Neighborhood Perspectives on Suburbia:
An Exploration of Form, Identity and Meaning in the Contemporary Suburban Landscape

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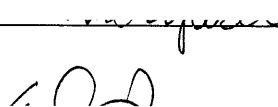
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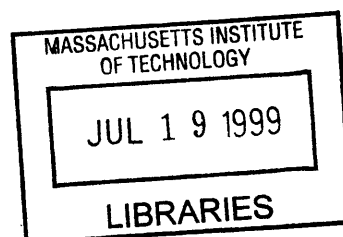Margaret P. Super 1999, All Rights Reserved

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TABLE OF CONTENTS

Chapter Five
Spatial Structure, Perception and Behavior in Lexington and Burlington

Chapter Six

Appendix A
Demographic and Socio-Economic Characteristics

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

Appendix G

LIST OF FIGURES, TABLES, & ILLUSTRATIONS

ACKNOWLEDGEMENTS

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ABSTRACT

Urban designers, planners and social commentators have argued that the contemporary suburban landscape of isolated subdivisions, office parks, and malls is devoid of identity and meaning. Critics protest the environmental impact of suburban development patterns and the increasing fragmentation of communities; yet Americans continue to locate in the suburbs in increasing numbers. Designers have responded to the problems of suburban sprawl with plans for new self-contained towns, while few proposals have been made for retrofitting existing suburbs.

This thesis explores the relationship between spatial structure, perception, and behavior in the contemporary suburban landscape from a neighborhood perspective. Twenty-four interviews were conducted with residents of Lexington and Burlington, two suburban towns in eastern Massachusetts. These towns have similar histories and demographic characteristics but distinctly different patterns of development. Lexington has retained a semi-rural, residential character, while Burlington has developed more of its land and encouraged commercial and industrial uses. In each of the two towns, two contrasting neighborhoods were selected for study. Each of these four neighborhoods represents a different type of development, based on its street system, density, lot sizes, access to open space, and proximity to shops and services.

In each of the four neighborhoods, six interviews were conducted using questionnaires, maps and photographs. The interview data from these four neighborhoods, combined with an analysis of existing spatial patterns, suggest that five inter-related themes are important in suburban town and neighborhood design. These themes are i) integrated road networks, ii) visible and accessible open spaces, iii) social town centers, iv) walkable neighborhoods, and v) active front yards. Based on these themes, a set of related principles is proposed for interventions to improve the existing suburban environment.

Thesis Supervisor: Dennis Frenchman
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INTRODUCTION

Urban design theorists and practitioners have frequently condemned suburbia's sprawling development pattern, sense of placelessness, and isolation of functions into autonomous zones. Critics further denounce the high level of auto dependence and environmental degradation that are a common by-product of suburban development. Two distinct themes emerge from these critiques: the first is socio-cultural, centered on issues of community and equity; for example Kenneth Jackson, *Crabgrass Frontier* (1985); Mark Baldassare, *Trouble in Paradise: The Suburban Transformation of America* (1986), and Dolores Hayden, *Redesigning the American Dream: The Future of Housing, Work, and Family Life* (1984). The second theme is environmental, with an emphasis on the regional impact of suburban development patterns. These critiques include Ian McHarg, *Design with Nature* (1969) and Sim Van der Ryn, *Sustainable Communities: A New Design Synthesis for Cities, Suburbs and Towns* (1986). Planners and urban designers protest the increasing fragmentation of communities into isolated sub-divisions; yet Americans continue to locate in the suburbs in increasing numbers. In his 1994 book *The Suburbs*, Palen asserts that:

> "Suburbia is not only where most of us live, it is also where most of us shop, go out to eat, and catch a movie. It is also where most of us work. Overall, these changes have been accepted and even celebrated by suburbanites and lamented by architectural and social critics. Regardless, the suburban transformation is now clearly a social fact." (Palen, 1995, p. 223)

8

At the same time, there is growing sentiment among policy makers and the general public that suburban environments do not provide the quality of life that most people are seeking. Suburban growth has become an issue in national politics for the first time since the post-war building boom. According to Vice President Al Gore, "I've come to the conclusion that what we really are faced with here is a systematic change from a pattern of uncontrolled sprawl toward a brand new path that makes quality of life the goal of all our urban, suburban and farmland policies." (*New York Times*, Week in Review, November 15, 1998) The growing movement against sprawl is based on both socio-cultural and sustainability arguments; according to Larry Bohlen, co-chairman of the Sierra Club's national campaign to fight sprawl: "We're not trying to subvert the American dream- we're trying to get back to it. It's that 'Leave it to Beaver' town where all the kids walk to school." (*New York Times*, Week in Review, November 15, 1998)

While there is growing interest in reshaping current patterns of suburban development, few research studies have systematically investigated residents' experiences of the suburbs (for a sociological perspective on suburban communities, see Herbert Gans, *The Levittowners*, 1967). Critics often assume that suburbs do not have the "sense of place" associated with the dense urban fabric of older cities, and that suburban environments do not foster a sense of community. These assertions are often based on aesthetic or formal analyses of the suburban landscape rather than evidence of residents' perceptions or patterns of behavior. As an indicator of environmental quality, perception is undoubtedly difficult to measure. At the same time, however, a better

understanding of the relationship between spatial structure, perception and behavior can yield important lessons for the design of suburban neighborhoods and towns.

The spatial structure of the suburban environment incorporates both large and small-scale patterns in the landscape, ranging from road and open space networks to the placement of houses on individual lots. These patterns directly influence residents' perceptions of their environment, which in turn influence social behavior. Residents' behavior is linked to spatial structure through the actions and decisions that shape the physical landscape. This chain of influence is illustrated in the following diagram:
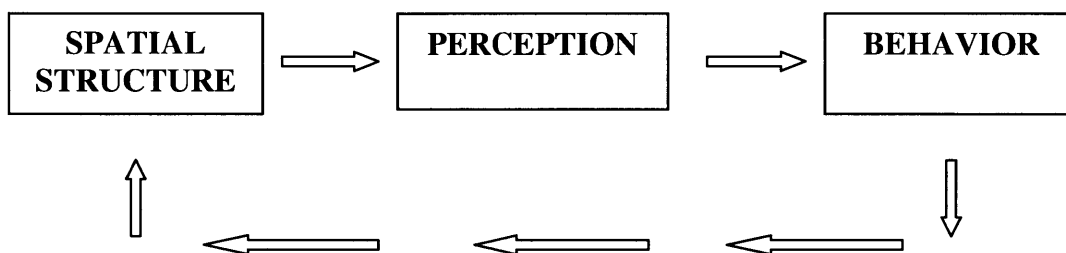
This thesis will investigate the relationship between spatial structure, perception, and behavior from a 'neighborhood perspective,' based on twenty-four interviews with residents of Lexington and Burlington, two suburban towns in Massachusetts. Both towns are located approximately twenty-five miles northeast of Boston on Route 128, and they share a common border (see Figure 1). Both Lexington and Burlington were rural farming communities from the late eighteenth century until the mid-twentieth century, when they experienced rapid growth as commuter suburbs. Currently, Lexington and Burlington have similar demographic and socio-economic profiles. According to the 1990 census, Lexington's population was 28,974, while Burlington's was 23,302. Both

towns are largely White, with less than 8 percent minority residents, while median

household income ranges from $55,952 in Burlington to $67,389 in Lexington.
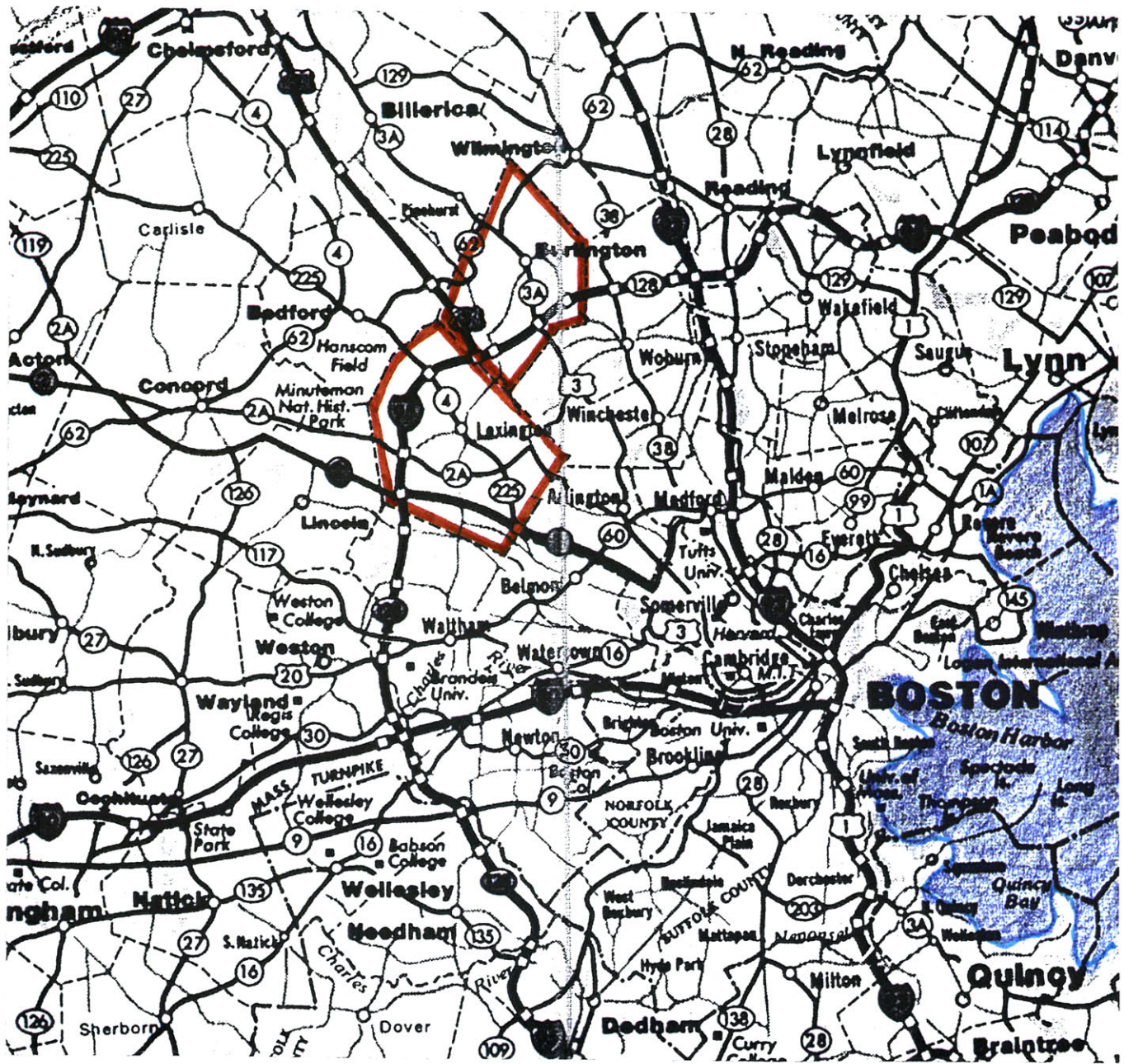
FIGURE 1
LOCATION OF TOWNS

Approximately eighty percent of housing units in both towns are single-family, with the same proportion owner-occupied (see Appendix A).

Despite their similar history and demography, Lexington and Burlington have substantially different patterns of land use and residential development. While Lexington has maintained a more rural appearance through the preservation of large tracts of open land, Burlington has chosen to develop more of its open space (see Appendix B). As of 1980, Lexington had retained 48 percent of its land area as open space, while Burlington had retained only 39 percent (Metropolitan Area Planning Council Municipal Profiles, 1986). Lexington's reserves of open space and parkland are located in close proximity to major roads, further reinforcing the town's rural appearance; in contrast, Burlington's open spaces are more isolated and less visible from main roads (see Figures 2.1 and 2.2). Lexington's open spaces are also more accessible than those in Burlington due to their proximity to main roads.

In recent years, Burlington has encouraged industrial and commercial development while Lexington has remained almost exclusively residential. Fully twelve percent of Burlington's land was dedicated to industrial and commercial uses as of 1980, compared to only three percent in Lexington (Metropolitan Area Planning Council Municipal Profiles, 1986). In Burlington, these uses include the Mall and New England Executive Park, located adjacent to Interstate 95 on the southern edge of town. This difference in industrial and commercial land use is reflected in the towns' tax bases; in 1997, thirty-five percent of the total value of taxable property in Burlington derived from industrial and commercial uses, compared to only eleven percent in Lexington (Massachusetts Municipal Profiles, 1996-1997). These two towns therefore provide an
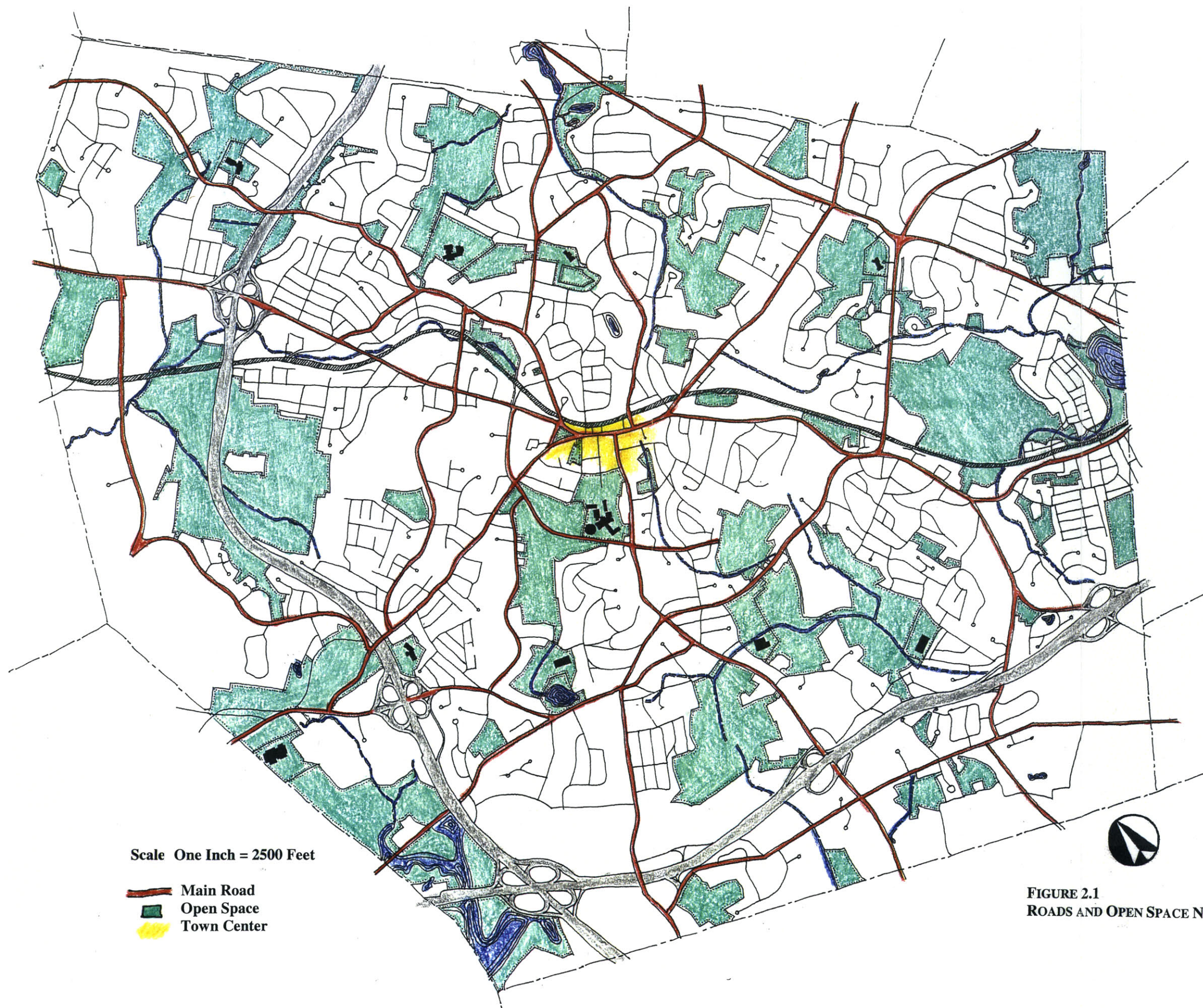
Scale One Inch = 2500 Feet

