies, and motivations for implementing the street changes.

6.3 Origins of the Community Security Infrastructure Program and traffic calming in Chicago

Chicago saw a rash of drive-by shootings and rising gang activity in 1991 and 1992, primarily in the south-central neighborhoods (Interview with Robert Cyboran, CDOT, 2001). Local media began to intensify these concerns and project the images daily into the public consciousness by shifting "news coverage to rely on highly graphic depictions of murder and mayhem every night" (Kass 1993.) In response to growing concerns about crime and traffic both citywide and in her district, Alderman Virginia Rugai (19th Ward) invited Oscar Newman to come to Chicago in late 1992 to make a presentation to Mayor Richard Daley. In response to growing pressure on his administration to address issues of crime and impressed by Newman's ideas, Daley announced a massive program of traffic calming, primarily taking the form of street closures that create cul-de-sacs out of formerly "open" streets of Chicago's grid. Daley initiated The Public Way Neighborhood Management Program in May 1993 which provided funds to close off residential streets (along with other street improvement projects); in 1995 the relatively haphazard and limited program was expanded to become the $2 million Community Security Infrastructure Program (CSIP). CSIP, which included four pilot neighborhood projects, relied most heavily on the use landscaped cul-de-sacs to inhibit automobile through-access in neighborhoods formerly woven into the massive interconnecting grid of the city's street network.

Mayor Daley went so far as to say that he would cul-de-sac neighborhoods in every ward (political district), which would effectively "scrap the city's historic open grid system and easy access from one community to the next" (Kass 1993). The aim was to limit auto traffic, maintaining continued pedestrian and bicycle access as existed throughout the street network, and hopefully enhancing the viability of using the streets for walking, cycling, and general enjoyment.

The explicit notion was put forward that many crimes, violent crimes and crimes of opportunity, would be quelled, or at least subdued, by this scheme. The crimes most prevalent and disturbing to residents that Daley specifically cited included drive-by shootings, gang narcotics, rapes, burglaries, and also reckless driving, associated with criminal activity and as a stand-alone problem (Kass 1993). The mayor raised the specter of criminals racing their cars recklessly through the city searching for victims and making the streets inhospitable and dangerous, further compounding the already chaotic traffic which was turning residential neighborhood

streets into clogged thoroughfares. He emphatically tied these concerns of crime with quality of life issues, contrasting current situations with ones of tranquility and vibrant neighborhood activity, appealing especially to parents who were seeing the city as less of a pleasant, safe, and nurturing place to raise children. Daley expressed hopes "to create communities where children can play in the street and parents don't have to worry if the next car driving by has guns pointed out the windows or that a rapist can travel 20 blocks down one side street looking for a victim" (Kass 1993). And to appeal to everyone's sense of neighborhood livability and justice, he emphasized not just criminality, but the impact of increasing traffic on the livability of everyone's neighborhoods: "Residential streets have to be used for residential purposes — not as thoroughfares for someone coming off a major street to cut around" (Spielman 1999).

This was not the first time street closures had been implemented in Chicago area, nor even the first to use this technique in the context of crime. The city of Oak Park first constructed a cul-de-sac on an open street in 1964 to control traffic, then more than a dozen between 1970-4. In 1987 one cul-de-sac in Oak Park was constructed to deal with crime. The police there have not attempted to measure its effects, the Oak Park Chief of Police told a reporter in 1998 that "'Perception is as good as reality, and residents wanted the cul-de-sac to help with both the perception and reality of crime.'" As in California, there were legal challenges to stop street closures in Illinois. However, these efforts failed and in 1993 an Illinois State Appellate Court ruled that a city could close a road to cut-through commuter traffic (Gordon 1998).

The city and CDOT have generally taken a hands-off approach to street closures and traffic calming in general, responding to Alderman and resident requests. The *Chicago Tribune* reported in 1998 that "Chicago officials take the position it's a local decision as long as it doesn't compromise arterial streets" (Richards 1998) or CTA bus routes. In general, a supermajority (60-67%) of adjacent residents can petition CDOT to install cul-de-sacs or circles on their blocks, and Aldermen are free to make requests. No formal community vote is required to satisfy Alderman request, including under CSIP.

CSIP had a heavy emphasis on the use of cul-de-sacs, but also incorporated diverters and traffic circles, the latter of which were added to Chicago's "toolbox" of devices in 1995. Other traffic calming techniques have been incorporated into the traffic calming program since, including bump-outs, chicanes, speed humps, and textured pavement, depending on the neighborhood context and the desires of the residents and their political representatives. It is important to note that even the cul-de-sacs maintain free-flowing pedestrian access, and some designs maintain bicycle continuity better than others.

CSIP encompassed four pilot neighborhoods: North Beverly, Jackson Park Highlands, Albany Park, and North Lawndale. This study looks closely at two of them, North Beverly and North Lawndale. Additionally for comparison, this study looks at Edgewater, a neighborhood which has been on the cutting edge of traffic calming in Chicago and has neither relied on street closures nor engaged in its program explicitly to address concerns about security. (see map of neighborhoods Fig 6.1)

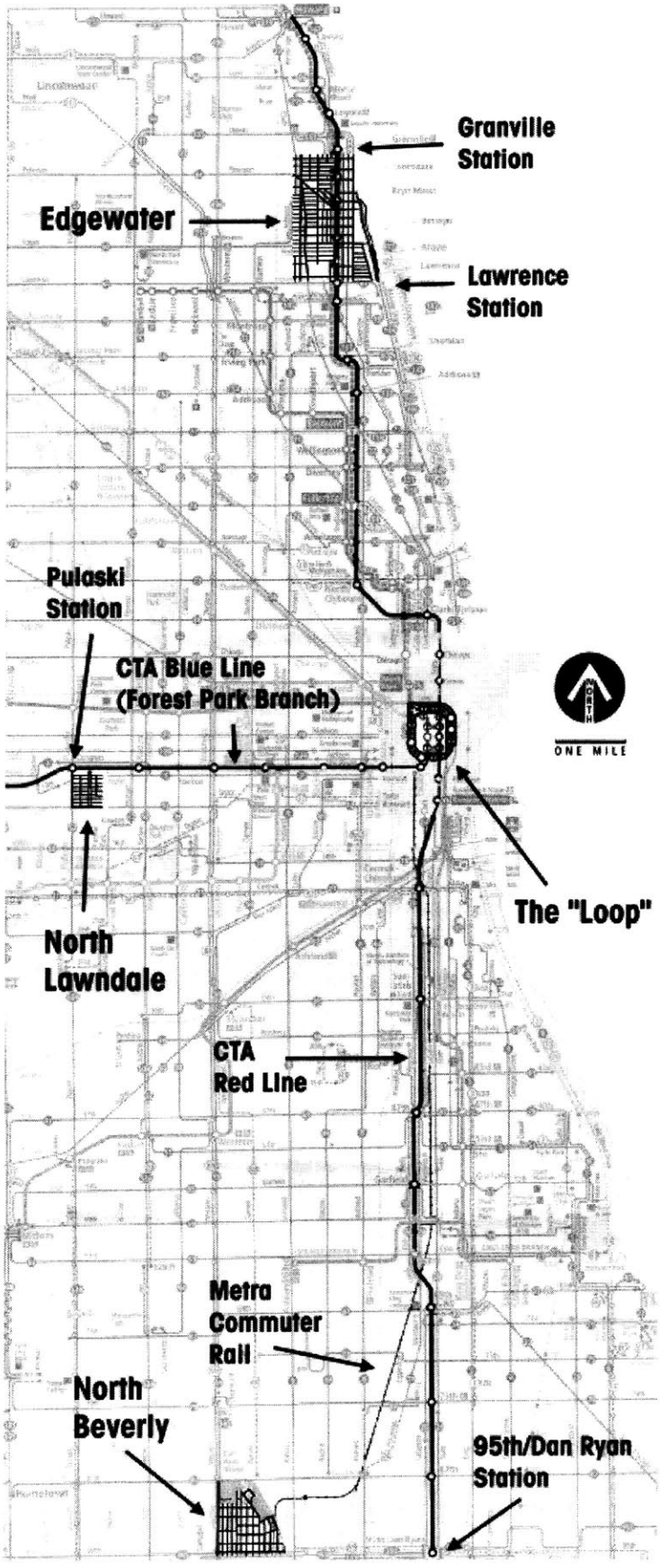


Fig 6.1. Location of the three neighborhoods examined.

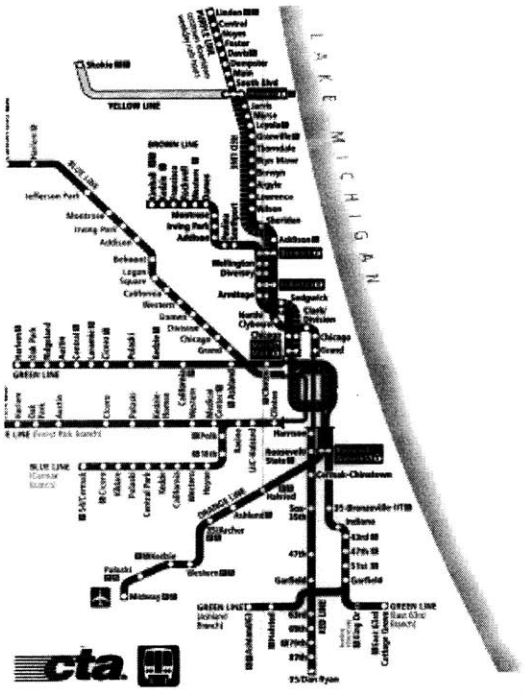


Fig 6.2. Map of Chicago Transit Authority (CTA) rail system.

6.4 North Beverly

Located on Chicago's Far South Side, North Beverly is a 1/3-square mile neighborhood roughly bounded by West 95th Street on the south (1600-2400 West), Western Avenue on the west (8900-9500 South), the Dan Ryan Forest Preserve on the north, and the Metra commuter rail tracks on the east. Composed primarily of stately single family homes, North Beverly is unmistakably an upper middle class neighborhood. (Fig 6.3) According to homebuyer surveys conducted the Beverly Area Planning Association (BAPA) in 2000, 42% of new residents have income over $100,000. Despite its economic affluence, North Beverly is fairly diverse racially. According to BAPA, the makeup of recent homebuyers in the Beverly/Morgan Park area is about 60% white, 30% African-American, and 10% other ethnicities.

The neighborhood is pretty clearly defined by its borders. Ninety-fifth Street possesses many characteristics of a traditional "Main Street" commercial strip, with sidewalk-oriented low-scale one to two story structures, though now it is a very busy arterial street with constant heavy auto traffic. (Fig 6.4) Western Avenue is almost expressway-like, as it is a divided road with fast traffic, and bordered by little activity – a country club on the west and several non-pedestrian oriented commercial establishments (such as auto dealerships) on the North Beverly side. Near the intersection of Western and 95th are multiple strip shopping centers and the large Evergreen Plaza enclosed shopping mall, which is surrounded by acres of surface parking. To the east, the neighborhood is blessed with convenient direct rail transit connections to downtown Chicago, with two Metra commuter rail stations, one at 91st and one at 95th. Additionally, bus connections along 95th provide a direct link to the end of the CTA Red Line rail transit, about one and a half miles to the east, which provides service through the Loop and onward to northern portions of Chicago.

Fig 6.3. Typical North Beverly streetscape

Fig 6.4. 95th Street, typical heavy traffic conditions.

While it otherwise has natural boundaries that would render it relatively isolated, North Beverly finds itself as a convenient cut-through to attractions on both its east and west sides – the train stations and the shopping center, both significant draws. Instead of using 95th Street, commuters would zip through the neighborhood en route to the train stations, either to be dropped off ("kiss-n-ride") or to park for the day. In the other direction, drivers would pass through the neighborhood to head toward the shopping center. North Beverly streets were both a shortcut to these destinations as well as a way to avoid heavy traffic on 95th. This through

traffic came to be perceived as a significant burden on the neighborhood and reducing its livability. The situation had gotten so bad that many residents, especially parents, feared for their families' safety. One woman who has lived in the neighborhood for 21 years recounted how her neighbor's daughter was hit and killed by a car in the neighborhood around 1991. She has five children herself, and said that "speeding traffic was so bad that [she] was petrified to let them out of the house; it was like the Indy 500." Some residents came to resent the attractions for the intrusion into their neighborhoods by their patrons. One resident proclaimed that "Other than lots of unsafe cut-through traffic, the Plaza never did anything for us." Others complained about the heavy truck traffic.

Along with this traffic came a perceptible rise in criminal activity, mostly property crimes and other crimes of opportunity, and residents consciously attributed this activity to through auto traffic. The traffic brought hit-and-runs, house break-ins/burglaries, and vandalism of cars and houses (Cyboran, Herrigan, and resident interviews; Ririe-Kurz 1995, Gordon 1998). Ironically, train commuters would park in the neighborhood rather than the designated city lots because the neighborhood was perceived to be safer. Some residents were concerned about violent crime as well, and when interviewed, one resident immediately referenced a murder that occurred at 87th and Evergreen when asked about the motivations for the street changes. Another resident stopped shopping at an adjacent grocery store in favor of one that was a couple miles away and "much less convenient" because a local police officer warned her that the local one was "dangerous."

Alderman Virginia Rugai's (who is North Beverly's Alderman) invitation to Oscar Newman came after a local murder and in response to rising joint concerns by residents of crime and traffic. The mayor was receptive to Newman's street closure concepts and funded the CSIP. The plan that was created for North Beverly, the result of a one-year community planning process, was the first complete neighborhood traffic calming plan in Chicago, as opposed to previous implementations had been isolated unrelated projects, haphazard, and incomprehensive in the way they considered the potential to affect and shape an *entire* neighborhood. While Newman's presentations emphasized the use of street gates, the community rejected that idea, though the only other traffic calming options presented to the neighborhood had been landscaped cul-de-sacs, internal diverters, and speed humps. In 1995 the street changes were implemented, which used cul-de-sacs to close nine out of twelve auto entrances around the perimeter of the neighborhood, plus three internal diverters that break up the internal continuity of the streets (for autos, Fig 6.5). According to Bob Cyboran, residents were looking for a way to maintain or reduce the incidence of crime and "force drivers back to the arterials," rather than using the neighborhood as a convenient cut-through.

North Beverly controversy

The closure plan sparked some controversy, reminiscent of other street closure controversies around the United States and Puerto Rico. The neighborhood directly to the east of North Beverly is of significantly lower income and is almost exclusively African-American; according to a local police officer, "Within a few blocks you have $500,000 houses and boarded up houses" (Interview with CPD Sgt. Loone, 2001). The plan's

critics, both from inside the neighborhood and from bordering neighborhoods claimed the project was racially motivated and unwarranted. People touted the correct data showing that North Beverly is one of the safest neighborhoods in the city – the 22nd Police district has one of the city's lowest crime rates and North Beverly has the lowest rate within the district. Alderman Rugai was criticized for using these measures in parts of her ward with the lowest crime rates and ignoring other areas. Because of the neighborhood's overall low crime rate, skeptics questioned the validity of her rationale: "Rugai's traffic figures seem to warrant a cul-de-sac plan, critics claim crime figures do not. But Rugai cited 'an increase in crime that hadn't been seen before,' adding that crimes of opportunity were committed by nonresidents passing through in cars" (Ririe-Kurz 1995a, 1995b). Defense against the charges of prejudicial motivation included acknowledgement that North Beverly "is a diverse community" (one resident interviewed noted that of the fourteen families on her block four are Hispanic and four are black) and that adjacent neighborhoods were also offered the same types of street changes but declined interest. CDOT's Tom Samuels' assessment of this uproar is that the racial tensions around traffic calming have been a lot of hype with little substance or even real tension underlying these charges.

Some residents have speculated that these charges were raised by people, both inside the neighborhood and in adjacent neighborhoods, who stood to have their normal driving routes altered by the plan or stood to gain a bit more traffic within the neighborhood due to re-routing. Cyboran recalled that opposition from within North Beverly tried to convince people that enduring constant neighborhood traffic is just "part of living in the city." That argument he said doesn't hold water, that everyone deserves a high quality of life, no neighborhood should be over-run by through traffic, and that the dominance of autos needs to be reduced in residential areas. Comments by Maurine Herrigan, North Beverly resident and Rugai's aide, mirrored this sentiment: "Just because we haven't reached the day where everyone bikes or takes the train, doesn't mean that until then we have to live with or tolerate cut-through traffic."

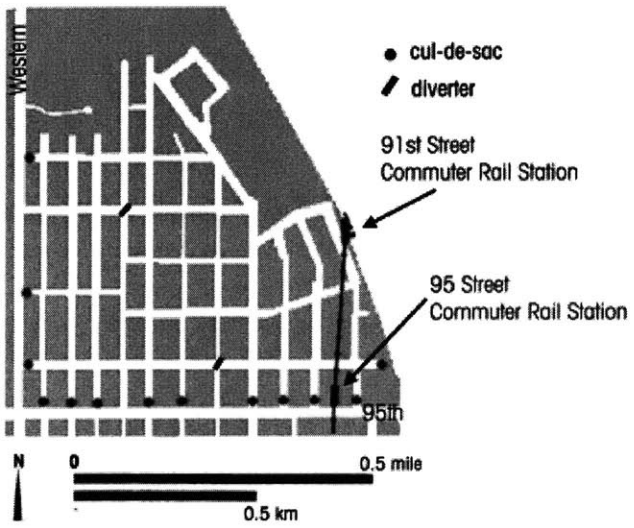


Fig 6.5. North Beverly street modification plan

The controversy flamed to such a degree that one Chicago Tribune reporter coined the term "cul-de-rage" and one North Beverly resident printed several issues of a newsletter – "Cul-de-News: all the news that's fit to be diverted" (Richards 1998). While a couple residents have said that the process has still left some persistent grudges among neighbors, most of the concerns and accusations faded away soon after implementation. (Herrigan interview)

Effects of street changes on traffic and crime

The traffic situation changed dramatically in North Beverly after the street modifications. Prior to the modifications, traffic counts showed North Beverly was generating 24,000 auto trips per day (trips breaching the arterial "boundaries" of the neighborhood), which was twice what a neighborhood of that size should have been generating, according to Cyboran. After the changes were made, there was close to a 100% reduction of through traffic (down to 12,000 trips per day). Train ridership at the adjacent rail stations remained the same after the changes, rising slightly very recently (likely the result of improved and more frequent service). Traffic on one of the neighborhood streets during the afternoon peak period reduced from 2,032 vehicles/hour to 915. In conjunction with these restrictions on volume, Alderman Rugai had CDOT lower the posted speed limit from 30 to 20 mph inside the neighborhood (Spielman 1996).

By all accounts, crime has gone down in North Beverly since the implementation, though whether it is the result of cul-de-sacs and diverters is unknown. One year after implementation, police and the Alderman reported to the *Chicago Tribune* that crime was down in the neighborhood by 10% (Kerrill 1996, Spielman 1996). However, crime dropped throughout the 22nd Police District from 1995-1997. Feedback from the police on the effectiveness of the street changes is a qualified "maybe." District Commander Claudell Ervin said in 1998 that though there was no data to substantiate it, he felt that cul-de-sacs have helped lower the crime rate. Said Sergeant Wayne Grobarcik, "It's partially the cul-de-sacs that may have helped, but we can't separate out their impact from that of better community policing" (Gordon 1998). Alderman Rugai has even reported to the media several botched auto theft attempts, whose lack of success she attributes to the street changes: "Cars aren't driving through at will, and the crime of opportunity is no longer there. They may know how to get in. They may not know how to get out" (Spielman 1996). Crime of opportunity may be down, but crime has certainly not been eliminated. In the summer of 2000 there was a rash of 46 burglaries in two months. The carefully orchestrated burglars broke into residents' garages (many accessed off alleyways) to steal such large items as snowblowers and lawnmowers. According to Seargent John Loone, the police have adapted their patrolling patterns satisfactorily to the neighborhood configuration, but for emergency response the police and fire department keep maps on hand to get around.

Resident perceptions of crime and traffic

According to a local police officer, residents of North Beverly are known for their sensitivity to crime, especially property crime: "People in North Beverly are very concerned about their property. Let's just say they get the most out of city services" (Officer Williams, 22nd District, interview 2001). However conversations with residents have also revealed concern (and vocal recollections) over the limited incidents of violent crimes in the area. Based on conversations with residents and local police, it appears these perceptions have been mitigated. Despite the fact that he wouldn't corroborate the actual effectiveness of the street modifications, Officer Williams said that "there is the perception among residents that the cul-de-sacs have been effective." One resident stated that crime has been reduced 30-40%. Given the *actual* magnitude of decrease in crime reported by the police, this exaggerated perception of reduced crime is initial evidence that perceptions of crime have been diminished far beyond actual effects. In other words, fear is down. Another resident said he believed property crimes were down significantly, and he attributed it to the cul-de-sacs, adding that this is the "safest neighborhood in the city." Concerns of crime among those who have recently moved in don't reflect the concerns that were prevalent pre-cul-de-sacs. One woman who moved in recently said that "crime isn't much of a concern. Only a few rare shoplifting or mugging." She participates in a neighborhood "courtwatch" which keeps track of local crimes, so she considers herself keen on current concerns.

Based on remarks by residents, there is a heightened awareness of their neighborhood environment and feelings of security that they attribute to the reduction in volume of auto traffic. One resident explained that before the street changes "traffic was so heavy that people were freaked out and distracted. You would just tune out the activity in the street. I didn't pay attention before, if I didn't recognize the car I just tuned out. Now I'm very aware. You notice it and look to see who it is." Another man added that "Now it's a "red flag if you see people drive in and turn around."

While residents say that crime was not so bad that it made them afraid to walk on the streets, traffic did create such an effect. But now residents report feeling comfortable and safe being active outside. A mother of five said that, "Now 95th Street is back to being busy and our neighborhood streets are more residential; I let my kids ride their bikes now. Also people feel safer now because you know that most of the drivers are neighbors." Alderman Rugai reported that more people are walking and riding their bikes outside than before. Not only are kids riding bicycles comfortably, but they are using streets for more active games, such as baseball. Street space is also used now for social events: block parties in the cul-de-sacs are now fairly common during warmer months, according to one resident. Adults are also using streets comfortably now for walking and bicycling. In my own tour of the neighborhood I observed many adults walking in the streets. While there was an inch of snow on the sidewalk (possibly discouraging sidewalk use), the people I observed walked slowly and casually, engaging in conversation and appearing comfortable and unafraid in their use of the quiet streets, snow or no snow. I also observed adult cyclists riding on the sidewalk along 95th Street (indicating inhospitability and fear of streets) who then switched to cycling in the streets once they turned into the neighborhood; bicycle route signs direct cyclists through the neighborhood, including through diverters and

cul-de-sacs. Residents of all ages were also observed walking to patronize local stores on 95th Street, including a group of young boys. Complaints about truck traffic have largely disappeared.

Street design character and the urban fabric

The cul-de-sacs and diverters take two primary forms, the "oblong" and the "dogbone" (Figs 6.6, 6.7). Both are detached from the curb ("floating") with two to four feet separating the device from curb, allowing for drainage and bicycle access. However, in some of these "gaps" have been placed large boulders, potentially to block cars from trying to hop the curb to get around the obstacle. The devices have been planted mostly with small trees, but the internal diverters tend to have smaller and sparser plantings (Fig 6.8). Visual continuity is maintained for pedestrians along sidewalks from either side of the devices, but the shrubbier evergreen trees planted on a couple of the cul-de-sacs acts as a visual screen for autos and creates more of sense of enclosure from within the neighborhood street. Residents have indicated that they feel the aesthetics of the devices are "just OK." All the initial plantings were done by the city. While one resident said it was never clear who would maintain the landscaping, some people have taken the initiative to plant annuals and even trees in

Fig 6.6. North Beverly cul-de-sac; "oblong" type; note person walking in the street.

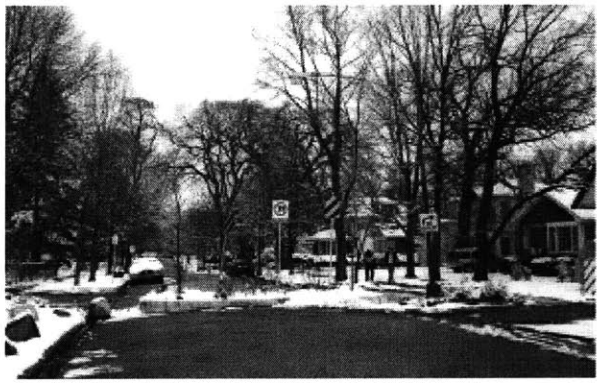


Fig 6.7. North Beverly cul-de-sac looking from 95th Street north into neighborhood; "dogbone type; note boulder in gap at left of device; also pedestrians walking toward stores on 95th (commercial alley access at right before cul-de-sac).

Fig 6.8. North Beverly internal diverter.

Fig 6.9. Continuous sidewalk cul-de-sac along 95th Street.

them. However, she adds, the city is slow to reimburse people for their efforts and this has been a discouragement to go undertake any ambitious gardening tasks. Regardless, this is evidence that many people have "taken ownership" of the devices and the neighborhood public space. There appears to be a tradition of people taking care of, even embellishing the fronts of their houses in the neighborhood, and many St. Patrick Day decorations were displayed when I toured the neighborhood, though whether this not was the case before the street changes is unknown.

A third cul-de-sac type has been implemented in the neighborhood at one juncture with 95th Street. Here the sidewalk was continued along 95th Street, creating a totally continuous surface for pedestrians, though landscaping and opportunities for embellishments or resident modifications is minimal. (Fig 6.9) While all of the other cul-de-sacs are set several yards back from 95th Street, placing them more in the "domain" of the residences, this one is set up in the sphere of the commercial area and has been left unadorned and stark.

While traffic volume has certainly been curtailed and the life on street ends has changed substantially, the quality of the street environment and observed behavior of drivers within the neighborhood on many streets seems to still pose some concern. Despite the clear directive to drivers to slow down through the neighborhood (as on 94th Street with the posted 20mph sign and indication of children playing in the area, Fig 6.10), the actual character of the streets has been left unchanged, remaining as fairly wide straightaways (with very few on-street parked cars). I observed significant speeding on certain stretches, no doubt well above the posted 20mph speed limit. Whether these drivers were residents or visitors is unknown.

Fig 6.10. Speed limit and cautionary sign indicating children playing in the area. Note that the street is still a wide, unobstructed straightaway.

North Beverly makes evident one of the prime dangers of employing cul-de-sacs for traffic control – the slippery slope it creates, morphologicaly, for future development patterns. If not carefully controlled, development which takes the wrong cues from this change in the street pattern could lead toward eliminating many of the benefits of maintaining a continuous, connective urban fabric and pedestrian friendliness that the modification was initially intended to support and augment, moving the neighborhood toward the type of land use and pedestrian fragmentation currently problematic in San Juan. Evidenced in two locations in North Beverly, the presence of street stubs created by cul-de-sacs can engender the attitude that the continuity of the street, visual or functional, is no longer important, such that subsequent development does not need to respect these critical pedestrian, bicycle, visual, and metaphysical links between adjacent neighbor-

hood areas. Using the cul-de-sac as an excuse and precedent for erasing of the street and establishment of less fine-grained and contextually appropriate patterns is unfortunate. The first location of such a development is the new Borders bookstore and café on 95th and Bell Street. Where a landscaped cul-de-sac previously was built in the street on Bell, the new development on 95th vacated the street stub along 95th and incorporated it as part of the development's parking lot. Borders then put up a wooden fence at the back of the parking lot, now blocking all visual connection from the neighborhood to 95th treet (Fig 6.11). The sidewalk from the neighborhood on the west side of the street was then totally discontinued at the fence. Borders gave a barely visible functional nod to the continuity of pedestrian access with a small opening in the fence from the east sidewalk, but indeed pedestrian access has been all but eliminated, if not fully relegated to low-class status. Whereas before someone walking from her house could continue on the sidewalk directly to 95th Street, now once through the fence, the pedestrian ends up in the middle of a large surface parking lot (Fig 6.12). Bicycle access has been totally severed. This development erased the memory of street as well, setting the stage for a development pattern of further coarse grained development, lack of pedestrian-orientation, and separation of uses. The same phenomenon has occurred on the east edge of North Beverly, where a large supermarket has built its parking lot over a former through-street which was cul-de-sac'ed (Fig 6.13).

Fig 6.11. Looking south along Bell Street toward 95th from within the neighborhood; note wooden fence severs the visual corridor and sense of connection to 95th Street commercial area. Also note the almost invisible pedestrian opening in the fence at left, leading into the Borders Books parking lot, where the sidewalk used to continue to 95th.

Fig 6.12. View from 95th Street north along the former corridor of Bell Street, now just part of Borders Books parking lot. No apparent connection to the neighborhood, single small pedestrian opening to the neighborhood hidden behind parked cars at rear of parking lot.

Fig 6.13. Former street connection annexed by supermarket parking lot on the eastern border of North Beverly.

Perceptions of the neighborhood

The street modifications have been a boon for North Beverly and in fact have been a strong lure to potential residents. Local realtors pitch North Beverly as a "traffic calmed community" and hype the modifications as enhancing the tranquility and quality of life for residents, but with the convenience of transit and local shopping. One prospective area resident told how "He believes he'll be safer from crime, as well as from speeding cars and unnecessary traffic when he Rollerblades in the street" (Ririe-Kurz 1995). Maurine Herrigan has observed that young families are again moving into the blocks bordering the commercial strip of 95th Street, which they had avoided before.

Community

There is a very active and organized neighborhood group in the area, the Beverly Area Planning Association (BAPA), which serves as a local chamber of commerce as well as social organization. Other than BAPA, which covers a large area, no residents mentioned the existence of more localized block clubs. Multiple residents expressed that they have always felt that in general there has been a "strong community" in North Beverly. Though several people qualified their answer with the explanation that families with children are most engaged in neighborhood activities, because of school and play-related activity, and that these families get to know each other better than most. The benefits of the street modifications seem to benefit families with children most in terms of creating safer, more traffic-free residential areas to play and providing more mobility for children to explore their neighborhood, including the bordering commercial area. However given the fact that more families are moving into the neighborhood, possibly in strong part because of the improved neighborhood and child-friendly street environment, and that they are more likely to get to know other residents, the street changes might actually have the effect of fostering a more cohesive and "neighborly" environment. However, this speaks nothing to the "neighborliness" among existing non-children households.

Conversely, participation in BAPA is skewed away from these groups which seem to be most "neighborly." One resident active in BAPA said that people without kids don't get involved as much and neither do the non-white families. One long-time resident summed up the state of "neighborliness" in North Beverly: "People are very friendly. But times have changed since the '80s. There is more racial mixture, people are more mobile, they don't stick around here as long, people have long commutes and on the weekends they do errands."

6.5 North Lawndale

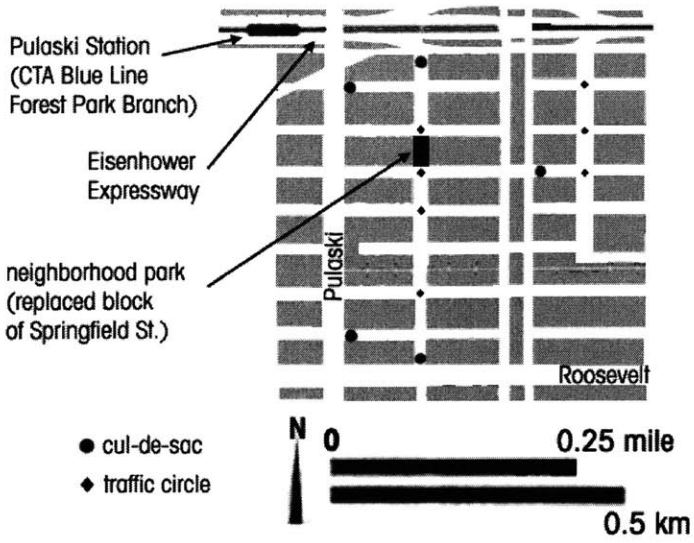
North Lawndale is located on the West Side of Chicago, just south of the Eisenhower Expressway, along whose median runs the Forest Park branch of the CTA Blue Line rail transit. The Pulaski Station sits at the northwest corner of the neighborhood, which covers between 1200 and 600 South and 3600 to 4000 West. According to 1990 Census figures 96% of the resident population is African-American and the median income is $12,570. The unemployment rate is very high, at over 27%. (In addition, fully half of residents over 16 years old are categorized as "out of the work force.")