Main Road
Open Space
Town Center

FIGURE 2.1
ROADS AND OPEN SPACE NETWORKS, LEXINGTON
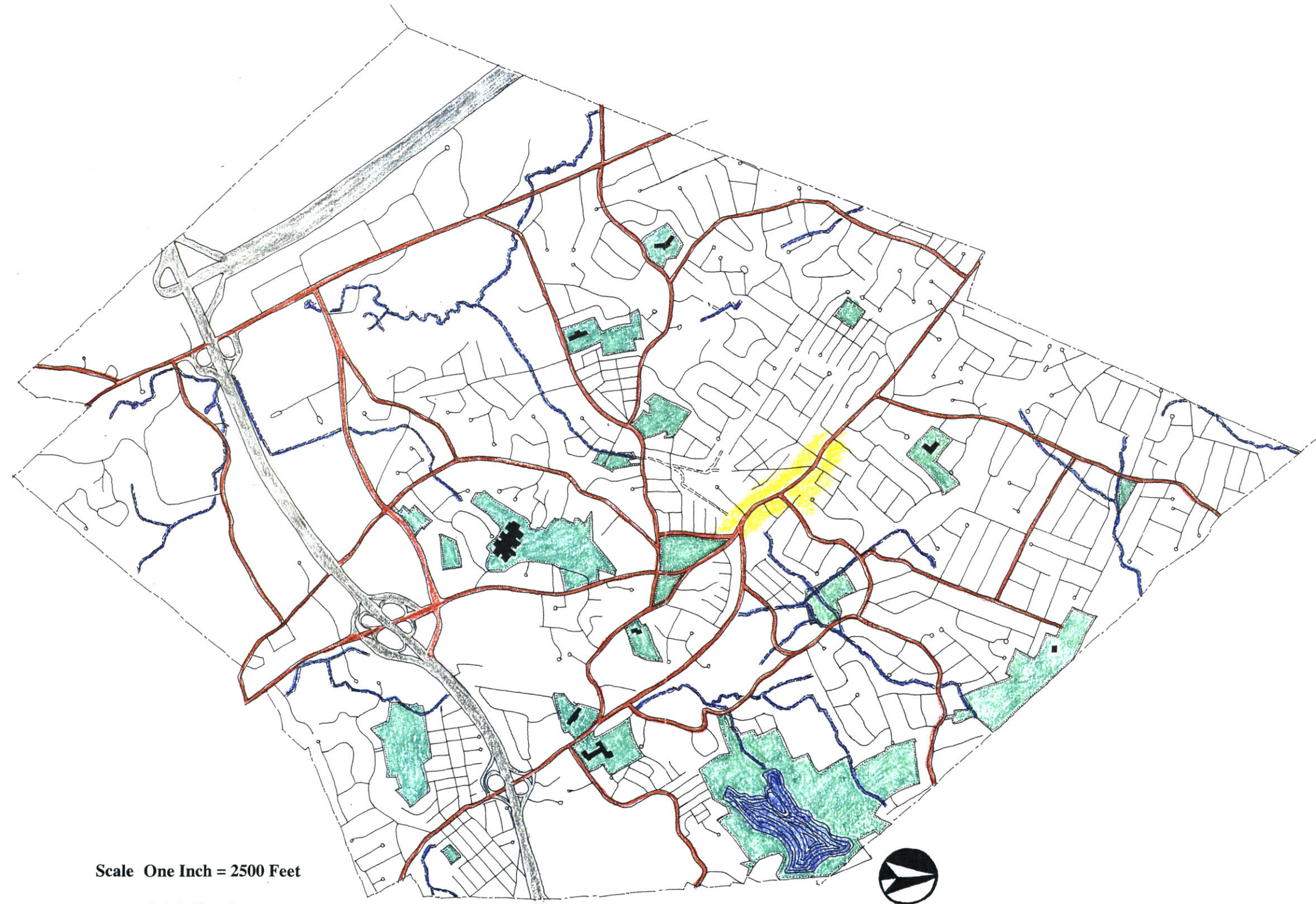
Scale One Inch = 2500 Feet

━━━ **Main Road**
▨ **Open Space**
▨ **Town Center**

FIGURE 2.2
ROADS AND OPEN SPACE NETWORKS, BURLINGTON

interesting contrast at many levels, from their land use patterns to networks of roads and open space to commercial cores.

In both Lexington and Burlington I selected two contrasting neighborhoods for study and conducted six interviews in each neighborhood. In Lexington, I interviewed residents of the Oak Street neighborhood and Bryant Road neighborhood (see Figure 3.1 for neighborhood locations). In Burlington I interviewed residents of the Great Pine Road neighborhood and Spruce Hill Road neighborhood (see Figure 3.2 for neighborhood locations). These four neighborhoods represent different types of development, ranging from 'integrated' to 'isolated.' The more integrated neighborhoods have characteristics usually associated with older towns, including well-connected street systems, higher densities, smaller lots, access to parks or playgrounds, and close proximity to shops and services. The more isolated neighborhoods have fewer connecting streets, lower densities, larger lots, little or no access to public open space, and no shops or services nearby. Of the four neighborhoods, Oak Street in Lexington is the most integrated, while Spruce Hill Road in Burlington is the most isolated; the other two fall between these extremes (see Table 1).

The interview data from these four neighborhoods, combined with an analysis of spatial patterns, suggest that five inter-related themes are important in suburban town and neighborhood design. These themes are i) integrated road networks, ii) visible and accessible open spaces, iii) social town centers, iv) walkable neighborhoods, and v) active front yards.
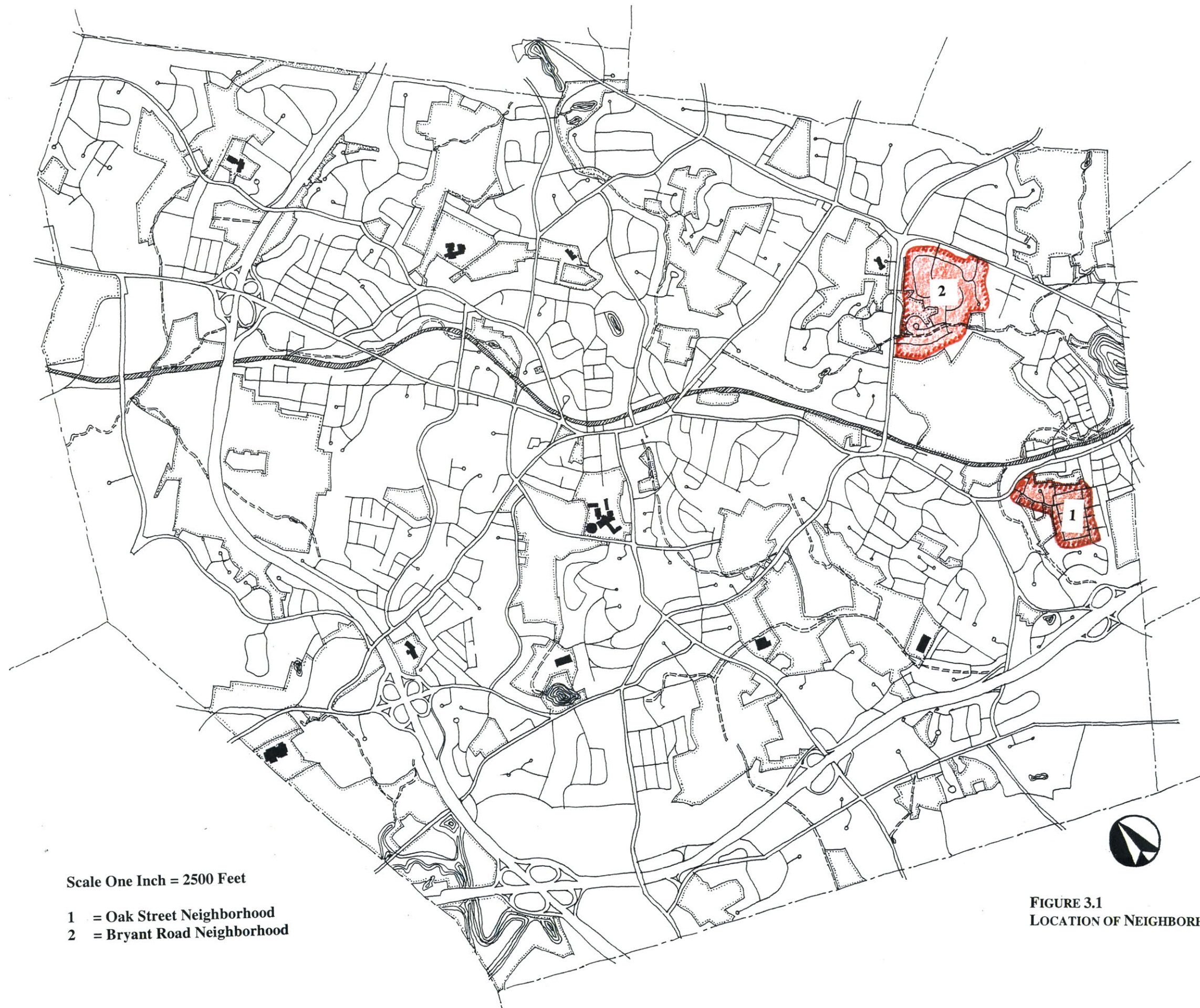
Scale One Inch = 2500 Feet

1 = Oak Street Neighborhood
2 = Bryant Road Neighborhood
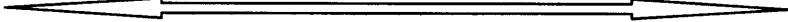
FIGURE 3.1
LOCATION OF NEIGHBORHOODS IN LEXINGTON

Scale One Inch = 2500 Feet

1 = Great Pine Road Neighborhood
2 = Spruce Hill Road Neighborhood

FIGURE 3.2
LOCATION OF NEIGHBORHOODS IN BURLINGTON

	INTEGRATED	Neighborhood Type		ISOLA
IBORHOOD	*Oak Street*	*Great Pine Road*	*Bryant Road*	*Spruce Hill Ro*
	Lexington	*Burlington*	*Lexington*	*Burlington*
ER OF HOUSES JDY AREA	170	130	100	52
'T PATTERN	Grid	Discontinuous grid	Loop and cul-de-sac	Cul-de-sac
AL LOT SIZES	1/8 - 1/4 acre	1/4 – 3/4 acre	3/4 – 1.5 acres	3/4 - 1 acre
C OPEN SPACE	36 acres (total)	1/2 acre	60 acres	22 acres
	West Farm	Pathwoods Tot Lot	Great Meadow	High school fie
	Sutherland Woods			
	Bruce Rd. Extension			
& SERVICES	Mass. Ave.	Cambridge Street	None	None

E 1: NEIGHBORHOOD CHARACTERISTICS

BACKGROUND

The Role of Image and Perception in Urban Design

Research on image and perception can provide important clues about the structure, organization, and meaning of the physical environment. In his classic 1960 book *The Image of the City*, Kevin Lynch argued that environments with a clear and commonly perceived structure have significant social value. Based on his study of three American cities, Lynch concluded that

> "A vivid and integrated physical setting, capable of producing a sharp image, plays an important social role... It can furnish the raw material for the symbols and collective memories of group communication... A good environmental image gives its possessor an important sense of emotional security." (Lynch, *The Image of the City*, 1960, p. 4)

Imageable environments are easily comprehended, with rich layers of symbolic and social meaning. This suggests that certain kinds of development patterns and spatial structures may be more desirable based on their "imageability."

The majority of research studies on image and perception in urban design have been carried out in densely populated urban environments. Behavioral studies on the social use of public space have also favored urban settings (see William H. Whyte, *The Social Use of Small Urban Spaces*, 1980, Jan Gehl, *Life Between Buildings: Using Public Space*, 1987). In contrast, very little research has been conducted on the relationship between spatial form and perception in suburban environments.

Nearly forty years after its first publication, Kevin Lynch's book *The Image of the City* is still regarded as the most influential study of environmental perception in urban design. Based on research in Boston, Jersey City, and Los Angeles, Lynch concluded

that there was a clear and consistent and relationship between the form and structure of

the physical environment and residents' cognitive image of the city. Lynch found that

residents' images were structured around five basic elements: paths, edges, nodes,

districts, and landmarks. In combination, these five elements generated a collective 'city

image.'

Lynch concluded that Boston was the most 'imageable' of the three cities, based

on the number of elements it possessed and the consistency with which these elements

were identified by residents. Jersey City, with its chaotic and undifferentiated visual

landscape, had a weaker image; similarly Los Angeles, with its decentralized pattern, had

a less consistent overall image. Lynch argued that imageable environments such as

Boston contributed to creating a strong sense of identity and place:

> "...There are fundamental functions of which the city forms may be
> expressive: circulation, major land-uses, key focal points. The common
> hopes and pleasures, the sense of community may be made flesh. Above
> all, if the environment is visibly organized and sharply identified, then the
> citizen can inform it with his own meanings and connections. Then it will
> become a true *place*, remarkable and unmistakable." (Lynch, 1960, p. 92)

In each of the three cities in Lynch's study, public open spaces were consistently

found to be the most imageable elements of the landscape. In Boston, "The Boston

Common...is for many subjects the core image of the city," while in Jersey City "West

Side Park, the only large park in the city, (is) cited again and again as a distinctive region,

a relief in the general texture." In Los Angeles, "Pershing Square is consistently the

strongest element of all: an exotically landscaped open space in the heart of the

downtown..." The uniformity of these responses suggests that public open spaces,

especially parks and commons, are among the most important symbolic elements of the

urban landscape. More than any other single feature, they defined a city's image and identity.

In contemporary practice, Anton Nelessen is one of the few designers to use image and perception studies as the basis for planning new communities. Nelessen uses the Visual Preference Survey (VPS) to determine what kinds of development are most and least attractive to residents, by asking them to rate a series of photographs of their town and other places. The Visual Preference Survey is often followed by questionnaires and model-building exercises to further refine the community's desired development pattern. Nelessen's technique begins to unravel the complex issue of residents' perceptions and preferences, and to relate those preferences to specific forms and typologies. In his 1994 book *Visions for a New American Dream*, Nelessen proposes a model ordinance and codes for community design based on ten principles: human scale, ecological responsibility, pedestrianism, open spaces, core, streetscapes, variation, mixed and multiple uses, design vocabulary, and maintenance.

Nelessen and his team of surveyors found that certain images received highly consistent ratings in approximately 50,000 Visual Preference Surveys conducted in cities and towns across the US. He described the results of these surveys as follows:

> "A clear visual and spatial preference has emerged from these surveys, what I call the American vision survey, or the vision of a new American dream. Although every region has an individual opinion on its positive vernacular and a solidarity of opinion regarding the negative images, overall the survey results have been fairly unanimous. In general, I have found that most people reject the current pattern and spatial characteristics of sprawl in favor of more traditional or neo-traditional communities, the New American Dream." (Nelessen, *Visions for a New American Dream*, 1994, p. 88-89)

Nelessen found that images of arterial roads, strip commercial development, and 'cookie-cutter' subdivisions received consistently negative ratings, while natural areas, mixed-use commercial development, traditional streets, and town greens received consistently positive ratings.

Unfortunately, Nelessen does not probe beyond the numerical ratings to find out why residents assigned positive or negative values to each image. For example, his photograph of 'single family units set far from the road' (which received negative ratings) shows an open prairie, devoid of trees or landscaping, with a double-yellow line road in the foreground. Had Nelessen shown these houses surrounded by trees, with a typical residential road in the foreground, the ratings would likely have been far more positive. Similarly, his aerial photograph of a 'cookie-cutter' development shows brand-new houses with virtually no trees or landscaping. The contrasting aerial photograph of a 'hamlet,' which received high ratings, has a much more wooded appearance. Thus it is impossible to know whether residents ratings were a response to the development pattern, as Nelessen asserts, or simply to the presence of more trees.

Dennis Frenchman has also used image and perception studies to develop principles for neighborhood planning and design. In an unpublished paper called "Learning from Foster Street: The Study of a Cambridge Neighborhood" (1973) Frenchman documents residents' perceptions of neighborhood identity and patterns of socialization. He employed two techniques for determining residents' image of the area. First, he asked residents to identify the point in each direction at which they felt they were leaving their neighborhood. Next he showed a series of photographs, and asked residents to select those that best represented their neighborhood. Frenchman concluded

23

that the Foster Street neighborhood was a highly imageable environment, evidenced by the fact that residents consistently chose the same photographs and drew nearly the same boundary lines. In the cul-de-sacs and grouped houses, he found that residents experienced close social ties with their surrounding neighbors. Residents of through streets, in contrast, did not have close relationships with their immediate neighbors. The methodology used for this thesis is primarily derived from the techniques used in Frenchman's research.

CHAPTER ONE
Origins and Evolution of Suburbia

The suburban landscape has historically taken a variety of forms, from the streetcar suburbs of the late nineteenth century to the sprawling metropolitan regions of the late twentieth century. This evolution can be traced through changes in transportation, technology, and government investment, as well as larger cultural themes of independence, mobility and freedom. The following chapter will provide an historical overview of suburban development in America, with special attention to the forces that have shaped the spatial structure of neighborhoods and towns.

America has witnessed a dramatic restructuring of metropolitan form and population distribution over the last one hundred years. From the rapid urbanization of the mid-nineteenth century to the suburbanization of the late twentieth century, America has become a predominantly suburban nation. This shift in demographics has its origins in the late nineteenth century, with the introduction of electric streetcar lines in most major US cities. By 1920 fifteen percent of the US population lived in the suburbs, and by the end of the second World War the suburban share had risen to twenty percent. (Palen, 1995, p. 2) The most rapid shift in population occurred after the war, as returning veterans and their families moved to the suburbs with the support of federal programs such as the FHA mortgage. The construction of the interstate highway system in the 1950s further facilitated the process of suburbanization, allowing commuters to live farther from the urban core. Suburban growth accelerated during the 1960s, when the suburban population increased by 33 percent, compared to only one percent in central

cities. (Baldassare, *Trouble in Paradise*, 1986, p. 6) By 1970, the suburbs held 37.1

percent of the American population, compared to only 31.5 percent in central cities and

31.4 percent in rural areas. In 1973, suburban employment nation-wide exceeded urban

employment for the first time in history. (Muller, *Contemporary Suburban America*,

1981, p. 4) Since the suburban ascendancy of the 1950s and 1960s, the suburbs have

continued to house an increasing proportion of the US population. According to the 1990

census, fully 46 percent of Americans reside in suburbs, compared to only 31 percent in

cities and 22 percent in rural areas. (Palen, 1995, p. 2)

Suburban Utopias, 1850 - 1945

In the late eighteenth century, the French traveler Crevecouer documented many

of the cultural traits that later contributed to America's embrace of suburban

development: "Foremost... was a love of newness. Second was the overwhelming desire

to be near to nature. Freedom to move was essential if goals were to be realized, and

individualism was basic to the self-made man's pursuit of his goals..." (Muller, 1981, p.

20-21) These traits, combined with the desire to escape from overcrowded industrial

cities, made the suburb an obvious choice for many Americans by the late nineteenth

century. The development of the early American suburb also reflected the Jeffersonian

ideal of the rural homestead, which suggested that true happiness could only be achieved

by leaving the city with all of its social and environmental ills.

The first American suburbs shared a number of common features with early

British suburbs. Both American and British suburban development were influenced by

the English picturesque tradition, and later by the Garden Cities movement. Kenneth

Jackson and Robert Fishman have both discussed the pivotal role played by Catharine

Beecher and Andrew Jackson Downing in translating English traditions of domesticity

and design for an American audience. Beecher's *Treatise on Domestic Economy*,

published in 1841, proclaimed the sanctity of the private home and the role of women in

uplifting "degraded man." (Fishman, 1987, p. 123) The primacy of the family home in

Beecher's writing was echoed by Downing, whose 1842 book *Cottage Residences*

eulogized the picturesque ideal of a private villa in a verdant landscape. Downing

described the picturesque cottage as a place "whose humble roof, whose shady porch,

whose verdant lawn and smiling flowers all breathe forth to us, in true earnest tones, a

domestic feeling that at once purifies the heart and binds us closer to our fellow beings."

(Downing in Fishman, 1987, p. 123) Downing's ideal American house was "An Irregular

Cottage in the Old English Style" set in a park-like environment. This model reflected a

deep nostalgia for the past, as well as the desire for open space that defined the

picturesque movement. Downing's 1850 plan for a "country village" demonstrated these

ideals, showing detached houses on tree-lined streets surrounding a public park.

(Fishman, 1987, p. 124) According to Downing, public parks were the "indispensable

desiderata" of the picturesque village; as he described, there should always be "a large

open space, common, or park, situated in the middle of this village- not less than twenty

acres, and better if fifty or more in extant. This should be well-planted with groups of

trees and kept as a lawn... This park would be the nucleus or *heart of the village*, and it

would give it an essentially rural character." (Downing in Girling, *Yard, Street, Park: the*

Design of Suburban Open Space, 1994, p. 49)

In the spirit of Downing's country village, Llewellyn S. Haskell and Alexander Jackson Davis developed the plan for Llewellyn Park, New Jersey, in 1857. The plan comprised a group of villas set along curving roads surrounding a fifty-acre park called the Ramble. Situated twelve miles outside New York City, Llewellyn Park was advertised as "Country Homes for City People." (Girling, 1994, p. 49) The lots ranged in size from 3 to 10 acres, providing substantial private open space; the plan also included 60 acres of public parks. The landscape was carefully designed to resemble a continuous large estate, with a prohibition against fences dividing the properties. Kenneth Jackson has called Llewellyn Park "the world's first picturesque suburb"; though as Fishman has pointed out, the plan followed thirty years of picturesque town building in England. (Fishman, 1987, p. 125)

Frederick Law Olmsted, the landscape architect responsible for the design of Central Park in New York and the Emerald Necklace in Boston, was one of the most influential designers of the early suburban landscape in America. Olmsted believed that suburban development offered a solution to urban overcrowding, and favored

> "the ruralizing of all our urban population and the urbanizing of our rustic population. For I regard it as doubtful which of the two slants toward savage condition is most to be deplored and struggled with, that which we see in the dense poor quarters of our great cities and manufacturing firms or that which is impending over the scattered agricultural population of more especially the sterile parts of the great West." (Olmsted in Fishman, 1987, p. 129)

According to Olmsted, the advantages of both town and country could be effectively merged in the suburb. In a letter to Edward Everett Hale, Olmstead stated that the suburb would provide "elbow room about a house without going into the country, without sacrifice of butchers, bakers, and theaters." (Fishman, 1987, p. 128)

The plan for Riverside, Illinois, developed by Olmsted in 1869, is a classic example of the picturesque suburb. The provision of extensive public open space and recreational grounds were defining features of the plan. More than 700 of the 1600 acres were designated for common use, including village greens, playgrounds, croquet and ball grounds, and
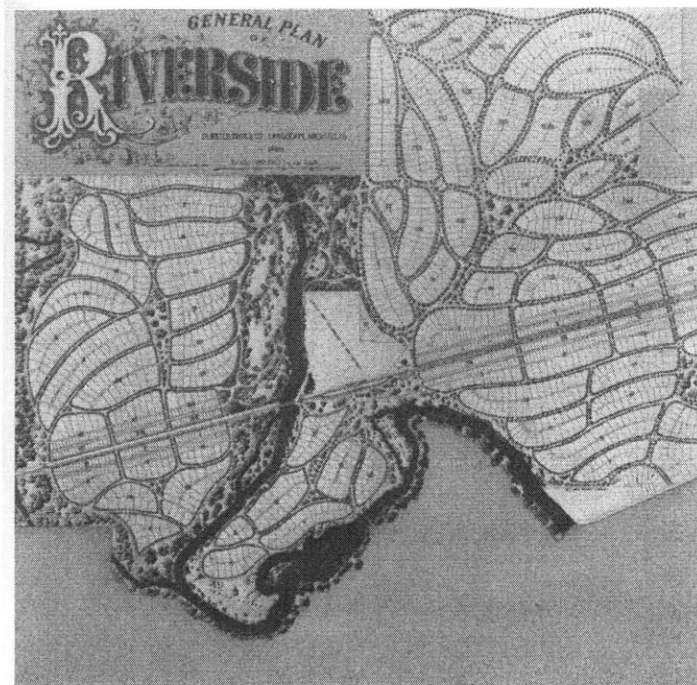
Plan of Riverside, Illinois
Olmsted, Vaux & Co., 1869
Source: Girling, 1994

sheltered resting spots along the road, as well as a public lake with boating and ice skating. In addition to these amenities, Olmsted proposed a landscaped pleasure drive connecting Riverside with the outskirts of Chicago. In order to preserve the "rural effect and domestic seclusion" of the town, Olmsted mandated a minimum 30-foot setback with no fences allowed. Typical lots in Riverside were 100 feet by 200 feet, or one-half acre, providing sufficient space for a barn, stable, and gardens. Though the pleasure drive and some of the open spaces were not constructed due to financial difficulties, the Riverside plan still stands as one of the most generous visions for public open space in the history of suburban planning.

Olmsted's vision for neighborhood planning is further illuminated in his 1868

plan for Shady Hill in Cambridge, Massachusetts. The plan, developed for the estate of

Charles Eliot Norton, envisioned a new community with close links to the surrounding

urban area. Olmsted believed his plan offered "the more agreeable rural characteristics of

a New England Village", as well as "all the street conveniences of a crowded town."

Olmsted proposed "a small public green or lawn suitable to be used as a playground by

children of the Neighborhood," and suggested that closed streets and walks should be

opened up to create linkages to adjacent properties. (Girling, 1994, p. 50) The estate was

subdivided following Olmsted's plan, and eventually completed in 1887.

In 1898, Ebenezer Howard proposed a new model for suburban town planning in

his book *Garden Cities of Tomorrow*. In advocating for Garden Cities, Howard stated

that:

> "There are in reality not only, as is so often assumed, two alternatives,
> town life and country life- but a third alternative, in which all the
> advantages of the most energetic and active town life, with all the beauty
> and delight of the country, may be secured in perfect combination; and the
> certainty of being able to live this life will be the magnet which will
> produce the effect for which we are all striving- the spontaneous
> movement of the people from our crowded cities to the bosom of our
> kindly mother earth, at once the source of life, of happiness, of wealth, of
> power." (Howard in LeGates ed., *The City Reader*, 1996, p. 347)

The proposed population for the Garden City was 32,000, of which 30,000 would reside

in the central city and 2,000 in the surrounding agricultural area. The entire region would

comprise an area of 6,000 acres, with the city occupying 1,000 acres in the center. The

Garden City itself was a series of concentric rings anchored by a 145-acre central park.

The park was to be surrounded with civic and institutional buildings, including a town

hall, concert hall, museum, and hospital, as well as a glass shopping arcade. Six large

Garden City Diagram
Ebenezer Howard, 1902
Source: Girling, 1994

boulevards traversed the city from center to periphery, dividing it into six equal wards.

Halfway between the center and periphery was a Grand Avenue, 420 feet wide,

encircling the interior portion of the city. The Grand Avenue provided an additional 115

acres of parkland, with four acres in each ward set aside for public schools, playgrounds,

and churches. Howard emphasized that the plan provided public amenities within a short

walking distance of all residences; the Grand Avenue was "within 240 yards of the

furthest removed inhabitant." (Howard in LeGates ed., 1996, p. 351) A network of

railway lines was proposed to connect the Garden City with other towns in the region.

In prescribing standards for residential design, Howard stated that houses in the

Garden City should be "excellently built…, each standing in its own ample grounds."

(Howard in LeGates ed., 1996, p. 351) Like Downing and Olmsted, Howard emphasized the importance of the detached single-family home. It is interesting to note, however, that the average residential lot size in Howard's Garden City was 20 feet by 130 feet, approximately one-fourth the size of typical post-war suburban lots and one-eighth the size of lots in Riverside. Howard further specified that "the fullest measure of individual taste and preference is to be encouraged" in house design and site layout.

By the turn of the century, suburban growth was more than a utopian dream. New forms of transportation were facilitating the growth of residential areas at the urban fringe. According to Palen,

> "...by the mid-1840s it had become clear that in large east coast cities, there was strong passenger demand for local suburban rail travel... The result was a selective suburban migration of bankers, businessmen, and other affluent professionals who could afford the time and costs of commuting by rail. By 1850 half of Boston's 400 lawyers already were commuters. By the end of the decade, Philadelphia had some forty trains a day making the commuter shuttle between Philadelphia and its northwestern suburb of Germantown. What began serving a limited number of suburban passengers in the mid-1840s had become a suburban institution by the 1850s." (Palen, 1995, p. 28-29)

In his classic book *Streetcar Suburbs*, Sam Bass Warner, Jr. documents the impact of the horse-drawn car and later the electric trolley in transforming the city of Boston. From 1850 to 1900, Boston expanded from a predominantly pedestrian city with a radius of 2 miles to a metropolitan area with a radius of 10 miles. (Warner, *Streetcar Suburbs*, 1962, p. 35) This phenomenon was not unique to Boston, however. Major cities including New York, Los Angeles, and Chicago experienced similar changes, as the more affluent middle-class chose to move away from the city center. The tide of immigration at the turn of the century contributed to suburban growth, as white residents

left the city for more homogenous and less densely populated suburbs. In 1900, more than three-quarters of the population of New York, Boston, Cleveland and Chicago were first or second generation immigrants, while residents in the suburbs of these cities were overwhelmingly white. (Palen, 1995, p. 40)

Howard's utopian vision for Garden Cities was adopted and transformed in the 1920s in the United States through the Regional Plan Association of America, whose members included Lewis Mumford, Benton Mackaye, Clarence Stein, and Henry Wright. The RPAA sought to develop new models for town planning that were responsive to changes in technology, while providing safe and socially supportive environments. In 1925, Mumford summarized the technological advances that were transforming communities in America: the automobile, the telephone, and the widespread use of electricity. (Girling, 1994, p. 54)

The plan for Radburn, New Jersey in 1929 by Clarence Stein and Henry Wright was an attempt to merge the ideals of the Garden City with the

Plan of Radburn, New Jersey
Clarence Stein and Henry Wright, 1929
Source: Girling, 1994

conditions imposed by widespread use of the automobile. Radburn was explicitly

promoted as "A Town Planned for the Motor Age", with careful consideration of traffic

and vehicular access. In his 1957 book *Toward New Towns for America*, Stein described

the five key elements that shaped the plan for Radburn: "The Superblock; Specialized

Roads Planned and Built for One Use Instead of all Uses; Complete Separation of

Pedestrian and Automobile; Houses Turned Around; Park as Backbone." (Stein in

Girling, 1994, p. 60)

Radburn was originally designed to house a population of 25,000 to 30,000

people, distributed in superblocks of 35 to 50 acres each. The superblocks were bounded

on all four sides by arterial roads carrying a high volume of through traffic, while the

interior roads carried destination traffic within the neighborhood. The plan for Radburn

was largely shaped by Clarence Perry's proposal for a "neighborhood unit," which called

for self-sufficient residential areas of 4,000 to 7,000 people, each with their own schools

and shopping centers. The size of the neighborhood unit was determined according to the

population required to support an elementary school, which Perry considered to be the

core of the community.

The principal unit of development in Radburn was the cul-de-sac street, which

contained fifteen to twenty houses. Cul-de-sacs were designed to reduce the risk of

traffic accidents and promote neighborhood sociability. According to Stein, the

automobile made the urban grid "as obsolete as a fortified town wall." (Girling, 1994, p.

62) Each house on the cul-de-sac had two frontages, with the kitchen facing towards the

street and the living room facing towards a pedestrian path and park. The park-facing

side was conceived as the public facade, while private activities such as hanging the

laundry took place on the cul-de-sac side. The elimination of through traffic on residential streets was intended to create safe play spaces for children, while the public parks and pedestrian paths were designed to promote social interaction.

The plan for Broadacre City by Frank Lloyd Wright, first presented in his 1932 book *The Disappearing City*, offered a radically different response to suburban planning in the automobile age. Like Mumford, Wright attempted to respond to technological
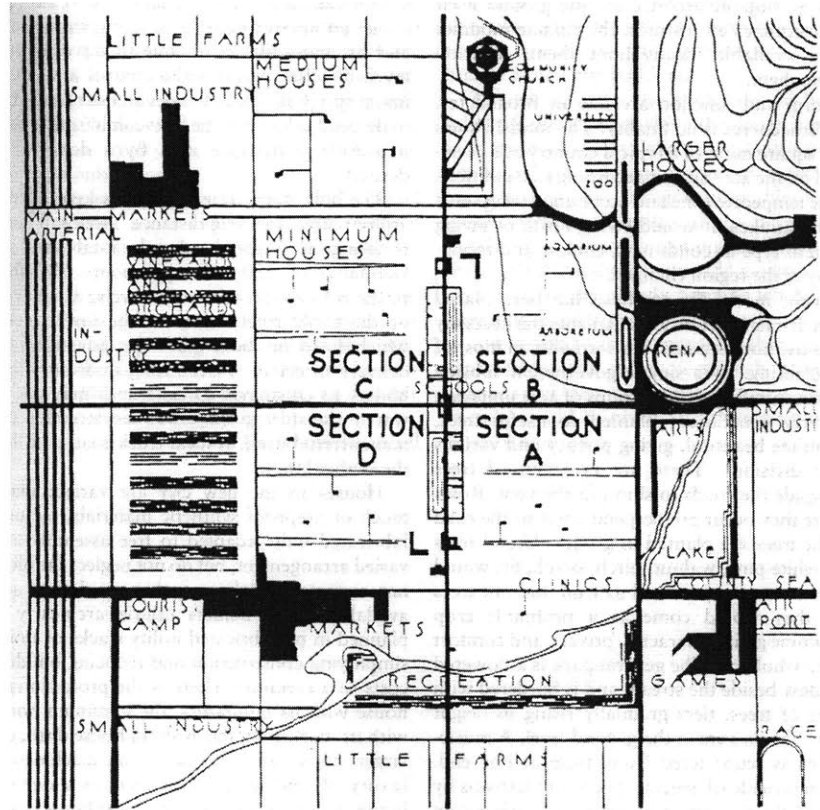
Diagram of Broadacre City
Frank Lloyd Wright, 1935
Source: LeGates ed., 1996

changes in transportation, communications, and industry. Wright's ideology, however, differed profoundly from the social agenda of the RPAA. The plan for Broadacre City was based on an ethic of individualism and personal freedom, echoing the Jeffersonian ideal of the rural homestead. As Wright described,

> "All common interests take place in a simple coordination wherein all are employed: *little* farms, *little* homes for industry, *little* factories, *little* schools, a *little* university going to the people mostly by way of their interest in the ground, *little* laboratories on their own ground for professional men. And the farm itself, notwithstanding its animals,

becomes the most attractive unit of the city." (Wright in LeGates ed.,
1996, p. 379)

According to Wright, the technology of "Edison and Ford would resurrect Jefferson,"

giving citizens greater mobility and freedom. (Girling, 1994, p. 71)

Broadacre City differed from earlier suburban plans in terms of its population

size, land allocation, and transportation systems. The planned population for Broadacre

City was 1,400 families, with each occupying a minimum one-acre lot. Wright's plan

assumed universal automobile ownership, and did not include any provision for public

transportation. As Wright described, "Every Broadacre citizen has his own car.