A large number of lots sit vacant, and many buildings are in poor condition, with boarded-up windows a common sight. The area was near the epicenter of riots in the 1960s, and still bears strong visible signs of disinvestment. Limited commercial activity exists along Pulaski Street to the west, and along Roosevelt to the south, though a fairly large supermarket sits just on the north side of the Expressway on Pulaski.

North Lawndale had a huge narcotics problem through the mid-1990s. Its adjacency to the Eisenhower Expressway provided easy in-out access for drug buyers, drug sellers, and rival gangs fighting over this fertile turf. Because of the accessibility, gangs would "claim" important corners; the "value" of these corners was created by proximity to the expressway and auto access. The Police Department conducted a sting narcotics operation and found out that the majority of drug clients were suburban, using the Expressway for easy in-and-out auto access. (This is a very similar situation to Five Oaks.) "People just shot down Springfield, bought drugs, and kept going" (Alderman Michael Chandler, interview March 2001). Residents expressed concerns in terms of cars carrying criminals (even worse that they were not residents: "people were coming from outside our community") which were also creating dangerous traffic conditions. North Lawndale residents felt that auto traffic chaos created the feeling that "anybody could come in here" and act with no regard for the community. They also expressed concerns not only over drive-by shootings but of the reckless disregard for the safety and quality of life of residents: "People wouldn't even stop at stop signs." Speeding was an even greater concern because of constant presence of children and schools. Things were so bad that parents wouldn't let their kids out of the house and would not let them walk to school or to the park.

Looking for neighborhoods to try out the street modification concept in Chicago, Mayor Daley approached Alderman Michael Chandler (24th ward) in 1995 to see if the Alderman had any neighborhoods where he thought such an application might be warranted and appreciated. The Alderman took the concept to the North Lawndale community, conducting at least three community meetings, explaining the pros and cons of cul-de-sacs and traffic circles to gauge interest. Residents had final say over the designs. (Friar Tom Walsh, interview, April 2001) There was some arguing among residents over the use of cul-de-sacs, but the majority of the neighborhood agreed and approved their use. In 1996 six cul-de-sacs were installed around a perimeter defined on the north and south by Harrision and Roosevelt, and on the east and west by Independence and Pulaski. Additionally, seven traffic circles were constructed at intersections "inside" the neighborhood, plus one set of street-narrowing chokers was installed. Shortly thereafter, a one block stretch of Springfield Street

Fig 6.14. North Lawndale street modification plan.



was vacated and replaced by a park, linking recreational facilities on either side, which served to re-route auto traffic as well.

Effects of street changes on traffic and crime

According to CDOT, overall crime was reduced 30% over the two years after implementation and drug arrests went down 14% for that same period. According to Alderman Chandler, feedback from the Commander of the local Police District (11th District) indicated that the street modifications "slowed, but didn't stop" the sale of drugs and that "crime went down statistically." While not citing any statistics, a 1998 press release by the Chicago Police Department featuring the headline "Traffic Calming Curbs Crime, Disorder," touts the benefits of this program in North Lawndale to solve such crime problems. CDOT's Bob Cyboran says that there has been more "calmness" in the neighborhood since implementation.

Resident perceptions of crime and traffic

The general perception among residents is that the street modifications substantially slowed, but did not stop drug activity. However, much of the violent activity and chaos associated with the drug trade has disappeared. One young man noted that "there used to be lots of shootings, but not much since then." There is a recognition that these physical changes aren't the silver bullet to cure the problem, but are an effective part of the solution: "It hasn't eliminated, but cut down on traffic, drugs, and gangs... It's greatly reduced the problem... It's stopped a percentage of the drug traffic."

Along with the benefits of less dangerous criminal activity residents tout the ability to enjoy safer, more tranquil streets, altering traffic both related to and independent of criminal activity. "Police used to chase drug dealers flying down the streets, traffic is much less now." Above all else, residents look after the area's

children and the improved opportunities (and space) for children to play in safety is the plan's greatest benefit. One resident explained that the plan "took traffic away from blocks with kids – they can play outside now." Another resident noted that there are certainly more kids playing in the streets, especially during summertime. In the course of my visit I observed several kids riding bicycles in the street, as well as young adults hanging out and dribbling basketballs down the street. When asked about whether he's gotten any feedback from residents, Alderman Chandler responded that when he walks up and down the blocks talking to residents, they say, "Don't take that cul-de-sac out of here. It's great, there's not much traffic." Overall, residents perceive that the street changes have "created an all-around safer community," However, some have noted that while the traffic circles keep people from "blowing through intersections and stop signs, they do little to control traffic" mid-block. A couple block clubs have posted their own speed limits (15, 20 mph) among their list of "rules" for their blocks (Figs 6.21, 6.22). However these postings are relatively small and invisible to all but pedestrians. Thus the circles and cul-de-sac have not been able to totally shape the behavior of drivers and visitors or create the desired safe and pleasant environment.

There are several block clubs, led mostly by older women, in the neighborhood which are very active in watching over the activity in the neighborhood. The traffic calming elements have provided the block clubs with a new, visible way to express ownership over the street and engage them in taking care of the public realm. The decrease in traffic has enhanced the natural tendencies and social controls of the residents to be outside, watching over activity in the street. On resident described how she sits out on her porch watching over the kids, "keeping an eye over what's going on in the neighborhood." Many of the residents report to CAPS (the Police community policing program) any activity that arouses their suspicions. Another active resident emphasized the importance of people being out and about, going in and out of houses in order to maintain a presence in the public realm, a pattern that has been enhanced by the street changes.

Character of street modifications and community amenities

The primary form of cul-de-sac used in North Lawndale is the " detached dog-bone," similar to the North Beverly installments except that a portion of the grassy sidewalk buffer has been scooped out to created a bulb-shaped turn-around area for cars (Fig 6.15). This creates the feeling of a large expanse of empty asphalt that makes the landscaped elements seem much more insignificant., especially those that are not as heavily planted with larger shrubs or trees. Most of the turnarounds are ringed by squat concrete bollards to prohibit cars from bypassing the cul-de-sac, and many of these unsightly objects have been uprooted, some even lying about in the middle of the road (Fig 6.16). The cul-de-sacs and circles sport some trees and bushes, but city signage warning drivers of the obstacles is the dominant aesthetic of many of the elements (Fig 6.18).

Friar Tom Walsh of the Presentation Church (3900 block of West Lexington) has said that CDOT "gave the [traffic calming elements] to the community," and that the community was intended to "take ownership" of them. He said that though some individuals have taken the initiative of taking care of the circles and cul-de-

Fig 6.15. North Lawndale cul-de-sac on Flourny, looking west toward store along Pulaski.

Fig 6.16. North Lawndale cul-de-sac looking north along Springfield toward Harrison and the Eisenhower Expressway. Note the concrete bollards in place and lying in the street.

sacs, primarily only a few block clubs garden and plant them. One local resident was quoted in the CPD press release saying, "It is a block club circle, so I knock on doors if I see some flowers I like, and say, 'Will you give us a couple of these plants for the block circle?'" One active block club member says her club plants their traffic circle with evergreens and perennials given to them by the city and non-profit organizations. In the words of Friar Walsh, "the circles and cul-de-sacs have become projects for block clubs to take ownership of." Block clubs have extended their domain to include the traffic calming elements and the elements have provided a venue for these expressions and a way to engage residents in active use of public space in their neighborhoods. On some blocks, there are no active block clubs and no one has shown interest in maintaining them. It is important to point out that not every block has a block club, and some are more active than others. Not all circles and cul-de-sacs are looked after by residents, and one woman who recently moved into the neighborhood remarked that "some look OK, but some of them aren't really looked after by anyone." Another recent homebuyer lamented the uneven maintenance: "If the circles are planted they look nice, like a little park. Though some circles aren't taken care of. If you just put them there, it's just another hole in the street."

While the park which replaced a stretch of Springfield does not conventionally fit into the genre of "traffic calming," it serves much the same functional purpose of the cul-de-sacs and has created pedestrian neighborhood space free of danger from traffic. The park has created space previously non-existent for neighborhood programming and recreational activities, as there are no other neighborhood parks in the vicinity. (Fig 6.18) This action of transforming a busy street into a park was very symbolic for residents. Friar Walsh put it this way: "It went from a traffic problem to something that people could utilize, an amenity." There are other recently-created such amenities in the neighborhood that residents can engage in and take ownership of, notably a couple community gardens (Fig 6.21). Built in 1997 by GreenCorps and the Open Lands Conservancy, the community garden on the 3800 block of Flourny has become a source of pride and activity for residents. One resident, Doritha, says she spends quite a bit of time in the garden. The neighborhood also has a tradition of block parties in streets, especially during the summer. The reduction in traffic has been a benefit to such events, mostly organized by the block clubs, which also organize neighborhood clean-ups and other activities.

Fig 6.17. North Lawndale cul-de-sac.

Fig 6.18. North Lawndale landscaped traffic circle.

Perception of the Neighborhood

The changes brought about by the street modifications – the joint decline in traffic volume, dangerous traffic, and crime, – have been followed by a subtle but noticeable change in neighborhood image, both by residents and by non-residents. Residents have observed new confidence in the neighborhood's stability and resident and property owner inspiration to improve the neighborhood. One noted that "the neighborhood looks better now. The changes inspired people to do more with their own property. A lot of improvements have been made." Vera, who I interviewed while she was painting the front steps of the house she just bought on the 3800 block of Arthington, said that there is "not much concern about crime here now, the neighborhood is on the upswing." She bought the house not to live in, but as an investment, noting that she had always wanted to own a building in this neighborhood. Another resident remarked that "white people are moving in, black people are moving back, and people are looking for property to buy." In fact, Vera figured, before I approached her, that I was walking around the neighborhood because I was looking for property to purchase. In sum, Doritha concluded that the "cul-de-sacs just made the neighborhood nicer."

Fig 6.19. Neighborhood park created in vacated block of Springfield.

Fig 6.20. Signage notifying drivers of dead-end ahead.

Fig 6.21. Community garden and 3800 Flourny block club signage listing block "rules;" note 15mph "speed limit" established by block club.

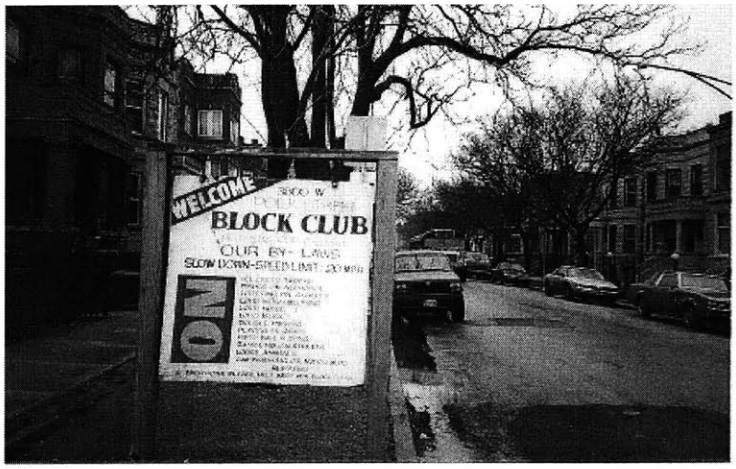


Fig 6.22. 3800 Arthington block club sign with rules; note 20mph speed limit on sign.

6.6 Edgewater

Located several miles to the north of the Loop, Edgewater was a rail suburb of Chicago at the turn of the 20th century. Now it is the densest ward in the city and very diverse racially and economically. According to the 1990 Census, the 1990 population was 51% white, 20% black, 17% Hispanic, and 12% Asian, with a median income of $31,000. Built with a diversity of housing types, from townhouses to single family homes to high-rise towers, Edgewater is a very walkable area and fully 40% of households do not own autos, according to Ernie Constantino, aide to Alderman Mary-Anne Smith (48th Ward). Edgewater is highly dependent on the CTA Red line which run north-south through the area with several stations in convenient walking distance to thousands of residents and local main street shopping districts. If ever there was a manifestation of most of the transit village ideals, Edgewater would be it.

Edgewater is also a significant crossroads at the convergence of major regional roadways, funneling large amounts of traffic through the area. According to Constantino, traffic studies have shown that over 100,000 daily commuters drive through the ward. Given this situation, cut-through traffic became a significant problem, creating unsafe conditions and making neighborhoods less pleasant and livable. While crime has declined as a concern in the area in recent years, people began to focus their attention specifically on pedestrian safety and the intrusions that cut-through traffic was having into the sanctity of their neighborhoods. Residents put emphasis on desires to drastically reduce average speeds and create safer road crossings, with declining volume a secondary desire. Alderman Smith brought in Tom Samuels, who was a renowned traffic calming planner in Toronto at the time, to look at the area and give recommendations. Soon thereafter, Samuels was brought on full time in Chicago as the chief traffic calming planner.

Samuels brought a richer variety of traffic calming tools to Chicago and found an eager audience and partner in Alderman Smith and Edgewater residents. Smith has become known for pushing the boundaries of traffic calming and other urban environmental issues in Chicago, with CDOT following her lead. Residents repeatedly said they opposed cul-de-sacs and wanted to stay away from total access denial as a means of shaping their neighborhoods; they did not want to appear exclusionary, especially given the dust-ups in North Beverly. Since 1995, Edgewater has installed numerous traffic circles, speed humps, and curb bump-outs, one chicane, textured/colored pavement, and one cul-de-sac. The traffic circles and speed humps are spread widely throughout Edgewater, with more comprehensive and aggressive chicane and pavement/bump-out designs concentrated on two streets, Elmdale (Figs 6.23, 6.24) and Marine Drive (Fig 6.25).


Fig 6.23, 6.24. Elmdale chicane.

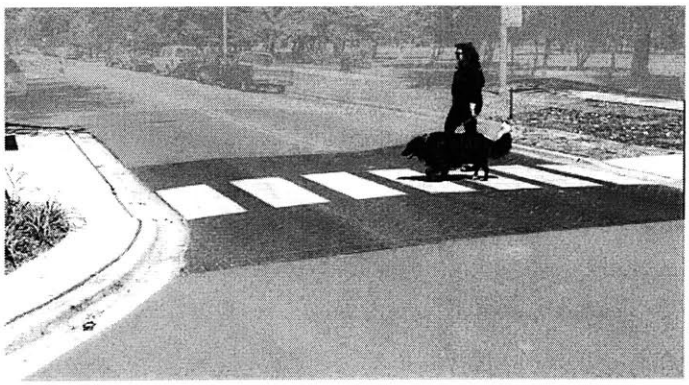


Fig 6.25. Landscaped curb bulb-outs with imprinted and colored pavement on Marine Drive.

Fig 6.26. Edgewater traffic circle; note dominating presence of signage.

Fig 6.27. Only Edgewater cul-de-sac; non-dettached and fully integrated into sidewalk paths with mini-park.

Effects of street changes on traffic and resident perceptions

One year after many of the changes were implemented, the pattern of heavy commuter traffic from Lake Shore Drive feeding into the neighborhood was noticeably diminished. Tractor-trailers were no longer travelling residential streets. After the implementation of the Elmdale chicane, traffic counts showed that speed was reduced but volume maintained fairly steady, aside from declines in truck traffic. According to Constantino there is widespread satisfaction with these efforts in terms of slowing cars and improving the neighborhood. Initially, there were many incidents of motorists crashing into traffic circles or bump-outs, but as one resident said, "these same people would be having accidents with cars or children. Instead, they're hitting traffic circles. Not that they should, but it's better than the alternative. And it shows they were driving dangerously to begin with through our neighborhood." While according to Constantino, the traffic situation never got so unpleasant that people stopped walking – "they kept walking, but they just felt unsafe. Now people feel much more peaceful and comfortable when walking; it's more pleasant." It is certainly plausible that if conditions kept deteriorating that people would curtail their walking and street activities, potentially even moving out of the neighborhood.