Multiple-lane highways make travel safe and enjoyable..." Wright's plan was especially

prescient in its prediction of multi-car households. As Wright described, "There is the

professional's house with its laboratory, the minimum house with its workshop, the

medium house ditto, the larger house and the house of machine-age luxury. We might

speak of them as a one-car house, a two-car house, a three-car house, and a five-car

house." (Wright in LeGates ed., 1996, p. 380) Of all the early plans for suburbia,

Wright's plan for Broadacre City has proven to be the most accurate prediction of the

contemporary suburban landscape, with its low-density development pattern and

complete reliance on the automobile.

The end of the Second World War ushered in the most rapid period of

suburbanization in American history. New economic incentives, combined with greater

mobility and standardization of housing production, generated a large-scale movement to

the suburbs by working and middle-class families. At the close of the war, returning

veterans and their families were encouraged to live in the suburbs by a series of national

policies that made suburban living affordable and accessible for working families.

Prior to World War Two, mortgages were usually only granted for a five-year

period, with a large payment due at the end. Following the war, the Veterans

Administration began offering loan guarantees to veterans at low interest rates, with no

money down and twenty-five or thirty-year payment schedules. At the same time, the

Federal Housing Administration liberalized its lending policies for non-veterans. New

homeowners were encouraged to live in the suburbs by the low cost of a down payment,

especially compared to houses in the city. Suburban developers also streamlined the

purchase process for a new home, allowing families to complete all of the paperwork in a

single afternoon. Furthermore, speculation houses in the suburbs were pre-approved by

the FHA, thus expediting the sale of entire developments. This method of pre-approval

made suburban homes distinctly more attractive than houses in the city, which had to be

individually inspected before a mortgage was granted, a process that often took weeks or

months. Even without FHA involvement, conventional mortgages were easier to obtain

in suburban locations. Lastly, taxes were almost always lower in the suburbs, often

because developers did not provide the "extras" found in urban neighborhoods such as

water, sewers, parks, sidewalks, curbs, and street lights. (Palen, 1995, p. 59-61) These economic incentives, combined with changes in transportation and industry, generated the suburban housing boom that characterized the post-war period.

Rapid suburbanization was greatly facilitated by the development of the interstate highway system. Federal funding for highway construction first began in 1921 with the establishment of the Federal Road Act, which created the Bureau of Public Roads to plan highways for all cities of 50,000 or more. According to this legislation, the federal government paid half the cost of all highways designated as "primary roads." These new highways quickly replaced the streetcar as the primary system for regional transit, and by the early 1930s more than half of all commuters in most American cities were driving to work. (Palen, 1995, p. 45)

The Interstate Highway Act of 1956 further encouraged automobile commuting. The Act created a new trust fund for interstate highway construction, through which the federal government paid 90 percent of local construction costs. Of the 42,000 miles in the national highway system, more than 5,000 miles of new interstate highway were planned for metropolitan areas. The development of the interstate highway system brought new land within commuting distance of the city; as Palen has described, "The freeways meant that distance from the city was now measured in time rather than mileage. Developers often put up billboards advertising their tract development as being 'only 25 minutes from here.'" (Palen, 1995, p. 60)

The physical landscape of post-war suburban America was largely shaped by private developers, under the influence of guidelines issued by the Federal Housing Administration. The architectural uniformity of post-war suburban developments, which

inspired the phrase "cookie-cutter suburbs," was to a large extent the result of standardized national guidelines and FHA requirements. Collectively, these standards generated the prototypical suburban subdivision plan, with its curved streets, large lots, and deep setbacks. At the same time, new zoning regulations designed to protect residential areas from incompatible uses contributed to the development of large tracts of land occupied exclusively by detached single-family homes. Commercial development was relegated to highway corridors and major interchanges, where large-scale retail flourished.

The FHA Minimum Property Standards, developed in the 1950s, were widely adopted by suburban developers eager to obtain approval for their plans with a minimum amount of paperwork and delay. These standards, detailed in such publications as *Planning Neighborhoods for Small Houses* and *Planning Profitable Neighborhoods*, promoted 'continuous curvilinear' or 'loop and cul-de-sac' streets. Gridiron plans, in contrast, were criticized as monotonous, expensive, and dangerous. Recommended lot sizes were from 50 to 60 feet wide by 100 to 120 feet deep, while blocks were to be 600 to 1300 feet long by 200 to 300 feet wide.

In addition to dimensional and street standards, the FHA endorsed the development of 'distinct' neighborhoods offering a variety of community facilities and services. According to one FHA bulletin,

> "The importance of distinctive neighborhood qualities lies not only in the
> initial appeal which is so vital a factor in marketing the development, nor
> in the increased security which derives from the safeguards created by
> careful planning, but also in the psychological reaction of the people who
> adopt the area for their home. Where a neighborhood can be identified
> and comprehended as such, the feeling of pride and responsibility which
> the owner has in his own parcel, tends to be extended to the neighborhood
> as a whole." (FHA Technical Bulletin No. 7, in Girling, 1994, p. 86)

To create distinct neighborhoods, the FHA recommended that suburban developments include local shopping, schools, churches and parks. At the same time, however, the FHA assumed that regional shopping centers, accessible by automobile, would serve the needs of many suburban residents. According
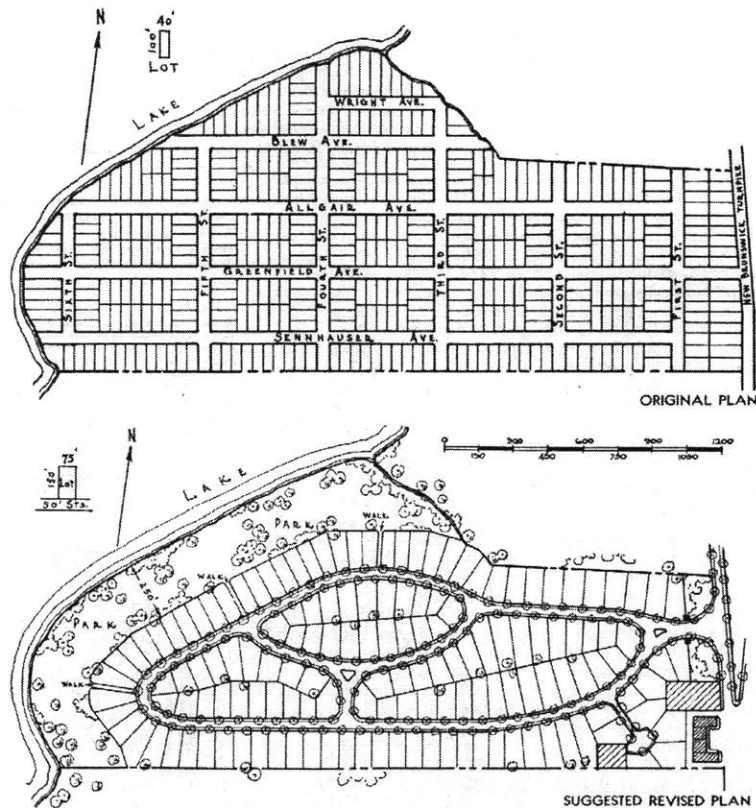
"Original Plan" (top) and "Suggested Revised Plan"
Land Planning Division of the US Federal Housing Administration, 1938
Source: Girling, 1994

to another FHA bulletin, "In neighborhoods planned for higher priced homes, where shopping is done by car or telephone or dependence placed on delivery services, it is possible to omit local shopping facilities and to rely on distant commercial centers." (FHA Technical Bulletin No. 5 in Girling, 1994, p. 87)

While the FHA consistently encouraged the development of parks and the retention of natural features, these were not promoted as essential elements of a community plan. As a result, developers often omitted parks and open space from their plans, considering them to be an expendable extra. As Girling has described, "The

concept of public open space as a community network was consistently overlooked (in the FHA plans). FHA-designed parks were most often isolated parcels or leftover corners... A park was a 'community asset,' whereas the argument for streets with cul-de-sacs and extra-long blocks was made in terms of 'cost savings and safety'." (Girling, 1994, p. 89)

Levittown, built by the Levitt brothers on Long Island, New York in the late 1940s, has become the archetypal example of post-war suburban development. At the time of its construction, Levittown was the largest private housing development in North America, with almost 17,500 single-family homes. The volume and pace of development at Levittown were made possible by new techniques for standardized production, including assembly-line construction of entire neighborhoods. As Palen describes,

> "Construction was broken down into a number of simple steps so it could be done by semi-skilled workers who would repeat the same process over and over. Homes were built on identical concrete slabs laid out on identical cookie-cutter 60-foot lots. All the cement foundations in a neighborhood would be laid out at the same time; and all the interiors would be finished simultaneously. Even tree planting was routinized.... Levitt claimed they were able to complete a house every fifteen minutes."
> (Palen, 1995, p. 64)

Mass production substantially reduced the cost of development, and allowed the Levitts to sell new homes at prices well below those in other suburban subdivisions. Young families flocked to Levittown, attracted by its low prices and convenient location. In a single day in 1949, nearly 1400 families signed purchase contracts for Levittown homes. (Palen, 1995, p. 66) Though Levittown has been severely criticized by architects, planners, and others for its architectural uniformity and "little boxes made of ticky tacky," it provided affordable homes for thousands of families, many of whom could not

afford to buy a house in the city. As Herbert Gans concluded in his landmark study of

Levittown in 1967,

> "The community may displease the professional city planner and the
> intellectual defender of cosmopolitan culture, but perhaps more than any
> other type of community, Levittown permits most of its residents to be
> what they want to be- to center their lives around the home and the family,
> to be among neighbors whom they can trust, to find friends to share leisure
> hours, and to participate in organizations that provide sociability and the
> opportunity to be of service to others." (Gans in Legates ed., p. 64)

Despite the popular success of Levittown and other new subdivisions, suburbia

was the subject of intense criticism from planners, sociologists, and environmentalists by

the early 1960s. The lack of coordination and strategic planning in suburban areas

created disconnected neighborhoods that often lacked a coherent pattern or design.

Despite FHA guidelines that recommended the inclusion of parks and neighborhood

facilities, these were often omitted from subdivision plans. Open spaces were scattered

and haphazardly distributed, and natural features were more likely to be destroyed than

strategically preserved. The rural landscape, which had been the original source of

attraction for suburban living, was rapidly disappearing. Jane Jacobs summed up many

of the criticisms of post-war suburban development in 1961, when she wrote:

> "...each day, several thousand more acres of our countryside are
> eaten by bulldozers, covered with pavement, dotted with
> suburbanites who have killed the thing they thought they came to
> find. Our irreplaceable heritage of Grade I agricultural land (a rare
> treasure of nature on this earth) is sacrificed for highways or
> supermarket parking lots as ruthlessly and unthinkingly as the trees
> and woodlands are uprooted, the streams and rivers polluted and
> the air itself filled with gasoline exhausts (products of nature's
> manufacturing) required in the great national effort to cozy up with
> a fictionalized nature and flee the "unnaturalness" of the city. The
> semisuburbanized and suburbanized messes we create in this way
> become despised by their own inhabitants tomorrow. These thin
> dispersions lack any reasonable degree of innate vitality, staying

power, or inherent usefulness as settlements." (Jacobs in Girling, 1994, p. 104-105)

In response to emerging critiques of suburbia, new models for environmentally sensitive open-space planning began to appear in the 1970s. Foremost among these models were cluster subdivisions and planned unit developments (PUDs). These techniques were designed to increase the amount of public open space in a development, and encourage the preservation of natural features such as woodlands and streams. In a cluster subdivision, houses are organized in groups or modules and placed on small lots. The space gained by using small lots is dedicated as community open space, which occupies the area between cluster groups. This technique was attractive to developers as it reduced the length of roads and infrastructure in the development. In addition, cluster subdivisions offered greater flexibility in site planning. In his 1964 book *Cluster Developments*, William H. Whyte argued that cluster subdivisions could be used to create a system of linked open spaces connecting whole communities. As Whyte noted, "The open space of a cluster subdivision may be functional in itself, but it becomes far more so if it is tied in with other open spaces- with community parks, with schools, and with the open spaces of other cluster developments." (Whyte in Girling, 1994, p. 112)

Planned unit developments, popularized in the early 1970s, also promoted community open space as an integral part of subdivision planning. PUDs are defined by attached single-family or multi-family housing, developed to a higher density than standard subdivisions. PUDs generally have shared parking facilities and public open space around the housing units. The initial objective of PUD ordinances was to allow greater flexibility in the approvals and development process, and to encourage innovation in site design. Developers of PUDs were required to meet certain guidelines established

43

by the local community, especially in regard to density, open space, and parking. A mix of uses was encouraged, including neighborhood retail, churches, and day-care facilities. In return for meeting local performance guidelines, developers were allowed greater freedom in site design.

Perhaps the greatest failure of suburban planning since the second World War has been the fragmented nature of subdivision development, and the lack of integration between housing, retail, offices, open space, and transportation networks. For the most part, suburban development has occurred piecemeal, largely driven by private developers with a minimal amount of strategic guidance from local or regional authorities. As architect and planner Daniel Solomon has commented, "Since 1965, the urban structure of the American city has been reduced to a rudimentary organization of land-use blobs, freeways, and arterials... The other area of planning is what is generally called design review and deals with subjects like window trim, roof pitches, or shades of driftwood stain... Between the vagaries of land-use blobs and the minutia of design review, there is an enormous chasm into which the whole heritage of the American town has fallen." (Girling, 1994, p. 174) The exceptions to this rule, however, are the master planned towns built since the early 1960s. Although these towns do not represent a significant proportion of all post-war development, they stand as important examples of comprehensive planning efforts. Variously conceived as new towns, eco-burbs, techno-burbs, and 'traditional' towns, these master planned communities have built on nineteenth and early twentieth century models of town planning, updated with new marketing strategies and carefully targeted populations.

The new towns of Reston, Virginia and Columbia, Maryland, built in the early 1960s, were among the most ambitious master planned towns of the post-war period. These towns were planned as economically self-sufficient communities, with their own quasi-governments and a range of jobs, facilities and services. Many of the planning principles utilized in Reston and Columbia were derived from the British new towns movement; not surprisingly, the projected populations were similar to those of the Mark II British new towns. The town of Reston was designed for 75,000 people, while Columbia was designed for 110,000 people.

Both Reston and Columbia were planned by large multi-disciplinary teams including architects, planners, engineers, economists, lawyers, and specialists in health, education, and psychology. Despite the difference in population size, both towns are organized into seven residential 'villages,' each with a distinct identity. Extensive open space networks are a hallmark of both towns: 23 percent of Reston's land area is dedicated to public open space, while Columbia offers 2,500 acres of open space with more than 50 miles of trails, 3 man-made lakes, 7 parks, 128 tot lots, 21 neighborhood pools, an ice rink, and a golf course. (Girling, 1994, p. 132) The most important difference in the plans is the treatment of the town center. While Reston has a pedestrian-oriented center, with a mix of retail and entertainment uses, Columbia has a conventional indoor mall, with no connections to the surrounding area.