While many residents note an improvement in traffic conditions and safety, the greatest benefits perceived are aesthetic and environmental, that is, improvement of the neighborhood ambiance. Said one resident, "It's improved the quality of life on my little corner of the city." One elderly woman who has lived on Elmdale for 40 years (where the chicane was constructed) said she doesn't think that traffic has improved all that much, but the biggest benefit is street beautification and she's very happy with the installations, specifically the landscaped chicane bulb-outs. She even cleans them once in a while, picking up litter from the planted beds. I interviewed another local resident who lives on a parallel road that has not had any traffic calming installed yet. He walks his young children over to the playground on Elmdale, and said that the chicane is certainly a welcome addition, especially given the presence of many children playing in the area unsupervised, though he said he hasn't been able to judge their effectiveness yet given the recentness of the installation. Like the first woman, his highest praises came for their beautification aspects. Occasionally a group from an adjacent church plants the landscaped portions of the chicane, however this interviewee explained how he wished the bulb-outs were built up higher and designed to be used more as a community garden that people could actively use, whereas now he feels the design lends them more to disrespect and treatment as "ashtrays." This type of engagement in and ownership of the traffic calming elements has been common throughout Edgewater, according to Constantino. In fact, Alderman Smith usually requires a letter from local block clubs promising to maintain the new streetscape elements after the city performs the initial plantings. He says residents generally do a good, consistent job at maintaining them, though occasionally some blocks must be reminded to do so. As incentive and encouragement to engage in shaping the public realm in this way, the Alderman's office tries to acquire and distribute mulch, flower bulbs, and other gardening supplies for block clubs or individual residents to use. Some residents need no encouragement to use the new streetscape elements as venues for expression, embellishment, and beautification. A couple traffic circles are routinely decorated, and one local resident regularly plants and decorates her traffic circle with seasonal and holiday

ornaments. For instance, on Halloween she places pumpkins and a full size scarecrow on the circle (Fig 6.29), and during Christmastime she adds decorative flourishes such as colorful ribbons. One security expert told the *Chicago Reporter* in 1998 in an article about CSIP that "sometimes what you need is a scarecrow, not a full fence" (Gordon 1998). It seems Edgewater has taken this advice literally.

Community involvement

The Edgewater neighborhood is known around Chicago for its high levels of resident involvement and neighborhood organizing. Every single block in the ward is covered in one of 20 block clubs, which are generally defined by natural boundaries (such as major roads or rail lines), or similar groupings of housing types. The Alderman has engaged the clubs integrally in defining and designing the traffic calming plans for the neighborhood, and in fact "empowers" them by deferring major decisions about zoning and planning issues to committees formed by block club representatives.

Fig 6.28. Edgewater traffic circle decorated for Halloween, "scaring away" fast and cut-through auto traffic.

6.7 Evolution of the Chicago traffic calming approaches and lessons: Creating amenities for neighborhood engagement

CDOT used the CSIP experience and its perceived success to build a full traffic calming program for Chicago, as planners soon realized that these urban design elements address not just concerns of crime, but serve legitimate needs of mitigating cut-through traffic and improving neighborhood quality of life. The program has been very popular and Mayor Daley has continued to emphasize devoting resources toward traffic calming efforts as part of his focus on improving the livability of urban neighborhoods. Every Alderman in the city is now allocated $1 million per year for neighborhood infrastructure, including street work such as traffic calming.

The sophistication of CDOT's street design toolbox continues to expand, though certain applications have had their waves of popularity, the latest being speed humps. As of February 2001, total implementation citywide has included 212 cul-de-sacs and diverters, 180 traffic circles, 19 curb bump-outs, and 101 speed humps (covering 66 blocks). CDOT still prefers to use soft approaches (such as turn restrictions or street direction changes) first when addressing traffic issues, and moving on to the "hard" design approaches when soft efforts fail. However, soft approaches rarely seem to achieve the qualitative benefits that more physical interventions seem to be able to achieve. Soft approaches tend not to dramatically change the ambience and street environment or offer the ability to beautify or provide amenities to the neighborhood. In fact, soft approaches (such as signage) which instruct drivers to act in certain ways rarely achieve even those intended behaviors, much less transform the perception of residential public space. Chicago Deputy Transportation Commissioner Carl Byrd concluded in 1999 that physical traffic calming is much more effective for controlling speeding than is lowering speed limits. (Spielman 1999) Additionally, traffic enforcement is generally difficult or nearly impractical in Chicago as police must track someone for two full blocks in order to document their traffic violations in order to issue tickets; hence traffic enforcement is nearly nonexistent. Physical traffic calming is the only trusted and sure way to influence or regulate driver behavior without having to rely on consistent education, enforcement, and effort.

According to Tom Samuels, what residents are concerned with is not necessarily technical "speeding" per se, but absolute speed. That is, people are realizing that 30 mph, sometimes even 25 or 20 mph, regardless of its legality, is just too fast for cars to travel on residential streets. *Speed is what makes traffic most intrusive and threatening in neighborhoods.* But soft approaches, and even many approaches that fall under the rubric of traffic calming, such as cul-de-sacs or traffic circles, continue to largely perpetuate an overall street and neighborhood design that facilitates faster, less-residential-appropriate driving behavior without changing the nature of the streets themselves. Unless drivers are possessed with an altruistism or sensitivity toward neighborhood life and the pace of activity desired by residents, physical cues that encourage, even require, more contextually appropriate speeds are necessary. Additionally, according to Cyboran, CDOT has found that given reasonable traffic speeds, residents will tolerate a traffic volume up to the threshold of about 1,500 vehicles per day,

above which people cannot comfortably talk across a street and neighborhood life "begins to deteriorate. Volumes above 1,500 vehicles per day become a burden to the community."

Further, creating a street environment that encourages neighborhood engagement, fosters feelings of comfort and identification, and demonstrates to non-residents that this space is, above all else, neighborhood space, is dependent on using design elements that serve as *amenities*, rather than just functional objects. The ability of traffic calming to create a sense of place and deal with other issues, such as concern about crime, fails when the modifications and mentality behind the modifications are engineering-driven and focussed. Samuels emphasizes that unfortunately, the predominant mind-set in Chicago when designing cul-de-sacs and other devices is not one of "creating amenities." As a result, many of these devices end up "pretty ugly and filled up with signage." Of course Samuels, being the city's main traffic calming designer, is more sensitive to this issue than the average resident. While the evidence does show that residents have adopted many of these elements and tried to transform them into neighborhood amenities, the effort seems to produce inconsistent results and fall short – making the best of a "structurally ugly" situation. That is, the elements themselves don't necessarily inspire among residents a vision of amenities for their use and enjoyment, and only through the enterprising and determined insight of a few residents have they been able to capture these elements into the neighborhood domain. Fundamentally, the cul-de-sac, traffic circle, and even chicane elements in Chicago are functional (engineering-wise) first, and the amentiy potential greatly subjugated..

Another lesson learned from the CSIP and other CDOT experiences was that haphazard distribution and isolated applications of traffic calming fail to realistically address fundamental neighborhood concerns, traffic or otherwise. Single street applications were causing internal redistribution of traffic in neighborhoods and didn't serve to draw together a neighborhood into a common realm. Ironically, the street closure-oriented programs have focussed much more on the neighborhood level comprehensively, possibly because of the certainty and intensity of the intervention of redirecting entire flows of traffic around a whole neighborhood. CDOT has since begun to address street and traffic issues more on the neighborhood level. Rather than just looking at the isolated problem on a block and applying a "fix," CDOT is trying to use a more "systems" approach which looks at a neighborhood more holistically. Projects additionally now include lighting, street trees, and other streetscape elements not directly tied to slowing traffic per se, but which help create a certain neighborhood milieu and also address concerns of safety and security. Despite attempts to encourage a more "systems"-level scope, Samuels says there is still often not much logic to the projects undertaken other than the politics of responding to Alderman and resident whims. Only recently has CDOT begun to take pre-installation traffic counts, and little or no follow-up data is gathered, including resident perception or satisfaction surveys.

Chapter 7

Towards A Vision of Secure and Livable Pedestrian-Oriented Transit Villages in San Juan

As San Juan planning officials work with developers to draw up plans for new development around Tren Urbano stations, they do so at their own peril if the conception of that development fails to seriously address the underlying alure of gated communities. This thesis has explored ways in which gated communities promise a refuge from the auto, whose omnipresence evokes insecure feelings of lack of control and unpredictable intrusion, while simultaneously shattering the peace and pleasantness of neighborhood life, and symbolizing the disintegration of comfortable and identifiable neighborhood structure. The attractiveness and lure of gated communities is not one-dimensional, and the solutions cannot be expressed with a succinct and simple one-line explanation or a solitary diagram. The preceding analysis of the underlying roots of fear of crime and the related physical and sociological neighborhood impacts created by auto traffic informs and enables a consideration of alternative models of neighborhood development that achieve the sought-after benefits of gated developments while facilitating more connective pedestrian-oriented and transit-supportive settlement patterns.

While some have criticized street modification efforts like those in Chicago as attempts to make central urban neighborhoods operate like suburbs, this criticism is misguided. One of the critical city planning and architectural challenges of our age is the creation of environmentally sustainable metropolises that are organized around public transportation. But the only way this will be successful is through the coordinated provision of attractive and "livable" compact residential communities. For people to be willing to shed themselves of the late-20th century dream of suburban-style living, they must perceive that the alternative offers the same or higher qualities of life. Sanjuaneros are not averse to urban living or higher residential densities per se, in fact their new residential patterns are generally much denser than mainland U.S. suburban housing. They are, however, averse to many of the drawbacks that are commonly perceived to come with busy urban areas: traffic, noise, dangerous and unpleasant streets and public space, lack of amenities, crime, confusion, anonymity, and conflict over scarce space and resources.

7.1 Design principles and recommendations

From the experiences of the traffic calming program in Chicago, both the CSIP and non-CSIP neighborhoods, and observations of current development trends in San Juan, a set of street and neighborhood design principles emerges. In sum **these principles form an approach to the creation of transit-accessible neighborhoods that feel both "secure" and comfortable for residents, while remaining externally connected and integrated into a more holistic form of the city. The objective is clear: to create**

highly-connective and rich pedestrian networks within a fabric that maintains the integrity of mixed-uses oriented around transit. We know now as a result of this research that while this fabric needs to bring people together and maintain a high level of connectivity, neighborhoods must have an identifiable structure and sense of boundaries within which the flow of movement and tone of activity is community-defined and set within the comfort zone of the residents.

The following urban design principles address the *space* of streets and the *structure* of movement networks in considering how the form and function of neighborhood design can shape perceptions of neighborhood security and livabilty sought by residents of gated developments. The five principles that facilitate these goals are:
(1) Use street space to articulate a constructive and positive vision of neighborhood activity by physically expanding the pedestrian domain to encompass the street holistically;
(2) Stress elements in the street realm that act as neighborhood amenities;
(3) Use street elements that exude the symbolism of invitation and accommodation by serving the dual functions of traffic control and inter-neighborhood zones of exchange;
(4) Optimize the pedestrian network and constrain the auto network with street design elments that recognize and take advantage of the potential overlapping duality of these networks and their respective relationships to the same built fabric; and
(5) Extend the comfort and identification zone of "home" and "neighborhood" via permeation of integrated street design and careful articulation of boundaries, potentially encompassing the transit station.

From the detailed articulation of these universal principles will follow a discussion of contextual implementation concerns for San Juan.

(1) Use street space (elements, arrangements, and programming) to actively articulate a constructive and positive vision of neighborhood activity by physically expanding the pedestrian domain to encompass the street holistically.

(space)

Exclusionary development comes out of fear and insecurity of not feeling able to ensure that visitors will share the community's expectations about respect and engagement. It is my proposition that what creates comfort and feeling of security is not an absolute reduction in the number of people who use or have access to community space, but is the assurance that the way in which the space is used is neighborhood-friendly – i.e. not by threatening and intrusive traffic. When Junta planner Edgar Silva says that exclusion of access is the only possibility because "if you allow these streets to be open, cars will fill up and dominate the space," it is clear that Sanjuaneros are thinking only in terms of stopping negative behaviors and unpleasant environments rather than shaping better ones that are self-instructing. Silva is then right to be apprehensive about re-opening these roads, as people will use every inch of the space for what it was designed for – auto movement.

The preceding research suggests that residents will anticipate and experience reduced fear, increased comfort, and reassurance of high quality of life if there is increased clarity of neighborhood behavioral guidelines. This must be done through comprehensive design of street space that not just indicates such intentions at *points* (e.g. as a portal or a sign might), but actually creates the environment where different behaviors are *required* for movement. The sense of community, responsibility, and *realization* of a pleasant neighborhood must be *manifested in forms and physical relationships that engage space users in a dialogue that embodies these relationships.* This means not leaving the street as currently constructed. The street must be transformed into a thoroughly pedestrian space of undulating rhythms, nooks and bays of activity, and criss-crossing directional flows, such that movement and activities of a local scale will be favored over through or regional movement (Figs 7.1, 7.2). This will not only *not* facilitate fast driving or convenient through traffic, but will boldly *create* an environment of a neighborhood scale and pace.

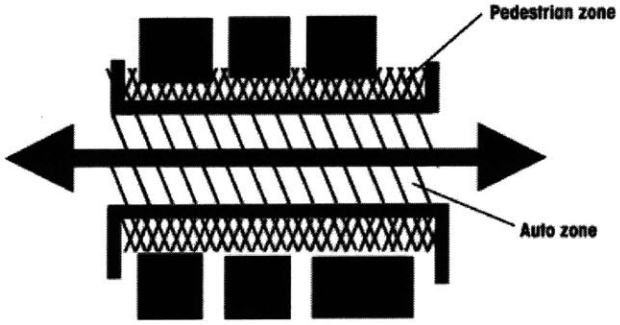


Fig 7.1. Parameters of activity set by street design: conventional, designed for through traffic.

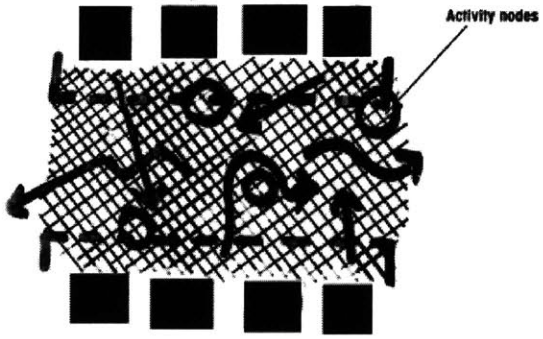


Fig 7.2. Redefinition of street space into supporting neighborhood-oriented pedestrian activities.

Additionally, the shortcoming of devices like speed bumps and barriers is that while they command what not to do and what is impermissible, they fail to create the kind of neighborhood where positive activity occurs, rather than just where negative activity is hindered. Neighborhood design needs to get past the simple notion of street modifications as just closed/open, and past the use of speed humps and other "punishing" devices, and move toward more sophisticated non-engineering design paradigms that really seek to change the character of the street, and if applied in a comprehensive way, the character of a neighborhood. As Jane Jacobs said, "Once a street is well equipped to handle strangers... the more strangers the merrier." (cited in Hunter)

Streets should physically embody and communicate the preferred behavior and acceptable parameters for use by visitors and residents alike. The design and appearance of streets establish a range of possible activities and attitudes that its users perceive. A street's composition and embellishments need to set a tone, perceptible *immediately*, *clearly*, and *consistently*. *Immediately* – as soon as one enters a new context or crosses a threshold into a residential neighborhood it should be instantly clear that this is a recognizable and distinct realm with a distinct ambience and set of expectations. *Clearly* – the design of the space must leave no vagueness as to the desired behavior and must demonstrate a direct link between physical dimensions or relationships and the spirit embodied by the neighborhood. *Consistently* – the street design and articulation of the vision must envelop the users and permeate the length and breadth of a street and neighborhood, rather than limiting modifica-

tion to select points. Signage does not fulfill this very successfully, especially as road design can send contrary signals that overwhelm posted placards. A wide straight road, clear of objects or nuances that demand attention, contradicts a sign which, while it indicates "Slow 20mph Children Playing," does not jive with the actual road conditions. Requests for slow courteous driving must take the form of slowly-designed neighborhood streets.