The most recent movement in suburban planning is the New Urbanism, which attempts to recreate the traditional fabric of early American towns. New Urbanist developments resemble town plans from the turn of the century, most notably those by Raymond Unwin and John Nolen. Andres Duany and Elizabeth Plater-Zyberk, the

founders of the New Urbanist movement, frequently cite the planning principles outlined in Unwin's 1909 book *Town Planning in Practice*. Unwin emphasized the importance of town and neighborhood centers, and proposed a web-shaped plan with major roads radiating from a civic center. Similarly, the plans developed by Nolen between 1909 and 1930 are a clear model for New Urbanism; indeed, it would be difficult to distinguish Nolen's plans from many of the new Urbanist proposals. Nolen's plans for Mariemount, Ohio
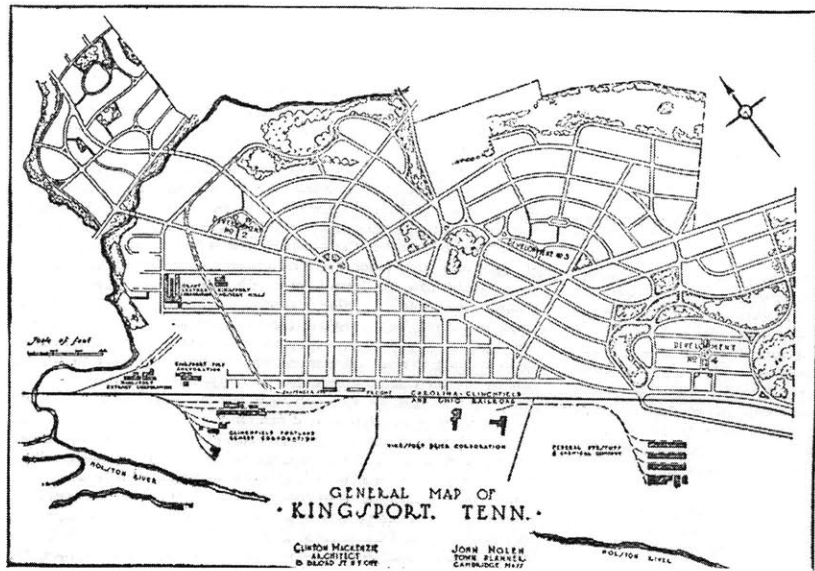
Plan of Kingsport, Tennessee
John Nolen, 1918
Source: Girling, 1994

Plan of Kentlands, Maryland
Andres Duany and Elizabeth Plater Zyberk, 1988
Source: Girling, 1994

in 1916 and Kingsport, Tennessee in 1918 are clear precedents for New Urbanism, with their civic centers, parks, and modified street grid.

Unlike their early twentieth century predecessors, New Urbanist towns rarely include large-scale industry and employment within town boundaries. Whereas Kingsport was intended to be a seat of local industry, most New Urbanist plans do not include provisions for large-scale office or industrial uses. In fact, most New Urbanist developments function essentially as commuter towns, much like other suburban subdivisions. While New Urbanism does offer a more pedestrian-oriented environment, with significant civic centers and public open spaces, the plans do not address the larger issue of regional connections between cities, suburbs, and their surrounding areas. As Cynthia Girling has noted,

> "Paradoxically, the relationship between (the Kentlands neighborhoods of the Gate House and the Hill District) and the existing commercial area is the one that Andres Duany glibly criticizes. To get to the nearby commercial area with fast-food restaurants, convenience stores, and the like, residents of Kentlands have to drive, although this area is a five-minute walk from the most populated neighborhoods. The edges of the property... are high planted berms, at the base of which is a low wall. Exit points are limited and no sidewalks exist, although the need is evident from the dirt paths within the green verges. Although the community is walkable internally, the architects, developers and the city of Gaithersburg have overlooked important off-site connections." (Girling, 1994, p. 187)

New Urbanist towns come with a complete set of codes for development, designed to control virtually every dimension and architectural detail. Duany and Plater-Zyberk insist that these codes are the only means of ensuring that the town will be appropriately 'traditional' in appearance and feeling. In New Urbanist towns such as Seaside and Celebration, Florida, these codes have resulted in a highly regulated landscape of wood-frame houses with front porches and carefully landscaped yards.

While the codes have certainly generated a coherent streetscape, New Urbanism has frequently been criticized for creating overly controlled environments with little opportunity for change or variation.

Pedestrian Pockets, a version of New Urbanism developed by architect and planner Peter Calthorpe, explicitly addresses the issue of regional connections through linked transportation networks. As Doug Kelbaugh has described, the Pedestrian Pocket is "a simple cluster of housing,

retail space, and offices within a quarter-mile radius of a transit system… the four key concepts are low-rise, high-density housing, mixed-use 'Main Street,' light rail transit, and either the regional shopping mall or the computerized 'back office.'" (Kelbaugh, ed., *The Pedestrian Pocket Book: A New Suburban Design Strategy*, 1989, p. ix-x) Pedestrian pockets are designed for a population of 5,000 people on no more than 100 acres. A regional transportation network of light rail lines and special roads dedicated to carpools
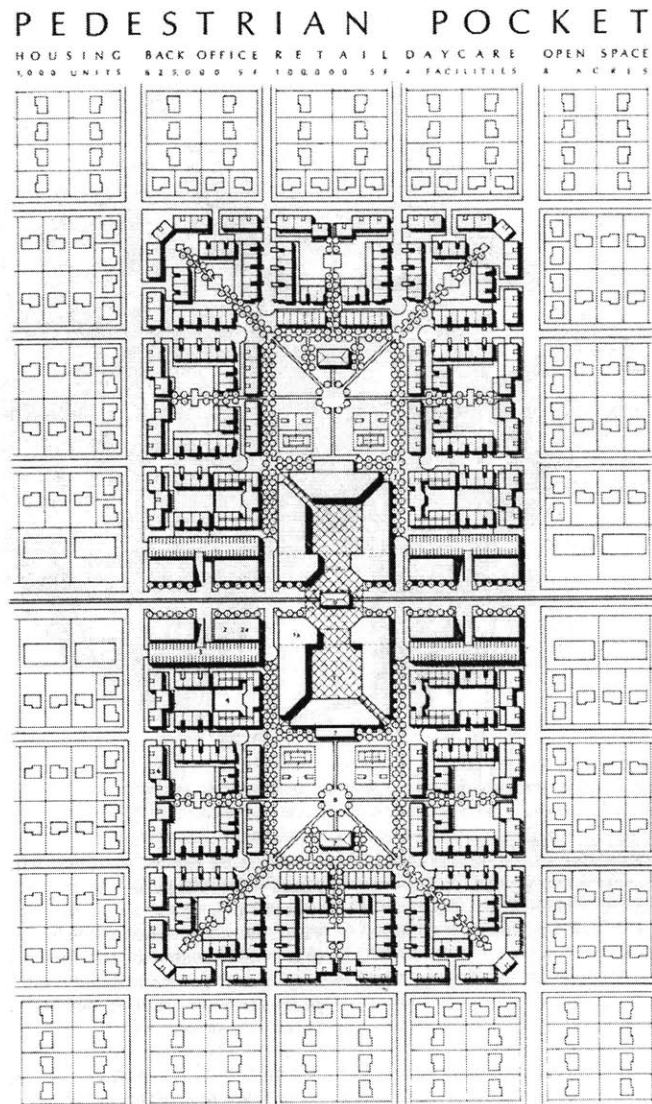
and buses are proposed to connect suburban areas to each other and to the city. Pedestrian Pockets are also designed to include substantial industry and commerce, providing approximately 3,000 jobs on site. These jobs are envisioned as part of a specialized local economy with a focus on retail, culture, light industry, or technology.

The plan for the new town of Laguna West, developed by Peter Calthorpe in 1989, is the most comprehensive attempt so far to implement the Pedestrian Pocket concept. Located in California's central

Plan of Laguna West
Calthorpe Associates, 1989
Source: Girling, 1994

valley, Laguna West is defined by its open space network and village green. The plan resembles other New Urbanist towns in many respects, particularly in its typology of wood-frame houses, front porches, and tree-lined streets. Much like the plan for Kentlands, Laguna West does not provide off-site connections to the surrounding area; all major open space linkages are terminated well within the property (Girling, 1994, p. 205). The Pedestrian Pocket concept is an important first step in developing a regional approach to suburban planning; however, Calthorpe's plans will be difficult to implement without the support of a comprehensive regional plan and light rail system.

Conclusion

Isolated subdivisions, malls, and office parks have become the hallmark of the contemporary American suburb. Networks of open space and parkland, which were the central feature of early suburban plans such as Riverside and Radburn, are minimal or non-existent in most new suburban developments. The lack of coordinated suburban planning in the post-war period has produced neighborhoods that are isolated from each other and their surrounding environment, with few connecting streets or shared spaces. Regional malls and roadside strips have taken the place of local town centers, while heavy traffic plagues suburban roads.

In response to the chaotic and sprawling landscape of contemporary suburbia, architects and planners have looked to turn of the century models of town planning in an attempt to re-create 'traditional towns.' These proposals and projects for a 'new urbanism' (which have been more appropriately called 'new suburbanism') have centered the debate on suburbia around the construction of new, master-planned developments, many of which suffer from the same problems as existing suburbs. In the context of the contemporary suburban landscape, the challenge is not only to design new communities but to address the quality of life in existing neighborhoods and towns. This challenge can most effectively be met through coordinated interventions to create more integrated road networks, visible and accessible open spaces, social town centers, walkable neighborhoods, and active front yards.

CHAPTER TWO
Prescriptions for Suburbia

A number of scholars and practitioners of urban design have argued for more compact, pedestrian-oriented environments with a fine-grain mix of uses as an alternative to suburban sprawl. Most of these proposals are centered on design principles for new communities, rather than design interventions for existing communities. Few proposals have been made for retrofitting existing suburbs, in part because this process poses more complex legal, political and social challenges. The problems of disconnected neighborhoods and isolated subdivisions, lack of pedestrian spaces and public amenities, and the dominance of automobiles in many suburbs cannot be solved in a single broad stroke. Rather, they must be addressed through coordinated long-range planning by municipal and regional authorities. With more than 115 million suburban dwellers in America, it is imperative to develop effective strategies for remediation of the existing suburban landscape.

Philip Langdon, author of *A Better Place to Live*, is one of the few critics to offer guidelines for retrofitting suburban neighborhoods and towns. Langdon's research interest grew out of his own experience growing up in older towns, which provided walkable streets, attractive downtowns, and local shops and services in close proximity to residential neighborhoods. In *A Better Place to Live*, Langdon explores the problems associated with contemporary suburbs, and suggests strategies for improvement. According to Langdon,

"We need to develop suburbs that foster neighborhood and public life rather than squelching it... Sidewalks and streets should be organized so that people have an incentive to explore their neighborhoods... We need to rethink our planning ideas so that neighborhood stores, neighborhoods institutions, neighborhood gathering places will have a better chance of coming into being and giving heart to the community. We need to think about achieving a broader mix of housing, so that communities can become more nearly complete, interdependent societies, containing people of varied ages and incomes. We need to consider increasing the density of some suburbs. Rather than reflexively favoring houses on big lots, we ought to ponder the advantages of creating enough concentration to nurture a vigorous community spirit and support stores and institutions within walking distance of homes." (Langdon, *A Better Place to Live*, 1994, p. xiii)

To achieve these goals, Langdon suggests a number of interventions for improving town centers and residential neighborhoods. First, he proposes that existing suburban shopping centers and strip malls should be retrofitted to create more attractive and pedestrian-friendly environments. His prescription includes new landscaping and planting; new or improved sidewalks along the road edge; improvements to pedestrian walkways connecting shop fronts; careful regulation of signage and facades; and incentives for constructing new buildings closer to the road. Langdon cites Mashpee Commons in Mashpee, Massachusetts and Hamden Plaza in Hamden, Connecticut as successful projects employing these techniques. He also encourages older towns to revive their centers through infill construction, new housing development, and improvement of sidewalks and parking facilities. To illustrate this point, Langdon cites Kirkland and Bellevue, Washington, two suburbs that have successfully revitalized their downtown areas.

Langdon also makes recommendations for the improvement of residential neighborhoods. To create better connections between neighborhoods, he encourages the

development of 'well-connected networks of streets,' though he offers no precise

description of what this means. He also proposes the introduction of 'traffic-dampening

devices' such as planted circles at intersections, and new pedestrian paths between cul-

de-sacs. Where organized resident groups exist, he suggests that they identify potential

locations for new neighborhood facilities such as shops and playgrounds. Finally,

Langdon recommends the development of higher density housing around town centers to

support local shops and services. Although limited in scope, these recommendations are

a useful first step towards the improvement of suburban neighborhoods and towns.

Peter Calthorpe's 'pedestrian pocket' concept offers a regional approach to

solving the problems of existing suburbs. In *The Pedestrian Pocket Book*, Calthorpe

argues that New Towns are inevitably disconnected from their surrounding towns and

neighborhoods. Pedestrian pockets, in contrast, have the potential to link suburban areas:

> "By implanting small clusters of development within the existing
> metropolis, Pedestrian Pockets avoid the isolation and 'newness' of New
> Towns. A Pedestrian Pocket does not function as a self-sufficient town.
> People are not expected to work in the same Pocket in which they live or
> to find all their shopping needs or recreation within the 100-acre
> development. In fact, the Pockets are meant to weave back together the
> currently isolated parts of our suburban environment; to put the elderly
> and kids without cars within reach of old downtowns as well as new
> shopping malls, parks, and other pockets; to allow workers access to
> existing and new job opportunities throughout a transit region, not just
> within a single town." (Kelbaugh ed., 1989, p. 5)

More recently, Calthorpe has developed proposals for retrofitting suburban

shopping malls to create more vibrant, pedestrian oriented environments. Calthorpe

points to the vast amounts of underutilized space in mall parking lots, which he refers to

as 'grayfields,' arguing that these sites have the potential to become new civic centers.

At a conference on New Urbanism in March 1999, Calthorpe presented plans and built

projects that demonstrate this approach. These projects typically comprise new chain store outlets with large floor plates inserted into a street grid, with new sidewalks and landscaping. Unlike most big-box retail, the buildings in Calthorpe's projects are designed with street-level windows, and several projects feature a 'village green.' This approach is an attempt to reconcile the requirements of corporate retail with the scale and street network of traditional town centers. It is telling, however, that people were strikingly absent from the photographs of these new developments. Without a critical mass of residential population adjacent to the site, it is unlikely that such projects will succeed in creating lively civic centers.

CHAPTER THREE
History of Lexington and Burlington

In analyzing spatial patterns in Lexington and Burlington, it is important to understand the historical context in which they developed. Following is a brief history of these two towns.

History of Lexington

Lexington was a rural farming community from the mid-1600s to the 1950s. The area was originally known as Cambridge Farms, and was part of the town of Cambridge. In 1691 Cambridge Farms was granted status as an independent parish after numerous appeals from town residents. A year later the first meeting house was at erected at the junction of Concord and Bedford Roads, and in 1711

Seal of the Town of Lexington
Adopted 1875
Source: Hudson, 1913

land adjacent to the meeting house was purchased for a town common. Lexington was incorporated as a town in 1713, and named after Lord Lexington, a prominent British aristocrat. In April 1775 'the shot heard round the world' was fired on the Lexington battle green, giving the town a place of honor in American history. In 1754 the southern

section of Lexington was annexed by the town of Lincoln, creating the current town borders.

Since its early days, Lexington has had an extensive road network connecting to surrounding towns. As historian Charles Hudson noted in 1868,

> "Lexington, for its geographical position, has been pretty thoroughly cut up by roads. Before railroads diverted the travel, there were three great thoroughfares running from Boston into the country, running the entire length of the town: the Concord Turnpike through the southern, the Middlesex Turnpike through the northern, and the Old Concord Road through the central part of time. These, with the roads to Bedford, Lincoln, Weston, Waltham, Watertown, Woburn, and Burlington, brought a large amount of travel through the place."(Hudson, 1913, p. 472-473)

In 1846 a railroad line was opened between Lexington and Boston, and in 1873 the line was extended further out to Concord.

In 1851 two new public schools were built in Lexington, and in 1854 the first public high school was built. Lexington dedicated more funds to education than most surrounding towns; a report in 1865 showed that of the fifty-two cities and towns in the county, Lexington was seventh highest in spending per pupil. (Hudson, 1913, p. 392) Good public schools were a priority for the town; as Hudson pointed out,

> "The town of Lexington has no manufactures to draw population within her borders. Her growth must, to all appearances, depend upon those who are seeking pleasant country residences, and the first question asked by that class especially is 'What is the condition of your schools?" If they find that our schools are poor, they will look elsewhere for a residence; but if they find that we have good schools, they might be induced to settle among us." (Hudson, 1913, p. 390-391)

In 1871 a new Memorial Hall and Town Library Hall were built in Lexington with a 20,000 dollar donation from Mrs. Mariah Hastings Cary. In 1886 the Lexington Historical Society was founded, reflecting a growing interest and pride in the town's

56

history on the one-hundredth anniversary of Battle of Lexington and Concord. In The

Lexington Field and Garden Club was incorporated in 1891, and was actively involved in

improvements to public spaces throughout the town. According to its charter statement,

> "The object of this association shall be the care and protection of trees and
> shrubs in the streets and public places of Lexington, and the improvement
> of the town by the planting of additional trees and ornamental plants, the
> study and development of the trees and natural resources of this vicinity,
> the cultivation of taste in arboriculture and horticulture, and the discussion
> of these kinds of subjects." (Hudson, *History of the Town of Lexington,*
> *Volume I*, 1913, p. 483)

In the first half of the twentieth century Lexington grew slowly, maintaining a

largely rural character. The construction of Route 128 through the west side of town in

1949 contributed to an increase in population, as residents were able to commute into

Boston. The town's historical commitment to public schools has remained relatively

constant, and Lexington currently has one of the best school systems in the area. The

commitment to preserving and enhancing public open space has also been a consistent

feature of the town's history, as demonstrated by the extensive networks of parks and

conservation land. Over the course of nearly three hundred years, Lexington has

remained a middle and upper class residential community, with a strong interest in

preserving its history and natural resources.

Burlington was
originally part of the town of
Woburn, and was known as
the Woburn Second Parish
until its incorporation as an
independent town in 1799.
The first public building in
Burlington was a church built
in 1642 on the west end of the
present town common,
followed by a second church

Burlington 175th Anniversary Commemorative Coin, 1974
Source: Fogelberg, 1976

on the hill east of the common in 1678. By 1794 the town had a grist mill and a saw mill,
and in 1795 the first four school houses were built. The town was home to a number of
small industries throughout the nineteenth century, including Reed Ham Works, one of
the largest meat processing plants in the region.

In 1849 a petition to build a rail line through Burlington was defeated due to
opposition from William Winn, whose cow pastures would have been disturbed by the
railroad. The first streetcar lines were developed through the town center in 1900 and
remained in operation until 1921. Marshall Simonds, the only person to leave substantial
money or property to Burlington, willed Simonds Park to the town in 1906. Several fires
around the turn of the century destroyed some of Burlington's most historic buildings,

including the Sewall mansion and the town meeting house. In 1915 the Burlington Grange was founded, and served as an important social and service organization in the town for more than forty years.

Following the second World War Burlington was a popular summer camp area, and by the late 1920s the town was beginning to develop as a suburb of Boston. One developer advertised homes in 'Garden Acres,' where families could "Buy one or more acres of land in this fast growing suburb, where you can make a good living on chickens and raise your own vegetables, keep a cow, where your family will be rosy and healthy, and you will be your own master and grow independent." (Fogelberg, *Burlington, Part of Greater Chronicle*, 1976, p. 327)

The most rapid period of development in Burlington's history occurred between 1949 and 1965, following the incorporation of the Burlington Water District and the construction of Route 128. Burlington's population increased dramatically as a result of these two events; population density went from 274 persons per square mile in 1950 to 1,645 persons per square mile in 1965. (Fogelberg, 1976, p. 1) In 1957 alone twenty-five new town roads were built. With its prime location and accessibility to Boston, Burlington quickly became a magnet for industrial development. By the late 1950s a number of major firms had located in Burlington, including the Radio Corporation of America and Spray Engineering. The Northwest Industrial Park, Economy Shopping Center, and IGA were also built in the late 1950s. The Burlington Mall and New England Executive Park were built in 1968, and approval for the Lahey Clinic was granted in 1971. In the midst of this rapid development, the Burlington Historical

Commission was established in 1964 and the Burlington Conservation Commission was established in 1965.

The rapid pace of development in Burlington in the late 1950 prompted concern over long-term impacts on the town's open space and natural resources. In 1962 the planning firm of Atwood and Blackwell was hired to conduct a study of the town, and in their final report stated that

> "The main recommendations of this report are aimed at helping Burlington through the next ten to twenty years, and at helping overcome the many problems of over-rapid building development to date. At this writing, the outstanding needs of the town are: Town acquisition of more land at and surrounding each existing school site; additional land for non-school parks and play-spaces; watershed protection lands (can be town forest and include some picnic places); stream and swampy land conservation measures (easements or gifts to the town?).... Steps need to be taken to acquire land on some systematic basis before the town becomes wholly built-up and needed land is simply unavailable."
> (Fogelberg, 1976, p. 375)

These recommendations were not fully implemented, and today Burlington has relatively little open space. The town continues to promote industrial development, with a focus on high-technology industry.

CHAPTER FOUR
Profile of Neighborhoods in Lexington and Burlington

Oak Street Neighborhood, Lexington

The Oak Street neighborhood, located on a steeply sloping hill in East Lexington, is the oldest of the four neighborhoods studied. Built in the 1930s and 1940s, the neighborhood is laid out in a grid pattern with lot sizes ranging from one-eighth to one-quarter acre (see Figure 4.1). The neighborhood is immediately bounded to the north by a strip of conservation land, to the east by West Farm and Wilson's Farm, to south by the Peacock Farms development, and to the west by residential development and Sutherland Woods. Massachusetts Avenue and the Minute Man bicycle path run along the north edge of the larger neighborhood, while Pleasant Street/ Route 4-225 form a clear boundary to the west.

The Oak Street neighborhood is bounded by three large areas of conservation land. South of Oak Street is West Farm, a sloping meadow with excellent views of the surrounding countryside. The sweeping views from Oak Street across West Farm are visible along the entire length of Oak Street, creating a strong edge to the neighborhood. South of West Farm is Wilson's Farm, a popular farm stand and gourmet grocery store. To the east of the neighborhood is Sutherland Park, an open field with play equipment at one end. Sutherland Park can be accessed from Sutherland Road or via a pedestrian path on Tarbell Avenue. To the north, the neighborhood is bordered by a wooded

THE GREAT
MEADOW

WILSON
FARM

PLEASANT STREET

WEST
FARM

BRUCE RD. EXTENSION

MASS. AVE.

FOTTLER AVE.

MINUTEMAN COMMUTER BIKEWAY

BOW STREET

BOWKER STREET

CHARLES STREET

STEVENS ROAD

CALVERT STREET

SUTHERLAND RD.

AERIAL STREET

DANIELS STREET

SIMS STREET

CHASE AVE.

TARBELL AVE.

BENNET AVE.

SUTHERLAND
WOODS

WHITE PINE LANE

TROTTING HORSE DRIVE

PEACOCK FARM ROAD

Scale One Inch = 600 Feet

100 200   400   600

FIGURE 4.1
OAK STREET NEIGHBORHOOD, LEXINGTON

conservation area (referred to here as the Bruce Road Extension), with access from Bruce

Road, Taft Avenue, and Bowker Street.

The conservation land has been a neighborhood social center for many years,

even playing host to pick-up games with the New York Yankees on several occasions.

An older resident recalled the baseball team's visits to the neighborhood:

"...when the Yankees would come to town and play the Red Sox, (the Wilsons) would
have the whole Yankee team back here for a picnic... West Farm is called 'the piggy' in
the neighborhood- I'm assuming it was a pig farm at some point- and they'd go out to the
piggy and play baseball with the neighborhood kids. And I guess Mickey Mantle and
Ted Williams have been up here on Oak Street playing baseball with the local kids."

The importance of the conservation land is further demonstrated by neighborhood

protests over a recent proposal to convert part of Sutherland Woods into affordable

housing. Neighbors did not object to the presence of moderate-income residents so much

as the loss of open space, demonstrated by the fact that several affordable units already

exist in the neighborhood with no apparent conflict. The proposal was defeated due to

the residents' efforts, and Sutherland Woods remains a popular local gathering place.

The Oak Street neighborhood was originally called "Consumption Hill," named

for the curative powers associated with its hilltop views and fresh air. Oak Street was

one of the first roads in the area, followed by Taft and Baker. The remains of old stone

walls are still visible at the intersection of Taft and Baker and at the end of Baker Street

to the south. Peacock Farms, a 'planned community' of modern houses, was built in the

late 1950s creating the first through access from Oak Street to Route 2.

The houses in the Oak Street neighborhood were built over several decades

between 1930 and 1960, contributing to their varied architectural appearance. Most

houses have been added onto or renovated since their original construction, further

contributing to the diversity of styles and sizes. Even with additions, however, the

houses are considerably smaller than those in contemporary subdivisions, making them

more affordable than most new houses in Lexington. The diversity of house sizes has

contributed to the relative income mix in the area, as young families have bought their

first homes in the Oak Street neighborhood. One new resident commented

> "I like the fact that it's a mixed-house neighborhood, in that there are
> houses built over widely varying times. There is a large difference in the
> size of houses. This one is 2250 square feet, whereas the one across the
> street is 800 square feet I think. You can't find, in, my opinion, a house
> that's been built since the 60s that's 1,000 square feet or less. And I really
> think there's a place for those kinds of houses."

Until relatively recently, Oak Street was a blue-collar neighborhood. As house

prices in Lexington have risen the neighborhood has become more middle-class. As one

resident described,

> "When I lived in Lexington when I was younger, this was a real working
> class neighborhood. I knew people who grew up in Peacock Farms, but
> they said 'You're moving to Baker? The kids from Baker used to come
> down the hill and beat us up!" But the folks who live next door to us who
> just moved in last summer, he's an engineer, she's a physician... most of
> the people in our age bracket are pretty professional. It's a real middle,
> middle-upper class group of people."

Despite the influx of middle-class families in recent years, the neighborhood has retained

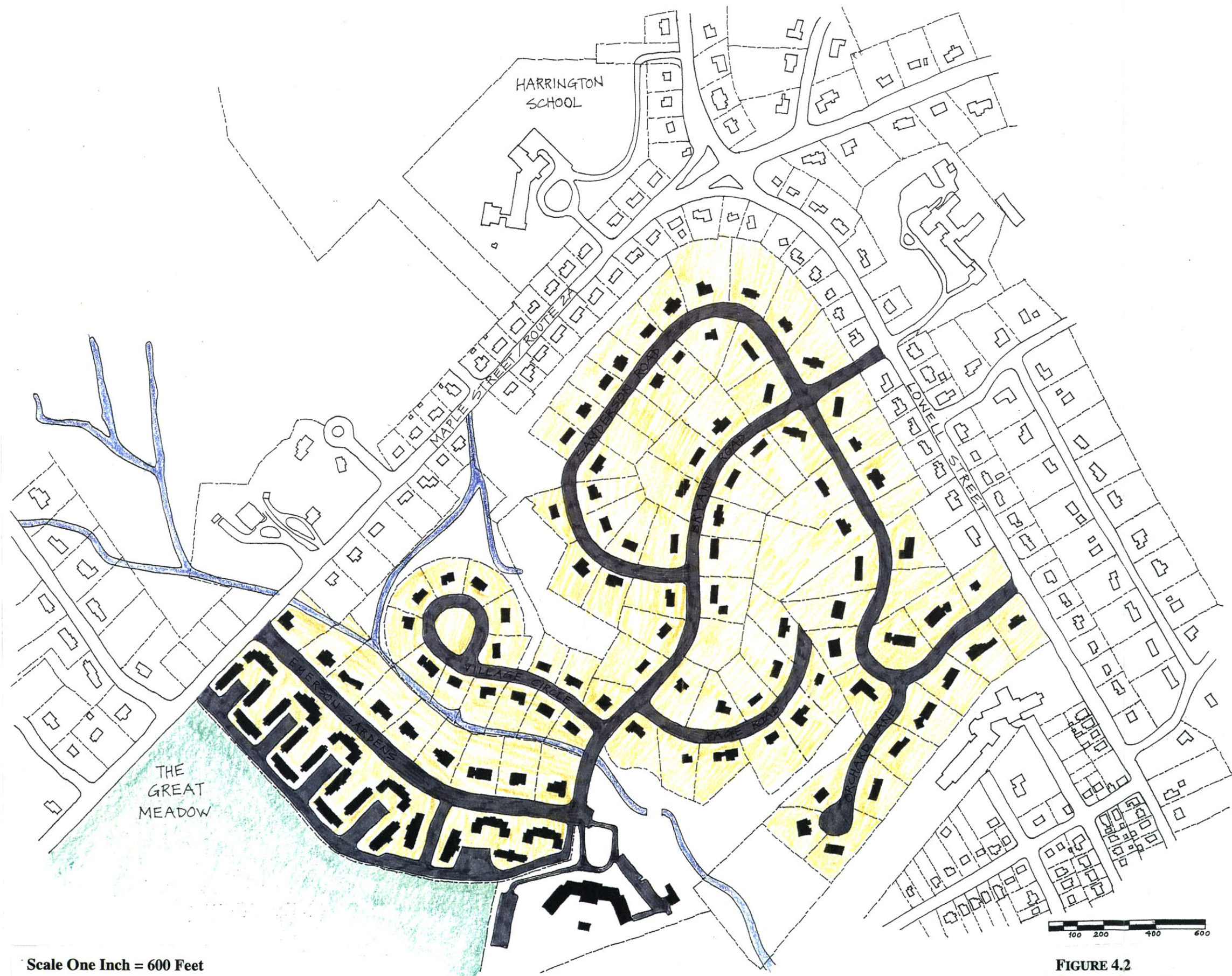a mix of old and new residents. One new resident remarked that

> "One thing that struck me (about the neighborhood) is that there is a fair
> amount of rather old people and that people have been here forever. I've
> met people who have been here 25 years and consider themselves
> newcomers. Some people in this neighborhood have 40 and more years.
> There's a 95-96 year old couple across the street that have been here over
> 55 years. And the woman next door is in her 90s and she's been here all
> her life. And there are two sisters that are in their mid-40s and they grew
> up as children here in the house."

Bryant Road Neighborhood, Lexington

Approximately one-half mile northwest of Oak Street is the Bryant Road neighborhood, located adjacent to Route 2A/ Maple Street. The Bryant Road neighborhood has several distinct sub-areas, including Sanderson Road, Orchard Lane, Page Road, Village Circle, and Emerson Gardens (see Figure 4.2). These sub-areas are individual loops and cul-de-sacs ranging in age from forty years to less than ten years old. Lot sizes throughout the neighborhood are typically three-quarters to one and a half acres, with several two lots mixed in. The neighborhood is bounded to the west and north by Route 2A/ Maple Street, to the east by the Lexington Christian Academy, and to the south by the Great Meadow conservation land. In the newer section of Orchard Lane, houses are considerably larger than in the rest of the neighborhood, typically comprising a minimum of 4000 square feet plus a three-car garage. The original farmhouse in the area still stands at the corner of Sanderson Road and Lowell Street, providing a striking contrast in size and scale with the newer houses nearby.

Much of the Bryant Road neighborhood was built on wetlands around the Fessenden Brook, which runs along the south side of Village Circle and underneath Bryant Road. The brook is nearly invisible from the main road, however, and has no public access, which prevents it from being used by local residents. Building on these wetlands was highly controversial, but in the end did not prevent most of the area from being developed. Unfortunately very little has been done to preserve them as a neighborhood amenity and they are all but invisible to most passers-by.

HARRINGTON
SCHOOL

MAPLE STREET / ROUTE 2A

SANDERSON ROAD

BRYANT ROAD

LOWELL STREET

LAWN ROAD

ORCHARD LANE

VILLAGE CIRCLE

FERROU GARDENS

THE
GREAT
MEADOW

Scale One Inch = 600 Feet

100 200   400   600

FIGURE 4.2
BRYANT ROAD NEIGHBORHOOD, LEXINGTON

On the south side of Emerson Gardens is the Great Meadow, a large wooded area of conservation land with hiking and bicycle trails. The Great Meadow does not have a visible presence in the neighborhood, however, since it faces a series of parking lots. Unlike the West Farm conservation area, which is highly visible from Oak Street, the Great Meadow is not located on a main route in or out of the neighborhood. In addition, there is no obvious trailhead or entry point. As a result, residents of the larger neighborhood do not use the area very frequently, and few mentioned it as a place they enjoy spending time. Like the brook, it is an under-used amenity due to lack of visibility and access.

The Bryant Road neighborhood is located immediately adjacent to the Harrington School on the other side of Maple Street. Despite its close proximity, parents often drive their children to school since there is no direct pedestrian access from the neighborhood. One parent living on Sanderson Road explained that

> "Kids in this neighborhood used to cut through the backyard of this crossing guard here and the houses all put 'Do not trespass' signs up. So one of these days we'll go knocking on doors and say 'Would you mind if my kids cut through? It's quite a walk around.'

The loop and cul-de-sac pattern forces residents to walk nearly half a mile to the school, much of it on a heavily trafficked road, rather than simply walking several hundred feet over to Maple Street.

The Village Circle section of the Bryant Road neighborhood, built in the early 1970s, was one of the first Planned Unit Developments in Lexington. The developer had initially proposed to build multi-family townhouses on the site surrounding a central open

space; however, the plan was changed after nearby residents raised strong objections to the proposal. One of the original residents of Village Circle described the controversy:

> "I have a feeling that (residents) felt it would be apartments and rental property and would bring people who would be only in town for a short while, not really have a stake in the town. And I think they felt the construction, for the most part, was incompatible with single-family homes. I don't think they pre-judged that it would bring riff-raff over here and ruin the neighborhood. But they felt the connection to the town would perhaps be tenuous at best and they would be here for a short period of time."

As a result of resident protests, the developer changed his plan to single-family houses around a cul-de-sac. The common space is now a landscaped circle, which is used as a play area by children in the surrounding houses.