The street must be woven into the physical and social fabric of the neighborhood, or else its activity will remain separate and foreign, continuing to challenge the ideal environment residents imagine and seeming "off limits," the domain of "traffic." The underlying built fabric, such as the design of housing, must maintain a direct relationship with the street environment and not withdraw from it, so that the street remains actively in the domain of the residents rather than separate from it. A well-conceived neighborhood street design plan need not even rely heavily on barriers, signage, or other implements (such as humps) that prohibit "harmful" traffic activities, rather than encourage positive relationships and augment the range of activities other potential street users can engage in. Critical to creating such positive environments is using devices that, rather than leaving the essential road structure unchanged (e.g. strictly defined curb lines, lanes) and merely limiting driver behavior, instead expand the pedestrian realm to include the road space and define that space as intended for pedestrian and neighborhood use. By breaking down the conventional design of streets as mono-functional corridors for through auto traffic (which speed bumps and peripheral gates fail to change), streets will begin to viewed by all users as under the domain and expectations of residential use. The entire street realm is transformed into usable space that breaks down the stratifying linear definitions of the conventional street which don't serve residents well or induce confidence and security (Figs 7.3, 7.4). In the words of Tom Samuels, "We need to de-mystify the curb."

Fig 7.3 No redefinition of street realms or articulation of vision.

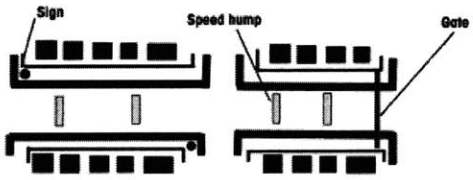
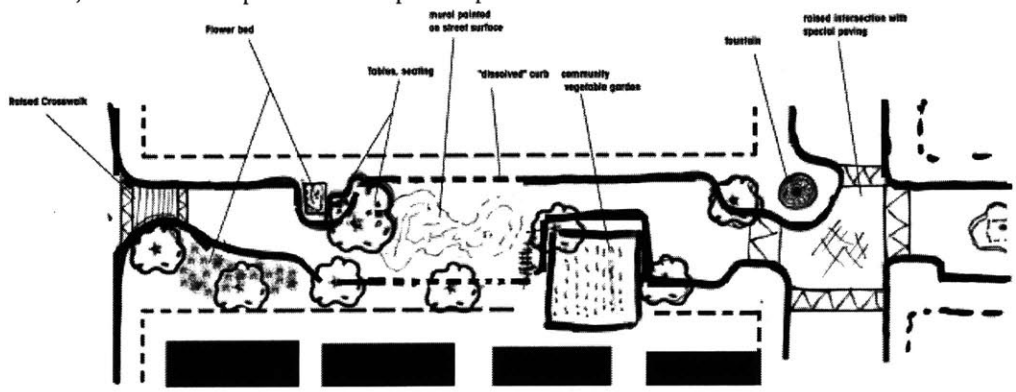


Fig 7.4. Transforming the street into neighborhood domain, articulation of positiveuse of public space.



"Neighborhood in the sense of a collectively identified boundary can be physically created, but neighborhood in the sense of mutual responsibility is much harder to produce." (Blakely and Snyder 1997) Gates and walls do not suggest or offer to either visitors or residents a vision of how activity *should* flow within or without these confines. All a membrane implies is separation. Separation alone does not inherently impart a sense of responsibility or instill a shared vision of how the neighborhood public realm should serve the residents. No real differentiation of substance is made between inside and outside streets and public space; the only notion that is implied by crossing the "threshold," whether of real or symbolic barriers, is that one is now "inside." So what? How am I to act differently or relate to my surroundings differently now than as before? This does not build new expectations, it only serves notification of an expected change in expectations. The failure to re-visualize and re-characterize the street space impacts both how visitors, once/if admitted inside the walls, use or abuse the neighborhood space and also how residents *themselves* perceive their responsibilities and sense of unified neighborhood vision. The presence of speed bumps inside gated communities is evidence that just granting access inside does not create a positive sense of community and responsibility (or at least a sense of appropriate street behavior). Qualititatiely intrusive traffic is often found within the circumscribed boundaries, as the molding of a neighborhood-friendly vision is limited to peripheral or periodic negatively-sontructed admonishments. What is somewhat remarkable is that *only* 73% of Five Oaks residents noticed an improvement in neighborhood traffic conditions, even when absolute volume and through-traffic were dramatically reduced. It is likely that some of the *quality* of traffic remained unchanged within the boundaries – reckless, unpredictable, insensitive, – as the fundamental character of the streets did not change. Even cul-de-sacs and traffic circles, as was the case in North Beverly and North Lawndale, are not particularly effective at slowing traffic and changing the fundamental character of streets, as they act only as structural or spot modification.

This principle, here derived from motives of increasing clarity of neighborhood behavioral guidelines so that residents anticipate reduced fear and have reassurance of high neighborhood environmental quality, points to the concept of the Woonerf as an appropriate model for the residential public realm. Studies of Woonerven, which have been implemented in Japan and Israel and even adopted as the national residential street design policy in northern Europe (notably Netherlands, Denmark, Germany), have shown signifcant increases in resident use of street space for socializing and play, most notably by children, and high satisfaction with the neighborhood environment (Eubank-Ahrens 1987, Ben-Joseph 1995). However, theses studies have not extended complementarily into surveying residents on their perceptions of security and comfort with the non-residents passing through neighborhood space.

(2) Stress elements in the street realm that act as neighborhood *amenities* in order to encourage territoriality, ownership, and engagement. *(space)*

The question must be asked: can urban design devices in the street and neighborhood environment be used and seen by residents as **amenities** that can be engaged, shaped, personalized, or utilized? If not, residents

are not likely to feel in control in their neighborhood, that they have a stake in setting the ambiance, or that visitors will respect the community's home. As we explored in theory and then in practice, the ability of neighborhood residents, collectively or individually, to physically manipulate and stake claim over elements in the public realm adds confidence and reduces fear and insecurity; it makes residents feel like they have shaped the neighborhood environment and have set the tone for activity. It also demonstrates to visitors that the residents here are active in engaging public space and looking after the activity that flows through it.

It is very hard to take ownership of a gate and transform it into an amenity useful to and cherished by the community. In a sense, it is one-dimensional. The same thing is even more true for speed humps, signage, and other inert objects meant to control traffic and behavior. Something inert or static placed into a neighborhood will never truly belong to the neighborhood or be *of* the neighborhood; residents will not easily develop feelings of identity or connection through it. Generally the cheapest form of calming however, traffic humps cost as little as $750 each and are unfortunately often the only available option for municipalities with limited funding. But bumps are the bane of firefighters and many residents and planners alike deride humps for being "cheap and insulting urban design tricks that city hall gives us because they won't take bolder steps to improve urban neighborhoods" (Inman 1995).

Spaces that have the potential to become "amenities" to the community will more likely be used, and through use residents are more likely to develop feelings of ownership. Street designs must empower residents and communities, and designs that are not based on the "amenity" model don't serve to empower residents to take initiative, manifest their visions, or feel in control of the neighborhood space. Residents who don't feel empowered are likely to feel that the agenda of activity is being set by others, and the infiltration and domination of traffic sets them back on their heels in a defensive posture, unable to enjoy their neighborhoods.

"Embellishments" and street designs must permit personalization, adaptability, and modularity. Streets need to be designed with a certain amount of open-endedness, allowing for acts of creation by residents. There is a fine balance between leaving too blank a slate (as streets are now – sheets of asphalt susceptible to domination by the most intrusive elements) and over-designing to eliminate participatory engagement. A creative mind can imagine numerous street designs and specific elements that can provide such community-engaging and livability-enhancing amenities that simultaneously provide the desired traffic control and neighborhood definition. One common denominator simple solution for such elements is the opportunity for landscaping. Most conventional cul-de-sacs and traffic circles provide limited space for such activities, as their placement and engineering-driven design make them worthless for these purposes. Community gardens provide an excellent example of spaces which provide continual engagement and opportunity for personalization by residents. There is no reason why a chicane or street closure cannot take the form of a generous community garden. Other examples of potential "amenities" that could be used for this purpose are play-lots, exercise equipment, meeting spaces (benches, chess tables, stages), mini-parks and natural environmental features (e.g. ponds), or malleable public art zones (See Fig 7.4). Two things that potentially stand in the way of designing generous amenities are the preservation of auto parking spaces or accomodating drainage or underground

utilities. Designs for chicanes (such as on Elmdale in Chicago's Edgewater neighborhood) and European Woonerven have shown that re-configuring parking with perpendicular or diaganol parking can maintain equivalent numbers of spaces while providing for more design flexibility, freeing up larger chunks of space for amenities such as gardens. The accomodation of drainage (or rather, the cost of re-grading the street) proved in Chicago to be somewhat of a hindrance to creating street elements that blended more seamlessly with the pedestrian realm. However, feelings of resident ownership and engagement seemed less a result of the fact that these elements remained somewhat "detached" and "floating" and more related to the individual design, placement, and size of the elements.

It is hard to say whether such street designs actually encourage higher levels of community interaction and social integration, but what is clear is that such devices do provide venues for the expression of latent levels of community desire and collective organization. Such street configurations can create "projects" and "activity space" for community groups to take on. The creation of such projects might in turn encourage more participation and sense of community as more people get involved in the maintenance, programming, and continual re-design of these spaces. The existence of these "projects" keeps the neighborhood organization (formal and informal) sharp and engaged, not letting it go dormant for want of activities, and expanding the range of opportunities for residents to be casually involved in the neighborhood.

(3) Use streets elements that exude the symbolism of invitation and accomodation by serving the dual funcitons of traffic control and zones of exchange. *(space, structure)*

The regular and expected use of semi-neighborhood "exchange" zones by non-residents and residents alike can reduce the xenophobic fear effects that neighborhood self-isolation produces. If visitors are unexpected, rare, uninvited, or "out of place," any presence will cause residents unease. But if there are zones of the neighborhood designed and set up to expect or welcome such interactions, residents will feel more comfortable with visitor presence in their neighborhood because of more frequent exchange, knowing that these visitors will follow the "rules" of visitation which were designed to handle them.

The obvious and intense symbolism of gates and walls makes it impossible to facilitate coming together. The use of street closures to retrofit existing neighborhoods has in general produced many problems, not least of which are the aesthetic and functional symbolism of the devices and their use in the specific contexts of tension in which they were plopped down. In the genre of potential devices used to effect street closure, gates and barricades are the poorest choices, both with unique problems. No doubt tensions already existed between adjacent neighborhoods in Los Angeles and Houston, and street gates were a visually aggressive way of manifesting and exclaiming the division. While the proponents of street closures might have been justified in wanting to curtail and control automobile infiltration into their neighborhoods, the choice of gates for this purpose conjured up notions of elitism, separatism, and even more negative "'-

isms." The gates say "stay away" and "keep out." Barricades in poorer neighborhoods, or just simply ugly and utilitarian closures, can create stigma, demonstrate lack of real local commitment, and suggest that there is threatening activity in the vicinity. But there is no reason why, instead of a concrete barricade or a stark wrought-iron fence, a street closure could not be effected with a small garden, playground, or one of many elements that can calm or deter traffic while offering opportunities for intermingling under more pleasant circumstances (Fig 7.5).

Defensible space and livable neighborhoods is not about reactive, defensive postures but about putting forth more positive visions. In addition to setting an ambiance of activity within a neighborhood and providing opportunities for engagement that demonstrate how activity should flow within the neighborhood, design elements should act to bring together residents with occupants and users of adjacent zones as well as passers-by. Even when functionally serving as street closures or otherwise restricting certain types of movement, gateway and edge elements should welcome in, rather than repel, visitors. These elements should be dually (or more) functional. While these zones welcome people into the neighborhood, they accommodate visitors and demonstrate that the welcome comes under conditions and within parameters.

Fundamentally, well-designed and located street and network elements should functionally serve to make residents feel comfortable and in control of the neighborhood's activity, but still maintain a feeling and actual degree of openness. These porous edges act as filters, as transition zones. It is in these transition zones, or exchanges, where visitors, passers-by and passers-through can mingle in space that is not fully internal to the neighborhood. The sharp inside-or-outside definitions created by gates and walls and even simple symbolic portals do not necessarily create transition or buffer zones which serve as "entry halls" into the inner parts of the neighborhood. Edges and entry zones of neighborhoods must both *define* the neighborhood and *connect* it with neighbors and the larger network at the same time (Fig 7.6). Even if sidewalks are left open and the public pedestrian network penetrates past the closure, the symbolism of a gate or barrier is enough to make the space inside appear private and off-limits.

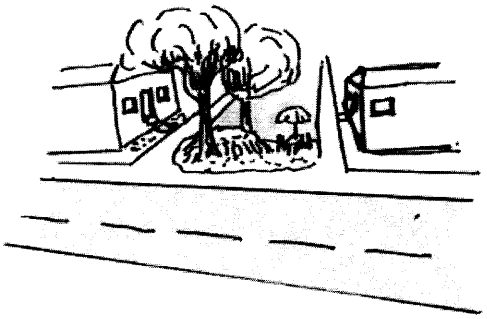


Fig 7.5. Mini-park street closure.

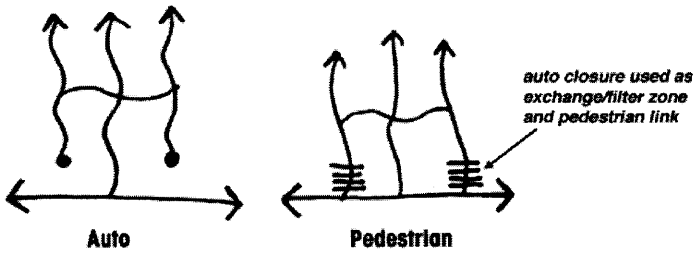


Fig 7.6. Street closure as exchange zone of activity and link in pedestrian network.

(4) Recognize and take advantage of the potential duality of pedestrian and automobile networks and their respective relationships to the same built fabric.

(structure)

This proposition follows a century-long progression of urban design thought concerning ways to construct networks of pedestrian and motorized travel and their respective relationships to the built fabric, given the conflicting attributes of each mode. The first model (A) is the traditional grid or other highly connected configuration (Fig 7.7), developed at a time when pedestrian and non-motorized movement was dominant. In this scheme, pedestrians and autos share the same network and have essentially the same relation to the built fabric. Each mode shares the same path configuration and levels of access, which works fine so long as autos do not come to dominate the street realm.

The second model (B), which was a strong reaction to the onslaught of the Automobile Age, is idealized by the Radburn (New Jersey) model. The Radburn design sought to separate pedestrian and auto traffic into different streams (ostensibly to protect the pedestrian in a more bucolic setting), each with fundamentally different views of the community. In fact they saw opposite sides of the same buildings. The problem with this model is that inevitably, buildings and their main activities turn to face one side, generally the roads, leaving the pedestrian paths to become "backyard" routes that don't necessarily link to front doors or areas of high priority and visibility. These paths can quickly become out of sight and unsafe (as described earlier, such as in the pseudo-blocks in San Juan), if not just practically useless as they may not lead directly to popular or necessary non-residential destinations. Newman (1972) reported that people consistently identified the public streets bordering their projects as being significantly safer than paths which bisected the interiors of projects, and much experience in San Juan has produced similar conditions.