On the south edge of the site is Emerson Gardens, a multi-family rental and condominium complex built in the late 1960s. The development was originally built as elderly rental units; as one long-time resident described, it was "the place to be if you were elderly and lived in Lexington." In the mid-1980s the development was sold off as condominiums when the owner went bankrupt. Emerson Gardens is now predominantly occupied by singles and young families with children.
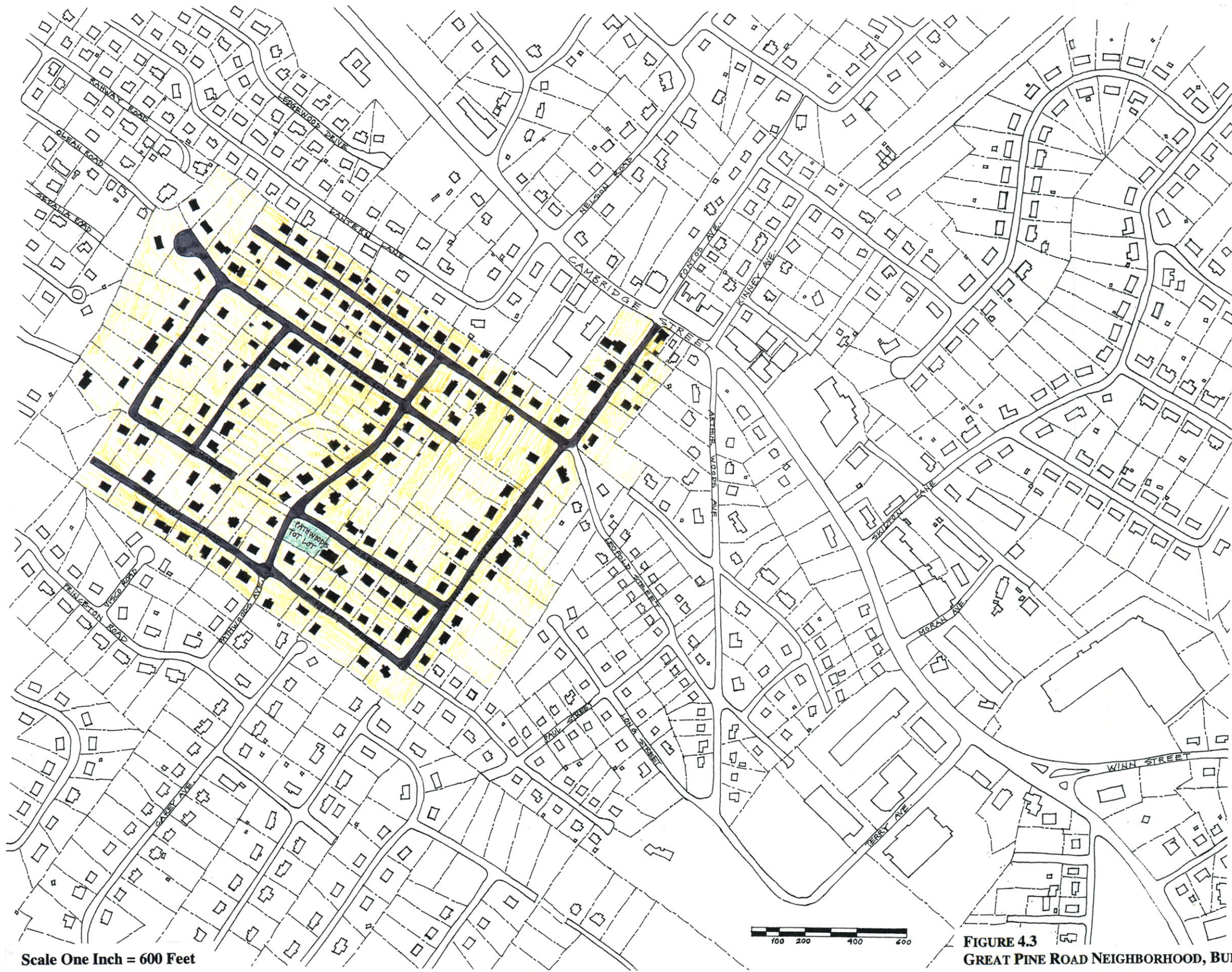
The Great Pine Road neighborhood in Burlington is located west of Cambridge

Street in the northwest quadrant of town. Laid out in the 1950s, the neighborhood is a

combination of square loops and dead-ends (see Figure 4.3). Lots range in size from one-

half to two acres, with narrow frontages and deep rear yards; houses are typically 1500 to

2500 square feet. The neighborhood is bounded to the north, south and west by

residential development, and to the east by the commercial corridor of Cambridge Street.

The only open space in the Great Pine Road neighborhood is a small park called

the Pathwoods Tot Lot, currently under renovation. Situated on a corner lot between

Pathwoods Road and Forest Road, the playground is regarded as a valuable neighborhood

amenity by neighborhood parents with young children. One resident in her early thirties

recalled that the town used to sponsor a summer program at Pathwoods, which was

phased out when her cohort grew older. Since the playground is relatively small and only

includes equipment for young children, its use as a neighborhood social center is limited.

Regan Park, located only a short distance away, is unused by most residents due

to its inaccessibility. In order to get there, residents of the Great Pine neighborhood must

either cut through a private yard at the end of Fernglade Road or walk all the way around

on Cambridge Street, nearly eight times the distance. As one resident described:

> "There is a park in back of the circle, but to get there you have to cut
> through somebody's yard. I took the long way there yesterday with my son,
> but the long way is a little bit too long... The neighbors don't want you to
> cut through the houses, so it takes you half an hour if you don't cut through.
> And about five minutes if you do."

Scale One Inch = 600 Feet

FIGURE 4.3
GREAT PINE ROAD NEIGHBORHOOD, BURLINGTON

Most residents do not bother to walk all the way around to Regan Park, and none of them feel it is part of their neighborhood.

High-speed traffic is one of the most serious problems in the Great Pine Road neighborhood. The long, straight roads are far wider than necessary for two lanes of traffic, and cars zoom through at speeds upwards of thirty miles an hour. To slow traffic, some residents have resorted to parking their cars along the roadside in a kind of informal traffic calming system. This has slightly reduced traffic speeds but the problem remains a serious one.

There appears to be more social conflict in the Great Pine Road neighborhood than in the others studied, particularly between old and new residents. Two residents had intense conflicts with their immediate neighbors over property-related issues, one of whom had to get a restraining order on her next-door neighbor. Other residents also described conflicts between neighbors over children's behavior, uninvited use of each others' yards, and similar topics. The unusually high level of social conflict may be due in part to differences in socio-economic status, which are more marked in this neighborhood than in the others studied. The neighborhood appears to have a long history of conflict, as is gruesomely illustrated by a murder that took place there approximately twenty years ago:

> "There used to be a little white cottage here- Burlington used to be all cottages. People in the cities who thought they were on vacation came here. So they were all little, teeny houses and there was a little white cape, or ranch or something that was on this lot of land. And there was a drug deal that went bad. They killed this guy in the kitchen. They shot him point blank in the face. And they dragged him out to the back and put him in the trunk of a car in the driveway and kept partying. But the police came by and thought it was gasoline leaking out of the back. So they came to the door and figured out it was blood, so that was the end of it...

So whoever owned this house before I did demolished that house and
bought the lot of land behind and then built this house."

Social conflict also occurs over issues of maintenance, which varies widely between

houses. While most houses in the neighborhood are well-maintained, several appear to

be nearly derelict. Similarly, maintenance of front yards ranges from nearly perfect

lawns to a junkyard, though most yards are well-kept.

The Spruce Hill Road neighborhood, located east of Lexington Street near the center of town, is the smallest of the four neighborhoods studied. It is entirely made up of cul-de-sacs with only one access road into the development (see Figure 4.4). Most of the neighborhood was built in the 1960s and 1970s, with the exception of several new houses on Shady Lane and Theresa Avenue. Lot sizes are between three-quarters and one acre, and houses are typically between 2000 and 3000 square feet. The neighborhood is bounded to the north and south by residential development, to the east by the Burlington High School, and to the west by Lexington Avenue.

The Spruce Hill Road neighborhood is densely wooded, with mature trees bordering the roads and creating a pleasant canopy. Several lots in the neighborhood have remained undeveloped and retain dense stands of coniferous and deciduous trees. The only large open space near the neighborhood is the high school athletic fields, which are accessed via a pedestrian path from the end of Joanne Road. The fields are not visible from the neighborhood, however, and residents must walk through a large parking lot to get there.

Much of the Spruce Hill neighborhood originally belonged to the Frothingham estate. The Frothingham mansion occupied a prominent hilltop site overlooking the surrounding area, and the estate's carriage house was located on the north corner of Spruce Hill and Lexington Road. By the late 1960s the mansion had been sold to the YMCA and was used as a summer day camp for girls, and in 1971 the YMCA built a pool on the property and opened membership to residents of the neighborhood and town.

Scale One Inch = 600 Feet

MEADOW
BROOK SCHOOL
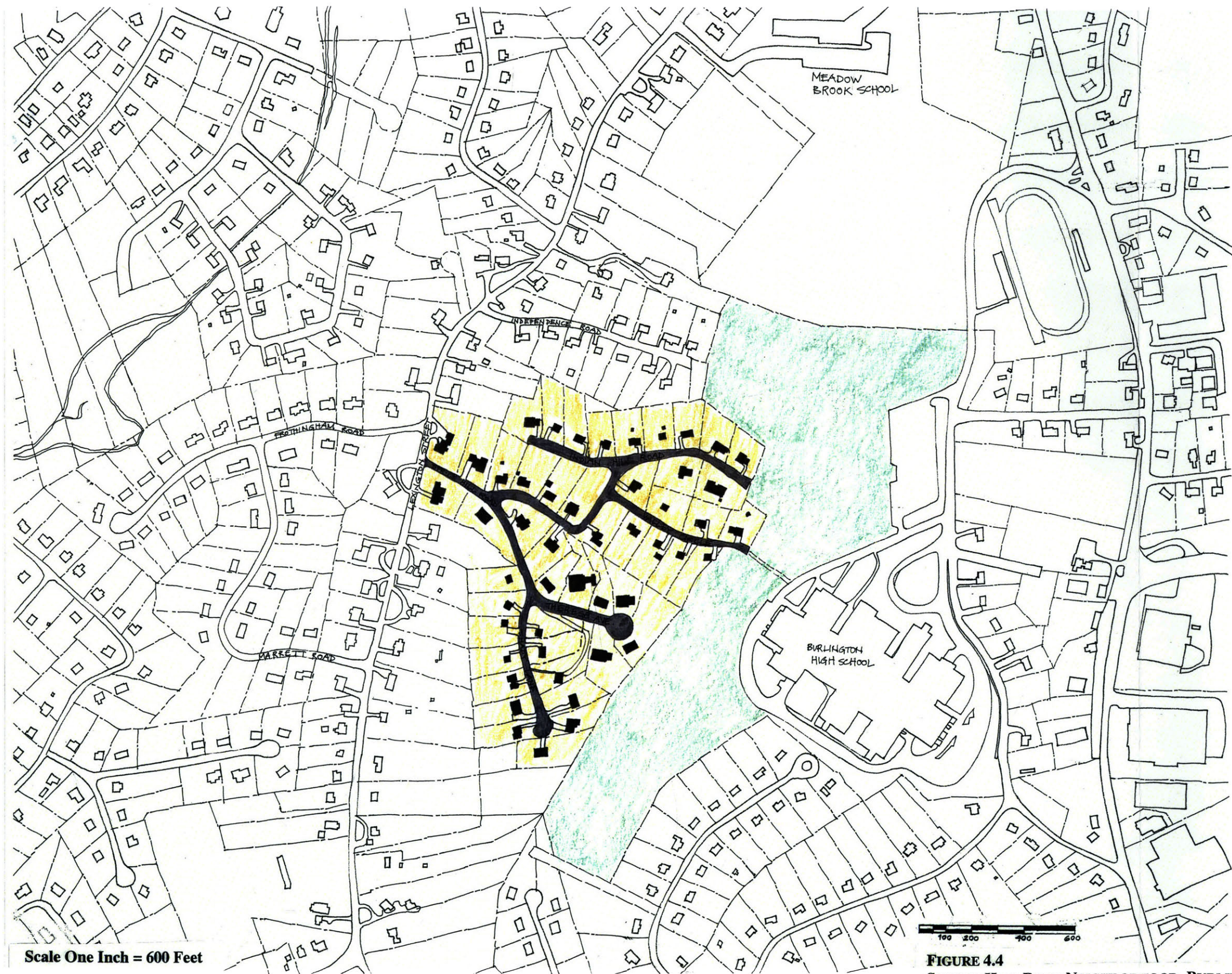
BURLINGTON
HIGH SCHOOL

FIGURE 4.4
SPRUCE HILL ROAD NEIGHBORHOOD, BURLINGTON

The pool served as a social center for families in the Spruce Hill neighborhood, while the

mansion was a favorite spot for neighborhood children year-round. One woman in her

early thirties who grew up in the neighborhood described how the local kids used to

gather there:

> "All the kids used to hang out up there on the porch. And we'd sit and
> talk. It wasn't like anything bad. And when somebody wanted to go up
> there and hang out, they'd go out and whistle... and a bunch of kids would
> come up and you'd sit until ten at night on a hot summer evening and
> watch the stars. Stars were a big thing. We were all watching shooting
> stars and meteorological things."

The mansion and pool provided a common ground for residents of neighborhood,

mitigating the physical separation of the cul-de-sacs:

> "There was a big separation between Shady Lane and Spruce Hill. Spruce
> Hill was its own entity. Shady Lane was an offshoot.... the kids over
> there were a little tougher. They used to come over and give us a hard
> time. So there was a lot of separation really... But everyone was at the
> pool and it was a nice meeting place. And it did make people feel like a
> community. Your differences didn't mean anything over there."

In the early 1990s, the YMCA sold the Frothingham estate to a private developer.

Initially there was a proposal to convert the estate into a halfway house for the mentally

disabled, which met strong resistance from local residents. Eventually the property was

subdivided and developed into a cul-de-sac, and the mansion was extensively remodeled

and sold as a private home. To build the cul-de-sac the granite pool was filled with rocks

and paved over. The destruction of the pool and development of the estate property was

a profound loss for many residents in the neighborhood:

> "When they sold the Y it was very upsetting. That building had a lot of
> meaning for the kids, all of us. We spent a lot of time up there... And
> when they got rid of the pool, it felt like the end of an era. One of my
> favorite places to go was right on the edge of the pool, or go out in the
> back. And there was a cliff on the edge of the pool, outside the fence...

Sit on that and you could watch the sun set. There were wild grapes. You could pick them and eat them. There were wild raspberries and blackberries and all in that area down behind the pool."

While some residents welcomed the development of the estate property with the view that it would increase house values in the neighborhood, others mourned the loss of the mansion and pool as a center of community activity.

CHAPTER FIVE

Spatial Structure, Perception and Behavior in Lexington and Burlington

Methodology

The research presented in the following chapters is based on twenty-four interviews conducted in March and April 1999 with residents of Lexington and Burlington. As previously discussed, I selected four neighborhoods and conducted six interviews per neighborhood. To contact residents and solicit interviews I began by hand-delivering individual flyers to every house in all four neighborhoods (see Appendix C). At least two residents in each neighborhood contacted me to arrange an interview after receiving the flyers; these residents then referred me to friends or acquaintances whom I subsequently interviewed. I also made interview contacts through casual meetings with residents while out walking in the neighborhood.

This process may have created a bias in the sample toward residents who are interested in neighborhood issues, as they would have been more likely to respond to the flyers. The sample may also be biased toward more sociable residents who would have been more likely to volunteer as research participants. However, since the same process was used in all four neighborhoods, this potential bias does not significantly affect the comparison.

The interviews generally lasted for an hour to an hour and a half. Of the 24 interviews, 22 were held in residents' homes, one in a coffee shop, and one in an office. The interviews began with a series of general questions about residents' experiences in

the neighborhood and town. I then asked them to mark certain features on maps of the

neighborhood and town, including the location of friends' houses, pleasant and

unpleasant places, neighborhood boundaries, walking routes, and important places in the

town. Lastly, I showed interview subjects a series of thirty photographs I had taken and

asked them to select five that best represented their neighborhood and five that least

represented their neighborhood. In combination, these techniques yielded a detailed

portrait of the neighborhoods and towns and revealed several important themes.

ROAD NETWORKS

One of the most striking differences between Lexington and Burlington is the geometry of the road network (see Appendix D for summary of findings). Lexington's network of arterial roads offers many possible routes, distributing traffic evenly through the town. The geometry of these roads, in combination with the open space network, has created a pattern of small neighborhood clusters with easy access to other neighborhoods, open spaces, and the town center (see Figure 5.1). The Minute Man bicycle path, which runs east/west through the town, also serves to connect neighborhoods with open spaces and the town center. The bicycle path is extremely popular with residents, who use it for travel to work as well as for recreation. In Burlington, the network of arterial roads is more limited, with fewer possible routes through town; this has resulted in a heavier volume of traffic on the main roads. Large areas of residential development have no immediate access to arterial roads, limiting the connections between neighborhoods, open spaces, and the town center (see Figure 5.2).