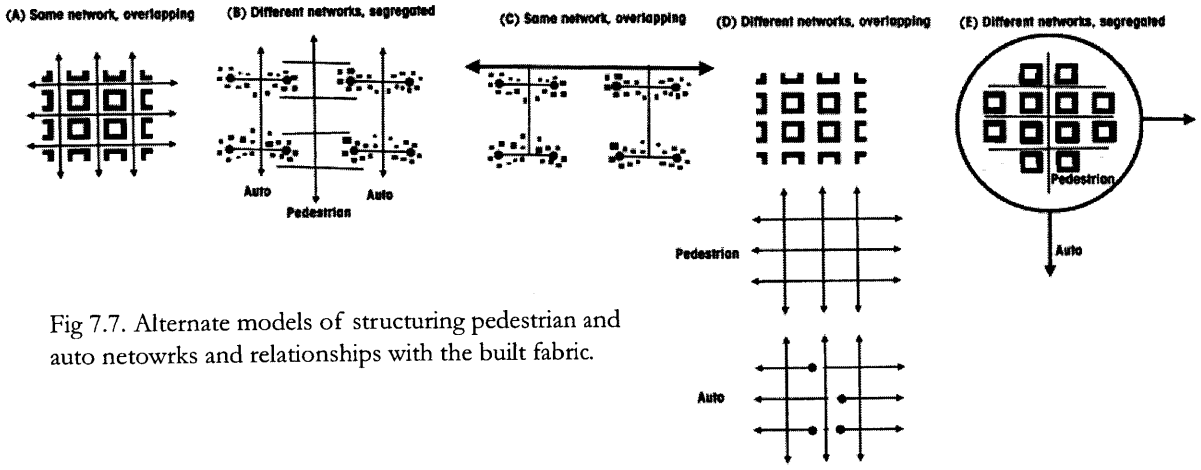


Fig 7.7. Alternate models of structuring pedestrian and auto netowrks and relationships with the built fabric.

The third model (C) is the conventional late 20th-century suburban model of hierarchical streets branching like a tree down to progressively less integrated and less trafficked roads, culminating in dead-end cul-de-sacs. This model took the auto network of the Radburn model as the skeleton of development and eliminated the separate connective pedestrian network, so that both modes are funneled along the same dendritic pattern, as one network. However, the auto defines this network. This is primarily the model in use in San Juan gated communities, which creates the many pedestrian problems already described at length.

My new proposed model (D) suggests an overlapping of the two networks, sharing the same fundamental framework and built fabric, but using street design to create two fundamentally different relationships. A highly connective and rich pedestrian relationship is optimized while the auto network is more constrained, without trying to construct and physically maintain two separate realities. (So that the built fabric doesn't have a split personality, this approach eschews any actual separation of networks which creates problems as far as designing an appropriate orientation of buildings and uses.) This scheme makes the definition of neighborhoods and residential home zones possible while maintaining an overall connective pedestrian- and transit-oriented whole. Certainly the use of "slow" neighborhood streets, such as Woonerven, would have some of this effect by making neighborhood streets less practical links in the automotive network. Combining these "spatial" or "volumetric" conceptions that affect the practical use of streets by different modes and uses with the selective use of more deliberate auto network structural modifications (such as closures) would serve this end most effectively.

A balancing act must be played between improving auto circulation and constraining it. As CDOT's Bob Cyboran said, "Traffic planning has conflicting goals. People want reduced traffic, but they want it convenient for 'me'" (Ririe-Kurz 1995b). The same paradox holds true for alleviating congestion versus discouraging driving or growth in VMT, as congestion and driving inconvenience can be prime motivators for opting for other travel modal alternatives. Adding more through-way redundant routes for autos must be compensated by a relatively much enhanced network and attractive conditions for pedestrians. The fundamental modal shift will depend on how much each mode's network qualities improve relative to the other. Since this model optimizes the pedestrian network relative to the auto network the relative attractiveness and practicality of walking (particularly to local destinations in the vicinity, such as a transit station) increases substantially. While there are advantages for decreasing auto traffic congestion with a highly interconnected and redundant auto network, we must equally recognize that there are significant disadvantages that arise from this widespread auto access, impacting many of the activities which border the streets. As shown clearly in all three Chicago examples, cut through traffic threatens the integrity and livability of residential environments, especially activity centers such as parks and schools. And while improving pedestrian access to transit is our laudable goal, improving auto access to transit can undermine the gains in neighborhood livability if mitigating conditions are not thoughtfully planned for, as evidenced by the problems created by "kiss-and-ride" traffic passing through Chicago's North Beverly neighborhood.

"Route modification" strategies (closures, diverters, one-ways, semi-diverters) are often controversial as they

alter traffic patterns, creating "inconveniences" (for auto drivers) where none existed before and for potentially diverting traffic onto previously quiet or fluidly flowing streets. Ian Lockwood, traffic calming guru of West Palm Beach, Florida, believes that such measures are overly drastic and "unnecessary with a well-conceived traffic calming plan"(Lockwood and Stillings 1998). However much planners might disdain street closures, sometimes they are necessary. As in North Lawndale, where a street section was vacated to create a needed park, the spaces freed up by street closures can be turned into opportunities to create needed and valued neighborhood amenities that can bring people together in many ways (like for a basketball game, for instance, as in North Lawndale). Closures can improve the pedestrian network relative to auto network by making walking distances relatively shorter at a very local scale while providing more relatively untrafficked walking routes through neighborhoods. Additionally, closures provide some sense of enclosure and structure to a neighborhood, keeping it a quiet pedestrian-haven while leaving it fundamentally connected to adjacent neighborhood areas. Of course through thoughtful design, buses and other feeder transit (e.g. publicos; also bicycles, emergency vehicles) could operate more freely than autos. For example, this can be done by placing low objects in the road that only high-clearance vehicles or vehicle with certain wide wheel-bases can pass over, using "mountable" curbs, or simply using "destructible" or breakaway elements, such as flower beds, that can be driven over in case of emergency and replaced later on at minimal cost.

An additional model (E) is the total pedestrianization and elimination of cars from the central zone (limiting them to the periphery), which is an extension of my model. This creates islands of pedestrian activities — a problem as the borders become auto-dominated and the edges begin to dissolve. This could work at larger scales, of say an entire district or self-contained mixed-use village, but if each unit is of a smaller scale, say just a few acres, this reverts to the problems of fragmentation.

(5) Extend the concept of "home" and "neighborhood" via permeation of integrated street design and careful articulation of boundaries. *(structure, space)*

One developer of gated communities in the United States was quoted by Blakely and Snyder (1997) as saying, "When you drive home, you would feel that you were at home at one of two places: when you turn onto your street or when you turn into your driveway. When I put a gate on an entrance, I can extend that feeling of home, which is so strong in you, it feels unbelievable. I can extend it as far away as your house is from the gate." By delineating space with boundary markers and/or by using design motifs to create zones of activity or consistent street ambiance, that notion of comfort or familiarity can be manipulated. There is no reason why that notion of "home" and sense of "my neighborhood" could not be extended to include the transit station, and in thinking about cultivating a sense of connection between Sanjuaneros and the system (or a particular station near their home), Tren Urbano should strive to create such a zone of identity around its stations. This implies not just creating a defined neighborhood around a station with boundary markers on the periphery of this central neighborhood, but creating a public realm motif of street design and ornamentation that can be carried through and permeate throughout adjacent and surrounding developments. Rather

than thinking about transit districts as neighborhoods orbiting around a transit station with linkages *from* the neighborhoods *to* the station, Tren Urbano should rethink transit stations as part of the "home territory" of the surrounding neighborhoods. Ideally, multiple neighborhoods "overlap" around a station and this area becomes shared "home territory" for each neighborhood. This fusion of overlapping neighborhoods comprises the entire transit district (Figures 7.8, 7.9).

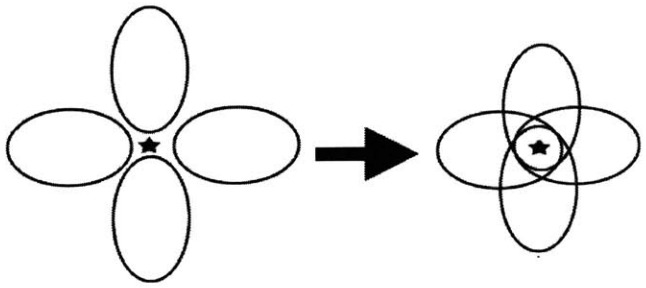


Fig 7.8. Rather than orbiting a floating transit station, the surrounding neighborhoods envelop it in their "home territory," creating a shared neutral zone.

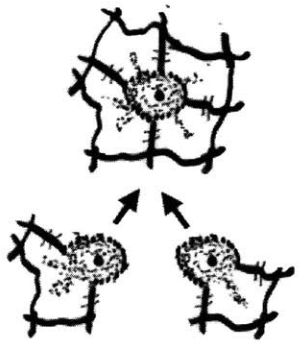


Fig 7.9. Surrounding neighborhoods overlap to form a transit "district;" with elements of the station character permeating back into the neighborhoods.

When one emerges from a Tren Urbano station, one should be greeted with the sensation of arrival at one's home, despite the fact that one's actual residence might be a ten or fifteen minute walk away. Conversely, when a resident steps out of her front door or building and heads down the street towards the rail station, she should not feel like she is leaving "her neighborhood" in the journey to the station, that the station lies within this zone of comfort and physical and social identity. This effect can be created both by extending the conceptual "boundaries" of a neighborhood to include the transit station, but also by extending the domain of the station into the surrounding neighborhoods through design language and streetscaping. Elements of the public realm that define the character of the station itself should permeate into the neighborhoods. Such elements include lighting fixtures, paving materials, colors, or patterns, street furniture such as benches and wastebaskets, repeated thematic art installations, flower beds, or even street and place signage.

Exemplified by the research of Rivera-Bonilla, one of the main lures of gated communities is the sense of enclosure, of physical community definition and boundaries and manageable human scale that is not absorbed anonymously into the flows of traffic and development. This is exactly the feeling of "home" that people seek. Combining the first four principles we now know that these boundaries can actually be key links in the pedestrian network that also protect the neighborhood from intrusion. At the pedestrian level there needs to be porosity and connectivity between developments, but at the macro levels of the neighborhood and the district this study has shown the need for definition. These sorts of boundaries, buffers and zones which define neighborhoods can be created by changing street types and thinking of the network as composed of different street types – neighborhood slow streets within the neighborhood, and boulevards and parkways on the borders to prohibit through traffic (as in Figs 7.10, 7.11) from penetrating the neighborhood but creating more pedestrian permeable buffers that are can double as shared exchange zones and greenways.

Rather than creating zones of identification by circumscribing a neighborhood with a thin line of demarcation, the juxtaposition of qualitatively different street typologies in adjacent zones can create a more comprehensive sense of neighborhood ambiance and unifed sense of "home" without the need to define it with unpermeable boundaries.

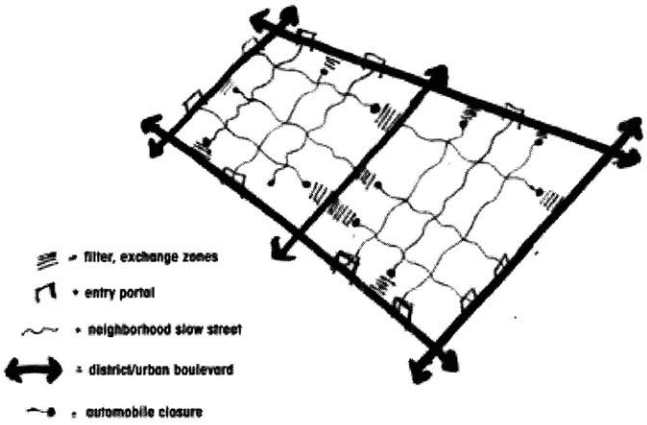


Fig 7.10. Sample configuration of adjacent neighborhoods.

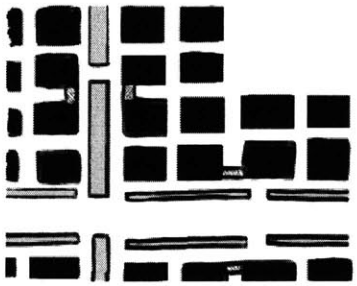


Fig 7.11. Hypothetical use of center-landscaped parkways and three-tiered boulevards along neighborhood edges to create sense of neighborhood boundaries.

7.2 Implementing the Vision in San Juan

It would be simple just to say that San Juan should use these design principles and induce a dramatic shift in development patterns and then leave it at that. In this pursuit San Juan has multiple issues to overcome and opportunities to seize in order to forge a new breed of communities around Tren Urbano stations. Following are some strategies that San Juan and Tren Urbano planners should consider in moving toward this paradigm.

The four strategic options for the public sector to consider include:
(1) Adapting transit to fit gated communities
(2) Retrofitting existing development
(3) Regulating and guiding redevelopment and new development
(4) Sponsoring and co-developing new demonstration projects

(1) Adapt transit to fit gated communities

This first stratgey is not so much one moving toward impelementing the physical solutions suggested in this thesis, but in trying to make transit work given the current situation and no physical changes. In the interim as a stop-gap measure, in order to deal with the current situation of infeasible access to stations because of gated and insular communities, transit feeder service shuttle services could be instituted that would travel into and within one or more gated communities to bring people to the closest Tren Urbano station. Such services

are necessary not just because of the infeasibility of walking to stations, but because of the unpleasant and pedestrian hostile environment "outside" the gates. As stated before, residents should be able to access transit services from within their "home" territories. These services could be sponsored by either the communities themselves, Tren Urbano, or AMA (the San Juan public bus authority). However this potentially creates a two-class transit system – in one class are those who use the public buses and in the other are those who ride on the gated community shuttle services, which might likely run "closed-door" once they leave the confines of the gates. On a practical level this seems inefficient and not a long run solution for several reasons, including the fact that most of this service would be totally useless and inaccessible to people living outside of each specific development and that many such routes would inevitably duplicate significant stretches of public AMA routes. The three primary options (Fig 7.12) available for such a service would be: a) gated development shuttles feed back and forth to the public AMA route which, in turn, serve stations; b) development shuttles serving one development take residents directly to stations; or c) development shuttles serve multiple developments, eventually terminating at the train station. The latter two options could either run closed (e.g. not taking anyone aboard) or open door after leaving the gates of developments. The first two options seem particularly expensive to sustain for singular gated developments on a per capita basis for more than peak hour service. (Though comparatively, such costs probably would run less than is spent on gate keepers and landscape maintenance). The third option seems a particularly inefficient and arduous way to get from point A to point B, especially is you live in one of the first developments served along the line.

Because it does not actually improve pedestrian access, provide any incentive to improve development patterns, or address any of the fundamental reasons driving the attractiveness of gated communities, this strategy just allows the status quo land use situation to perpetuate longer, and thus should be viewed as nothing more than a temporary band-aid solution, albeit a likely necessary one in some form in the short run.

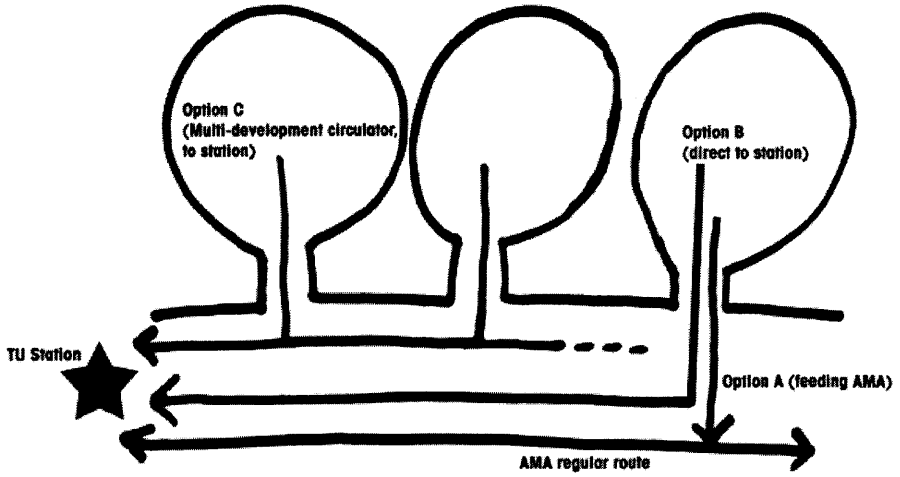


Fig 7.12. Options for adapting feeder transit services to gated communities.

(2) Retrofit existing developments

Gated communities have already created great fragmentation and difficult conditions for pedestrians and transit in San Juan, and it is impossible to ignore existing development. Of course any permanent barriers *can* be demolished to create more permeability – exemplified by the razing of a portion of Old San Juan's walls by Spanish authorities in 1897 to let the overcrowded colonial capital grow. That wall was publicly owned though, and retrofitting current walled development is quite a different proposition, as owners, property managers, and residents would have to be convinced that the benefits outweigh the perceived advantages of the gates. The most logical and minimal step in technically adapting gated communities would be to **add new pedestrian entrances and linkages** around the perimeter of developments that directly connect to internal circulation and provide the shortest and most direct paths to nearby commercial development, public facilities (e.g. parks), major roads (for bus access) and other attractions. Tren Urbano planners must not merely look at existing public rights-of-way in considering important corridors for pedestrian access improvements (as public rights-of-way are few and far between), but must look closely at the internal design of the many nearby gated communities, their edge and access conditions, as well as their internal configurations, to look for opportunities to make pedestrian connections to and between developments. The two facets to consider are (1) convenient linkages for residents of each development; and (2) convenient through-passage for residents of surrounding developments for whom the most logical and direct walking route runs through the given development. *The problem with this approach is that recently constructed insular developments have been designed to preclude such access, so no rights-of-way or leeway in building configurations exist that would facilitate the creation of successful linkages.* Nevertheless, opportunities should be sought out and encouraged. Further, Tren Urbano can potentially expand local notions of "home" to include stations by extending the domain of station design, such as consistent and identifiable lighting, landscaping, or paving, into adjacent neighborhoods and developments.

In urbanizaciones that have put up gates across public streets and sidewalks, such as several neighborhoods around the Torrimar station, pedestrian gates could be removed or permanently opened, and street gates replaced by more welcoming and community-oriented *amenities* (such as gardens, small parks, or recreational facilities) in the streets which redefine the public space.

Unfortunately, in San Juan there is no precedent for *undoing* gates once established, so this effort is an uphill, but necessary, battle. Both political support and community buy-in will be vital to initiate such changes. Initiating a community planning process that gets people to begin rethinking the necessity and impacts of gates and redefining them with a new design language and forms might prove fruitful. PRHTA could give planning grants to municipalities to form citizen task forces comprised of residents and owners of station area developments in order to negotiate and broker ways to create more pedestrian permeability. This would be a way to directly broach the subject of accessibility and pedestrian access with residents, get residents to talk openly and gain the reassurance and comfort of their neighbors, and simultaneously empower the residents of the area to make the decisions. If municipal planning departments and/or Tren Urbano approach communities with the offer and stated intent of *providing new amenities* to communities (rather than

explicitly coming to *take away* their gates), communities might be enticed into entertaining the notion of increased connections.

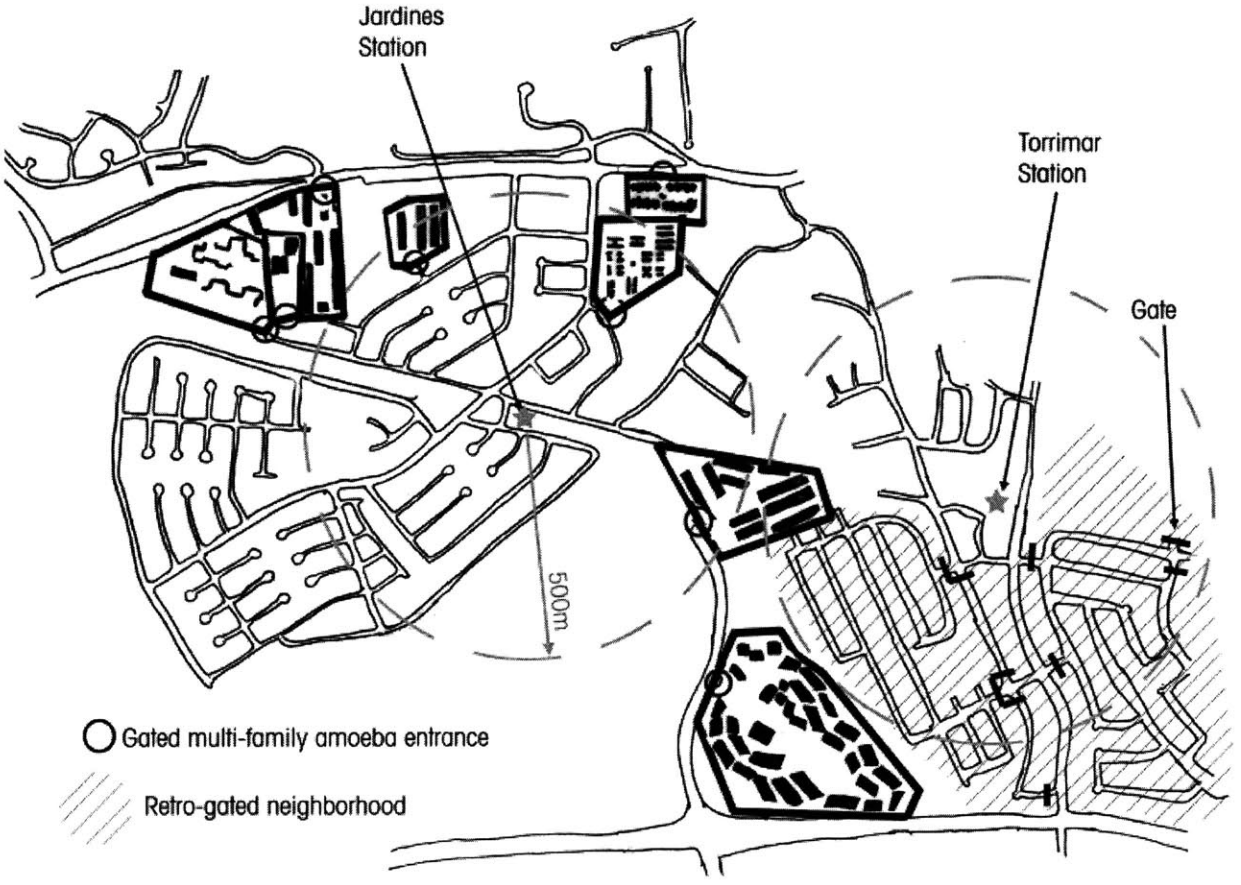
Given the substantial prevalence of public housing in San Juan, the opportunity exists for the government to directly lead the way in this effort. Since Puerto Rico is a United States territory it might be able to use HUD HOPE VI funding to retrofit these developments (especially those already in need of upgrading), and in fact the HOPE VI program design paradigm *is* of pedestrian oriented, contextual, and permeable development. Developments and urbanizaciones within a one-mile radius of Tren Urbano stations should be given priority attention, with those within 1/2 and 1/4-mile given respectively higher priority. Ultimately, the incarnation of Law 21 that permits and facilitates gates should be phased out and replaced with a traffic calming program that offers to communities a full toolbox of traffic control and neighborhood amenity strategies.

Minor incremental retrofit will be able to reap only marginal benefits in terms of achieving a high quality pedestrian environment as the configuration of buildings and developments was built intentionally to preclude such access, so any changes will still lead to sub-optimal, and possibly not very palatable or even functional situations. Retrofit will likely have to involve major demolition and reconstruction, if not totally wiping the slate clean and starting over for many properties.

A look at the built context of the Jardines and Torrimar station areas illustrates this grave reality. The area around Jardines is dominated by a patchwork of gated multi-family amoebas (Figs 7.13, 7.14). These developments squeeze out any north-south access and permeability and limit residents to singular gated openings not necessarily conveniently located vis-a-vis access to stations and to nearby commercial establishments. In considering connectivity improvements in this scenario, Figure 7.15 indicates corridors of ideal pedestrian linkage, as well as critical locations for new gate openings and enclave permeability. However, given the tight configuration, inward orientation, and lack of contextuality of adjacent developments, selective demolition and reconfiguration of existing buildings would be necessary to realize and facilitate such corridors and truly make them attractive. The station area also features subdivisions with dendritic patterns of cul-de-sacs (primarily southwest and northwest of the station), essentially following the conventional suburban network model (C in Fig 7.7). While these latter developments don't possess gates per se, from a pedestrian's standpoint the pattern created by the street network replicates the same non-direct and lengthened routes as a gated development (see Figure 3.10c). One notices however, that to facilitate better connectivity in these subdivisions, selective removal of houses at the end of cul-de-sacs would also be necessary.

This strategy lies heavily in the hands of the private sector, so short of providing massive incentives to undertake major overhauls of extant developments or taking land by eminent domain, the public sector will be able to impose minimal direct improvements.

Figs 7.13, 7.14. Built-unbuilt (above); street layout and configuration of gated enclaves in Jardines and Torrimar station areas.



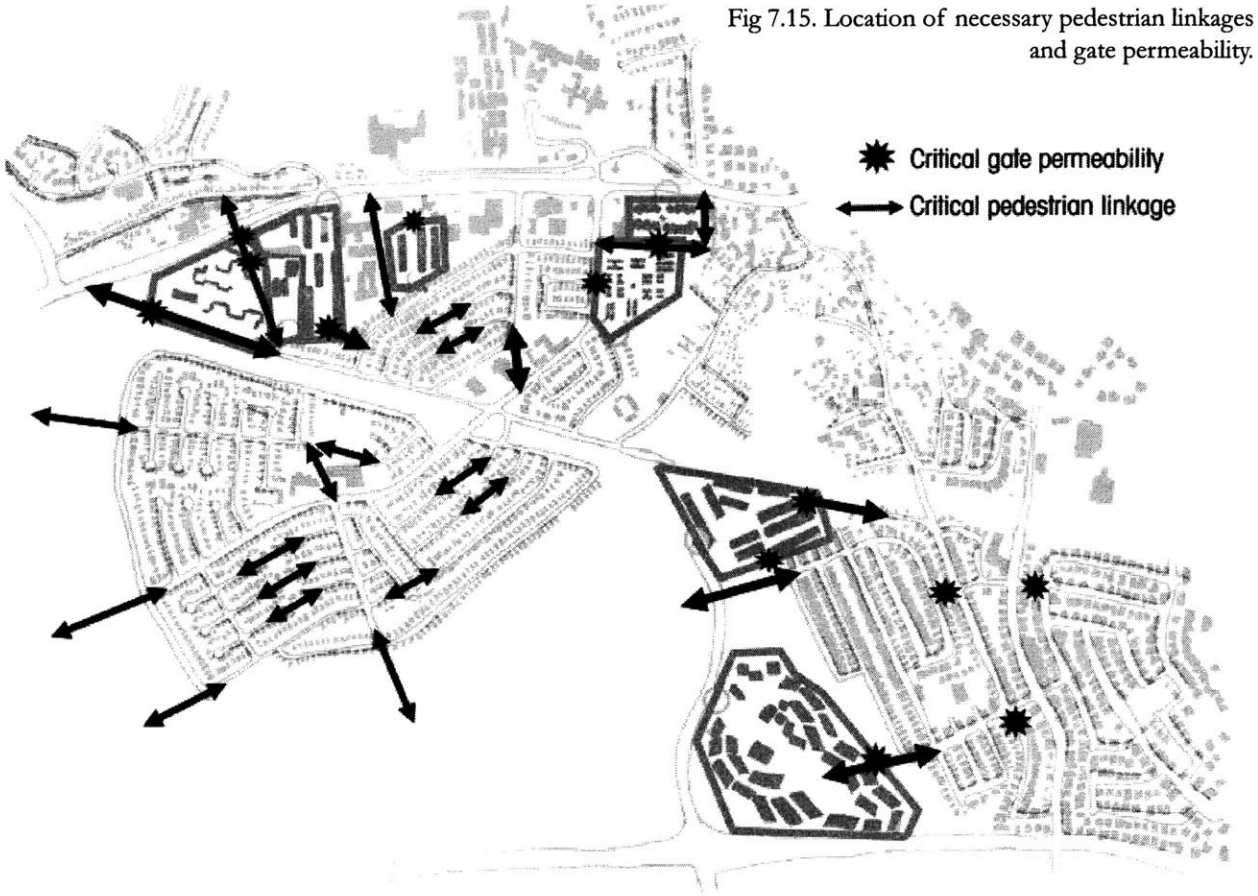


Fig 7.15. Location of necessary pedestrian linkages and gate permeability.

(3) Regulate and guide redevelopment and new development

While the opportunities for the PRHTA and other government planning authorities, such as the Junta or municipal agencies, to directly tackle the retrofit of existing private development are limited (short of using eminent domain), well-crafted zoning and subdivision regulations, which are in these authorities' power, have the potential to significantly shape the form of new development around Tren Urbano stations. Zoning and subdivision regulations can include many urban design criteria and requirements which address and advance the principles presented in this thesis. To address pedestrian network issues and establish an overall pedestrian-oriented neighborhood layout, these regulations could include: mandating the creation of open-ended street stubs for future connections to subsequent development; prohibition of "pedestrian cul-de-sacs;" minimum numbers of pedestrian "entry points" per length of neighborhood perimeter; minimum distance between pedestrian entrances and between internal parallel pedestrian routes; and/or maximum block size. Urban design regulations could further control building orientation and relationship to streets. Importantly, street design standards must be flexible enough to permit the creative and pedestrian-oriented neighborhood street designs suggested here, where cars are placed in a submissive role and the street is used primarily for active neighborhood use and enjoyment of amenities while still permitting a degree of motorized through movement. Conceivably, subdivision regulations could even prohibit the creation of privately controlled streets and require that all new right-of-ways become the domain of the municipality.

One primary obstacle to implementation in San Juan is that while many thoughtful standards and design regulations exist, there is little enforcement or political will to make sure development follows through with either the letter or the spirit of the law or the design intent of the standards. This is typified by the illegal, but de facto permissible, striping of car parking spaces over the sidewalks, referenced earlier, on streets such as Piñero (Fig 3.13). The same lack of enforcement has held true for the retro-gating of neighborhoods. Indeed, there are regulations governing this activity, but urbanizaciones flagrantly violate even those with no public oversight – doing such things as building 8-foot high walls in the middle of roads or unlawfully setting hours of acceptable public use of the streets. At least currently, this suggests that efforts to impose new design requirements that run contrary to strong market forces will be met with great political hostility by the private development community. If they are accepted, they will be accepted only because the development community knows from experience that they will not be held to the standards. Nevertheless, getting new urban design standards on the books is a necessary step to eventual enforcement, for without the standards, there can never be enforcement.

However, beyond merely regulating or making binding prescriptions for urban form, regulatory bodies can instead (or additionally) provide **incentives** to developers to create superior urban designs and layouts (e.g. better connectivity, innovative pedestrian-oriented street design, mixed uses). These incentives could take the form of providing low interest loans, deferred property taxes, density bonuses, relaxation of certain zoning restrictions or requirements (e.g. parking), or expedited permitting processes. Another pseudo-incentive based way to usher in dramatic overhauls of property is to upzone certain areas near stations, both to achieve land use goals beneficial to Tren Urbano and to make new combinations and layouts of uses much more profitable for the landowner than maintaining the current uses and configurations. An increasingly popular way in American cities of facilitating and promoting preferrable development patterns is to create parallel or "floating" zoning districts which outline an enlightened set of design principles, but do not eliminate the existing zoning allowances. **By tying the use of parallel regulation to lucrative incentives, the public sector can skirt the political opposition of changing zoning but tilt the playing field toward the preferrable patterns.** While this scenario is less preferrable than outright overhaul of zoning and subdivision regulations because it would still permit the continued legal proliferation of undesirable development, it is potentially the only politically viable route currently available. However, the incentives must be lucrative enough to overcome the hesitancy of developers to diverge from established trends. Further, for innovative and sensitive developments which meets Tren Urbano, regional, and municipal goals (for pedestrian connectivity or other pertinent qualities) that the are proposed by private development, these public bodies could help share marketing costs and actively help promote such developments, even offering to rental, mortgage, or other assistance to potential residents.

Aside from providing standards or incentives for developers, Tren Urbano and municipalities could create a graphic portfolio of desirable neighborhood, street, and building design prototypes, exhibiting examples of the type of development it would like to see, using sample neighborhood layouts, abstract diagrams, and even real-life examples of preferred models of development. While administration of this requires a certain level

of design review sophistication if tied to an oversight process, such statements of preference could be very influential on their own.

The insular and non-contextual design trend is also influenced by the development process and land ownership patterns. Currently, the same number of approvals and permits are required in order to build 20 units of housing as are required for 200 units. Developers have little incentive to build in smaller, more incrmental and contextual pieces, but to build bigger projects that are all-of-a-piece. Architect Manuel Delemos credits this undifferentiated approvals process to exacerbating this trend. For instance, no new walkup multi-family amoeba is smaller than five or six acres (100-200 units) because of permitting hassles. *The permitting and planning process must be reformed to require administrative and approval hurdles in proportion to the size of the project.* This would hopefully encourage smaller scale, more incremental and contextual development to occur. Reducing parcel sizes (or providing incentives – such as swifter permitting – to not merge parcels) is a key element of encouraging development that see itself as part of a larger whole, rather than as the whole. However, while large parcelization will trend toward more master-planned self-referrential design that tends to ignore its edges, strong subidivision and zoning regulations (plus design review) should be able to control how the development looks and functions.

Tren Urbano needs to work with local municipalities to develop specific area plans around stations that go beyond merely looking at immediate pedestrian connections and upgrading, but a plan that guides development as it occurs and provides a binding vision for incremental development, designating areas of retrofit and identifying opportunities to make new connections. The discussion with the public, if not public officials, of transit-oriented development and Tren Urbano leading up to the formation of these plans might be the best way to broach the closely-held issues of gated communities in San Juan.

(4) Sponsor and co-develop demonstration projects

While it is difficult to impose or instigate change on private development once built, Tren Urbano, municipalities, and the Puerto Rican government can shape the landscape themselves by taking advantage of development opportunities directly. The public sector can thus turn around its current situation of being *victim* and hostage to market forces, by becoming the *trend setter.* In fact, recent developments infer that *only* the public sector, with its control, influence, and relative insulation from the whims of the market might be able to break from trends and the strong "bandwagon" effect of market developers. It can do this if it has the will because it is less tied to private financial markets and banks for capital. As there might not be enough political capital to force developers to adhere to certain design standards (or even code requirements), the public sector can maintain code requirements, urban design integrity and ideology, and even break new ground in an environment where private developers are hesitant to do so. While developers continue to fall back on the claim that "no market exists" for non-gated developments or that they are only building "what the market wants," the public sector can establish the viability of an "unproven" product. The publicly-

sponsored development will serve as demonstration projects exhibiting characteristics and design principles to be emulated and duplicated elsewhere. There is budding evidence that it will be the public sector that will establish new trends and pull the market out of the gated mentality, rather than enlightened private developers leading the way. A small number of federally subsidized small to mid-size multi-family infill developments that are fairly well-integrated into their surrounding neighborhoods have been constructed indowntown Carolina and across from the main plaza in central Rio Piedras. They are access-controlled only in the way the pseudo-blocks are — interior parking courtyards, – and fit within the block structure and overall pedestrian-friendly fabric. However, these projects are located on small parcels, and as of yet, the public sector has not demonstrated such sophisticated design integrity in the development of larger parcels it has a hand in.

The Finca Rosso parcel, which lies immediately southeast of the Jardines Tren Urbano station (visible as the obvious large blank space in Fig 7.13), within walking distance of both this station and the Torrimar station, barely a half-mile to the east, presents just such an amazing opportunity. The size of the parcel and adjacency to a Tren Urbano station make it the ideal showcase for development patterns described here and favorable to Tren Urbano. The significance of precedent cannot be overstated for demonstrating to the private development world the marketability, viability, and profitability of neighborhoods based on these conceptions of security with connectivity that differ from the gated paradigm. Early plans for this 550-acre parcel, developed by a prominent design team led by Miami architect Andres Duany, called for a fine-grained mid-rise neighborhood with small-scale gridded streets, many public open spaces, and links both to neighboring developments and the Jardines station. Changes in the island's political leadership in 1993 resulted in the scrapping of the Duany plan and the introduction of a new plan which proposed a super-block layout ringed by a large road, one long internal pedestrian spine and no connections to neighboring developments. The Puerto Rico administration changed again in 2000, and it is still up in the air whether they will proceed with the existing superblock plan. While the government has not seen itself as the developer of this parcel, it is the sponsor of an officially-sanctioned area master plan that will guide future development and potential disposition of the land. There is further pressure on the government to produce a plan of great public benefit and purpose because of the controversial nature of the Finca Rosso parcel's history – it was taken by the Puerto Rican government using eminent domain decades ago ostensibly to build public housing (which was never built, even after the goverment wethered legal challenges to its land taking).

Tren Urbano itself has numerous opportunities to act as development entrepreneur that could get the ball rolling in establishing the tone for development and redevelopment around stations. In fact, the air rights over "open cut" portions of the system's alignment, such as between Torrimar and Jardines, provide opportunities to bridge neighborhoods on either side of the tracks and create a new central neighborhood directly around the stations. (Though the cost of developing air rights is significant). Additionally, a new eastern headhouse for the Jardines station could be constructed so that the new neighborhood developed could be designed to envelop the station into it, thus extending the notion of "home" to include the station. Tren Urbano has other opportunities around stations to instigate development, most significantly on the large expanses of station-area surface parking, best viewed as temporary land banks awaiting development and more intense

pedestrian-oriented use complementary to the stations.

In sponsoring development of new neighborhoods, the public sector has the opportunity in two ways to gain greater acceptance of the more connective neighborhood concept. First the design and planning of new projects could incorporate a community planning process that brings residents of the surrounding areas of the parcel into discussions about visioning, starting a dialogue about the options and consequences for the form of the area. The planning authorities can use this opportunity to broaden people's horizons and conceptions about what streets, neighborhoods, and the public realm can be, rather than what the development industry tells them is the only option. Second, the *marketing* of new non-gated neighborhoods, following the principles outlined in this paper, will be of utmost importance to successfully opening minds and interest. Advertising the development as "traffic calmed," "tranquil," possessing "comfortable and pleasant neighborhood streets," or "a place where you can feel safe letting your kids play in the streets," will start to hit home with Sanjuaneros and really get at the heart of what makes people consider gated developments as the only option.

In sum, given current market conditions and entrenched development trends, (1) the creation of development and regulatory incentives for building along a parallel set of enlightened design guidelines and (2) sponsoring demonstration projects, are the most feasible and likely to succeed planning tactics in forging a new direction and opening up the city's eyes to new options in urban living

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Chapter 8

Postscript

8.1 Search for "Openness" and "Community"

Urban historian Robert Fishman wrote that suburban form is a "testimony to deeply buried fears that translate into contempt or hatred for the 'others' who inhabit the city" (quoted in Wilson 1995). While I'm not sure that I would characterize gated community development in San Juan as a signature of "contempt" and "hatred" of others, I would certainly conclude that the gated development trend in San Juan does stem from a fear of the seemingly overwhelming impact, intrusion, and uncertainty that a modern city teeming with people creates, especially one so over-run by autos. The automobile epitomizes this placeless-ness, where someone gets in a car and zips away to anywhere the pavement runs, and people's movements are not tied to "place." Someone driving through your neighborhood is no more likely to be someone you know or someone who has a connection or interest in your neighborhood than anyone picked at random from within the metropolitan area. But a rail transit system is fundamentally rooted to place, and the pedestrian, who emerges from and travels to the transit station, is fixed by default of distance to the surrounding places. Gated development is an attempt by Sanjuaneros to get a handle on a more "manageable" pace and size of a neighborhood and community, where a person can engage in the small everyday activities of residential life and not have to feel overwhelmed by the scale and externalities of the city.

Depending on one's point of departure, the principles of street and neighborhood form proposed in the preceding chapter could seem a retrenchment toward "closed communities," moving in the direction of gated communities. William Whyte criticized the basic tenets of Mayor Daley's cul-de-sac plan, saying that "You can't make an enclave and expect it to work like a city" (quoted in Kass 1993). Such a criticism implies that a city achieves and expresses openness and "publicness" through movement of autos. Starting from the point of San Juan, my proposed model moves toward more openness, at least from a pedestrian's standpoint, while still keeping that sense of neighborhood structure as well as synthesis and permeability of the entire transit district. A case such as Chicago, moving from the totally integrated grid toward my proposed model (to which many neighborhoods seem to be moving), is more sensitive and must be treated with design forthrightness and sophistication to avoid creating a perception of secession from the city and privatization of the public realm. However the traditional "open grid" was largely perpetuated before the auto age when street use was much more democratic. Since then, streets have essentially been privatized de facto by the auto, as only people with autos can use streets for vehicular use, and this private appropriation is generally enacted in other people's neighborhoods by drivers who live nowhere near the space in question. In fact public space is not public at all if people don't feel comfortable or safe using it, so any configuration which liberates the streets from the burden of dominating auto traffic is one moving toward publicness.

In this current age of "high" technology, instantaneous information, electronic communication, homogenizing forces of globalization, and perpetual mobility, the quest for more local and tactile conceptions of "community" increasingly occupies the dialogue and rhetoric of architecture, planning, real estate development, and generic civil discourse. Yet we try to mesh our ideals of diversity and heterogeneity with the more closed notions of "community," or of mutually shared ideals. As neighborhoods become more multi-cultural and multi-generational while being further pulled by the scatter-inducing factors of information and globalization, our notions of forming communities based on shared values *and* physcial spaces becomes more elusive. And because people are so mobile that they become disassociated with place, those places become mere hollow containers and stages. While our social institutions evolve into non-localized webs of connections less tied to place, what we have left to tie people together at the local level and fulfill human needs for attachment and physical belonging *is* the physical environment – neighborhoods, streets, and public realm. Now, at the bare essence, that tissue which brings people together is a shared notion of what constitutes a good physical living environment. Rather than cultivating communities of shared culture that shape physical place, we must take a different tact -- create physical environments that inspire individual attachment to place and physical systems (such as a transit system).

The urban fabric of San Juan is so emaciated and fragmented that it cannot fulfill this requirement of serving as common ground and anchor of attachment. If these physical places embody ideals of neighborhood engagement (such as the amenity-based neighborhood-oriented slow streets suggested herein), hopefully the creation of such thoughtful physical environments will inspire, or at least facilitate over time, a feedback loop that actually forms social bonds though mutual sharing of valued places. But are these social bonds ("community") necessary for feelings of comfort, security, and identification? This research suggests that such social constructions are not necessarily prerequisites for sustaining a secure-feeling neighborhood; rather, the physical construction of a moderating neighborhood structure of streets and spaces will suffice to engender these feelings on an individual level, such that individual households will be assured in living in a more connected fabric. Development of social bonds among neighbors would be an extra.

8.2 Limitations and recommenations for future research

Methodological limitations

This research faced a couple methodological limitations that, in the time available, were not feasible to rectify. The primary obstacle was the strict reliance in evaluating the impacts of the Chicago neighborhood traffic calming experiences on anecdotal feedback available through personal interviews and casual conversation. If the time permitted, it would have been prudent to conduct a formal, statistically valid random survey of resident attitudes (concerning fear of crime and quality of life issues) as well as travel and movement patterns. However, the informal candid conversations were certainly revealing. Additionally, the observations I was able to make were limited by the season and weather (March) and short duration of my stay (four days, including two weekend days). The City of Chicago Department of Transportation was also unwilling in the end to

share a key internal evaluation of the Community Security Infrastructure Program, which outlined the quantifiable effects of the street modifications on traffic and crime. However the elusive CDOT memo did not delve into resident attitudes anyway, which was of most relevance for this research.

On the San Juan end of the research, access to residents of gated developments was limited, mostly by distance and the impracticality of identifying and contacting "random" residents. As such, resident perceptions were limited to second hand accounts (newspaper articles, published research) and from the "supply" side of the development equation -- developers and planners.

Unanswered and new questions

In the course of this research and the formulation of the resulting design principles and other recommendations, a few questions have bubbled to the surface, potentially each warranting in-depth study on their own. These issues relate to San Juan and Tren Urbano specifically, as well as urban design more broadly.

This thesis suggests ways to use street design and manipulation of pedestrian and auto network configuration to influence people's sense of "home." But more research into the actual effects of traffic calming and street modification programs in this area are warranted. In Chicago and in other cities, how did the boundaries of the implemented street designs actually reflect residents' sense of what constituted their "neighborhood?" Did the street modifications, in their design scope and impact, change people's perceptions of what their "neighborhood" was, possibly based on the types of designs implemented? And more broadly, how do people come to mentally define the bounds of "their neighborhood?"

This conception of extending "neighborhood boundaries," sense of "home," and identification with a place, brings up other practical issues of implementation. How does a transit system extend its domain and physical presence into the surrounding areas, especially in a way that diverse populations can identify with? Of these techniques, what is the range of affordability and design sophistication versus impact?

One of the key issues facing city planning in Puerto Rico is the disdain, or at least sense of irrelevance, towards the function and act of planning, which extends not just to lack of enthusiasm or buy-in of making plans, but to enforcing plans, codes, and standards that exist. A study of the history of standards enforcement and enforcement of plans once made in San Juan would be valuable. An examination along these lines might focus on such issues as enforcement of parking and pedestrian realm standards, or a deep look at how the Junta lost design control of the pseudo-block master plan near Hato Rey.

While this thesis did not take the next step of combing through existing San Juan-area municipal subdivision and zoning regualations to see if they contain distinct inhibitions on connective, continuous, and pedestrian-scale development, the current conditions and trends warrant a detailed look at the history of street regula-

tion in San Juan and an analysis of ways in which existing regulations permit or facilitate such patterns to proliferate. Do current regulations actually require such fragmentation and insularity?

Along these same lines, how can the permitting and parcelization process in San Juan be reformed to facilitate smaller-scale, more incremental, and more contextual design?

In crafting and implementing appropriate development incentives, a good deal of research will be necessary to determine exactly what level of financial or procedural incentives are necessary, sufficient, but not excessive to trigger landowners to turn over existing uses or undertake new non-gated developments.

Returning again to the development of gated communities, this research did not have enough time or resources to look at how banking affect the form of development in Puerto Rico. This would include not just the financing of new developments, but the consumer side of obtaining mortgages or other financial assistance. Are non-gated developments "red-lined" in San Juan?

Finally, exactly where do the trade-offs lie in creating highly-connective and redundant networks, specifically auto networks? The need to augment the richness of the pedestrian network is clear, but simultaneously augmenting the auto network has positives and negatives, as touched on at length in this thesis. What is the scale and spacing of redundancy which moves motorized congestion from gridlock to more free and dispersed flows, while keeping neighborhoods free of through traffic? If a neighborhood is thought to be roughly a square of one-half mile per side, is it sufficient to have through auto streets only on the perimter? Is one-quarter mile spacing necessary?

8.3 Call to action

There is a general loss of faith among Sanjuaneros that neighborhood public space is able to deliver to residents the richness and nurturing quality they want, that the public realm can indeed be something positive and user-friendly. The noble and celebrated exceptions, such as the Paseo de Princessa promenade in Old San Juan, are seen as anomolies and not perceived as relevant to the greater residential situation. Old San Juan is perceived by most as a unique entity. Gated communities are one manifestation of Sanjuaneros' quest to turn the equation back around, to one where neighborhood public streets and public spaces, serve and support them. But in reality, the more popular gated communities become, the worse conditions deteriorate outside of them and the more it seems evident that the only way to get control, peace, and breathing room is to carve out a separate private domain.

This catch-22 cycle must be broken, and to a large degree many Sanjuaneros do not know that another reality is possible because good examples are so scant. To this end, a few high-quality demonstration developments that integrate the principles developed here, in combination with other principles of good pedestrian building

form will need to break the ice, and Tren Urbano should put its full weight behind using opportunities such as the Finca Rosso parcel to this end.

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