Burlington residents in both neighborhoods cited traffic congestion as the most serious problem in the town, while Lexington residents did not feel traffic was a serious problem. While heavier traffic in Burlington is due in part to the higher proportion of office, industrial, and commercial uses, the geometry of the road network exacerbates the problem. As one resident described,

> "To a point I think commercial development is good. Certainly the funding
> that it brings to the town and lower taxes are good to a point, but for me, there
> becomes a tradeoff where I'd rather pay a bit more taxes if there is a bit more
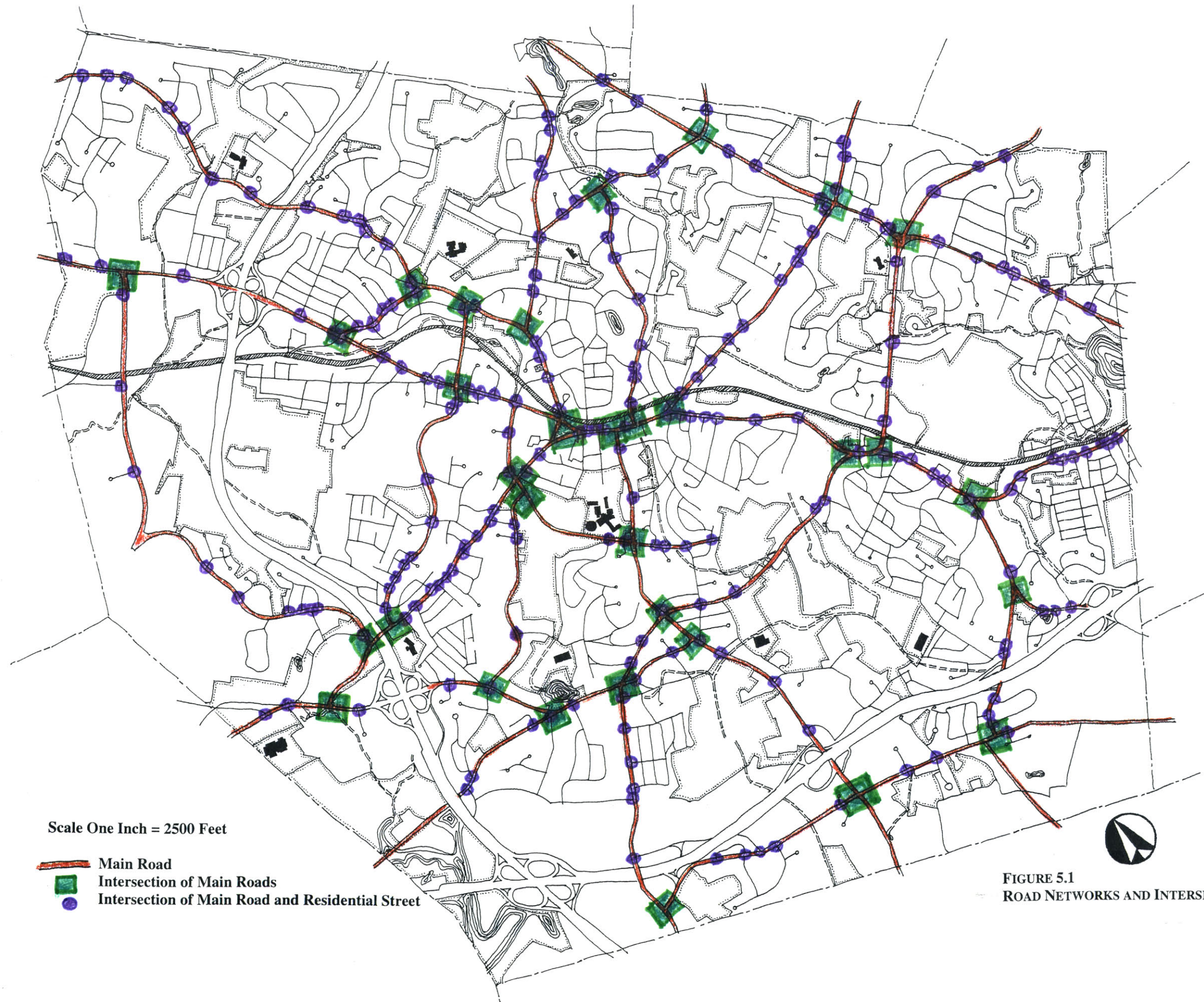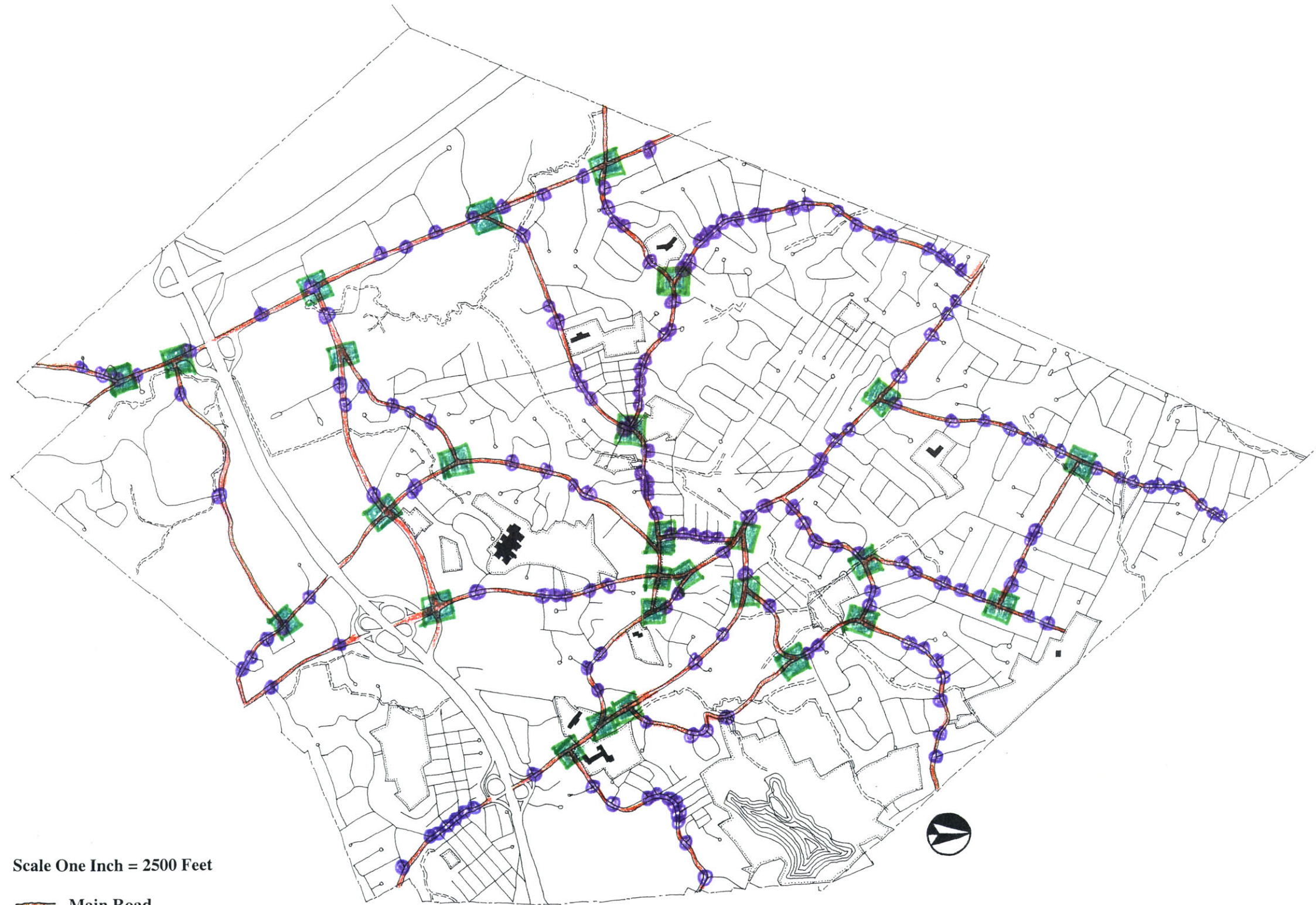> sanity when you are driving around and you can get places. if they don't have

Scale One Inch = 2500 Feet

Main Road
Intersection of Main Roads
Intersection of Main Road and Residential Street

FIGURE 5.1
ROAD NETWORKS AND INTERSECTIONS IN LEXINGTON

Scale One Inch = 2500 Feet

Main Road
Intersection of Main Roads
Intersection of Main Road and Residential Street

FIGURE 5.2
ROAD NETWORKS AND INTERSECTIONS IN BURLINGTON

the infrastructure to support the growth, it's a little crazy... there are times, particularly like even Saturday nights with the movies in the mall or Christmas, it could take you half an hour to go half a mile."

The increase in regional traffic to commercial and industrial destinations in Burlington, combined with the concentration of residential traffic on a limited number of arterials, has created heavily congested roads that further isolate the neighborhoods from the rest of town.

OPEN SPACE NETWORKS

In both Lexington and Burlington, it is clear that parks and open spaces are one of the most important aspects of the town both symbolically and functionally (see Appendix D for summary of findings). When asked to mark important places in the town, Lexington residents consistently selected the town common, conservation land and parks, while Burlington residents selected the town common and Simonds Park (see Figures 6.1 and 6.2). Among the open spaces selected in Lexington, the Town Common, Center Field, and Hayden recreation area were the most universally popular. These three parks are the most prominent and accessible open spaces in the town, located at the junction of five major roads, and lying immediately adjacent to the town center shopping area and civic buildings. In combination, they create a powerful magnet effect that reinforces the importance of the entire town center area. Residents also consistently selected conservation areas, especially Whipple Hill, the Great Meadow, and the reservoir. All three of these open spaces are highly visible and accessible, with direct access from two main roads.

WHIPPLE HILL

TOWN CENTER

GREAT MEADOW

MUSEUM OF NATIONAL HERITAGE

WILLARD'S PARK

HAYDEN RECREATION AREA

RESERVOIR
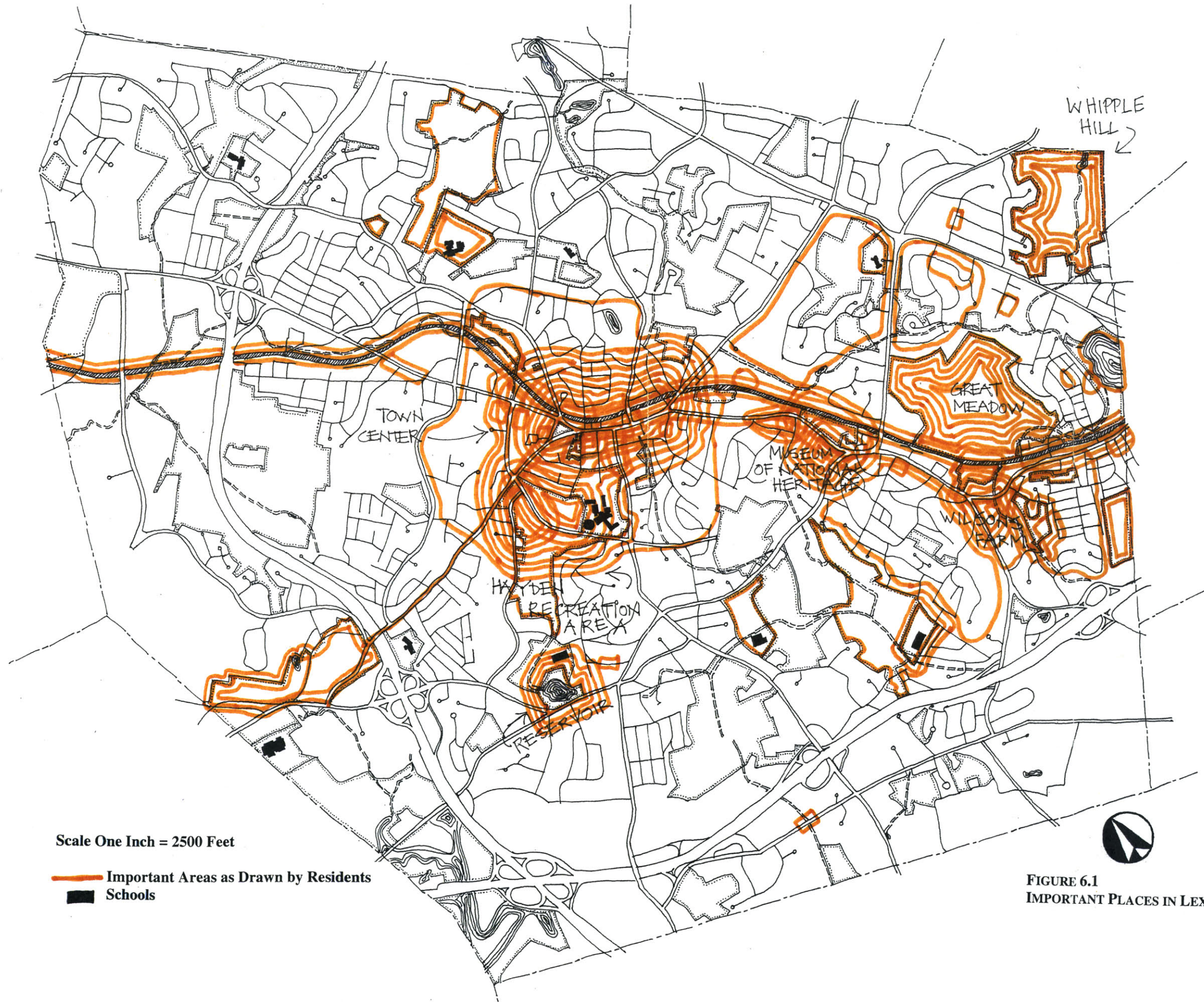
Scale One Inch = 2500 Feet

—— Important Areas as Drawn by Residents
■ Schools

FIGURE 6.1
IMPORTANT PLACES IN LEXINGTON

MALL

TOWN
CENTER

RECREATION
AREA

RESERVOIR

Scale One Inch = 2500 Feet

Important Areas as Drawn by Residents
Schools

FIGURE 6.2
IMPORTANT PLACES IN BURLINGTON

In Burlington, residents universally selected Simonds Park and the Town

Common as the most important places in town. Like the town common in Lexington,

these two public open spaces are located at the intersection of five major

roads. In contrast to Lexington, however, Burlington residents did not consistently select

any of the other parks or open spaces in town with the exception of the reservoir. The

contrast is particularly striking between Lexington's Hayden recreation area and

Burlington's recreation center and fields, which were not selected by a single resident. It

is not the case that Burlington's recreation center is not as well-used or well-liked; nearly

every resident mentioned the town's recreation programs as one of its major attractions.

Unlike the Hayden recreation area, however, Burlington's recreation center is tucked

away in the middle of a residential neighborhood on the southeast end of town. To get

there, residents must pass underneath Route 128 and drive three blocks through a

residential neighborhood. The recreation center's lack of visibility and access has thus

rendered it symbolically 'invisible.' While the differences in selection of important

places in Lexington and Burlington may be partially attributable to other causes, such as

residents' ability to read maps, these results do suggest that residents identify more

strongly with places that they frequently see.

TOWN CENTERS

A third contrast between Lexington and Burlington is in the quality and character

of the town center (see Appendix D for summary of findings). While Lexington has a

pedestrian-friendly center with small-scale shops, sidewalks, lighting, benches, and

crosswalks, Burlington's town center is an aging strip mall dominated by asphalt and

fast-moving traffic. In Lexington, every resident interviewed selected the town center as the single most important place in town, noting it before anything else. The town center in Lexington is important both symbolically and socially; as one resident described, "One thing that was very important to my husband and I is that we wanted to have a place where we felt we could go shopping, for a cup of coffee, and there was an epicenter where you have some kind of commerce, but then the social parts. So a community that helped you feel connected."

In Burlington, only one person selected the town center as important, and many residents expressed a strong dislike for the area. Many residents would like to see the center redeveloped to create a more walkable and visually attractive environment. One person commented that

> "I think one plus would be if they did downtown a little bit better. So it's more of a place you want to walk around. I've walked there and you feel like it's just dirty or like the traffic in the parking lots is crazy. You feel like you're taking your life into your hands. And it's not like that's the norm (in places) where people have strollers and they're walking up and down. But the storefronts (in Burlington), you drive there, do your thing and get out. So it would be nice if it was a place that people walked to and that alone would be enough to do, entertainment."

The desire for a walkable town center is especially significant in Burlington, where residents could easily go to the mall instead. If malls were truly the nexus of suburban community life, as many scholars have argued, then there would be little need for a town center in Burlington. In his recent book *The Suburbs*, John J. Palen declares that malls have become the new social centers of the suburbs:

> "… it is impossible to discuss suburbia today without noting the importance of malls not only for retail purchasing but also for social life. As old downtowns decline, malls have become the primary place where people rub elbows with other citizens… Malls serve a social function,

particularly for adolescents and the elderly. Being a teenage 'mall rat' is part of growing up in many parts of the country. What Main Street, the malt shop, and the diner were to the teenagers of the post-war period, the mall is to the preadults of the 1990s. The mall is a teenage hangout, a form of 'third place' or 'neutral ground' where adolescents can gather free of parental observation."

In Burlington, however, the mall does not function as meaningful social center. Although a number of residents selected the mall as an important place, none of them expressed any great attachment to it. Rather, it was perceived as a functional environment without any special significance. After studying social interactions in shopping malls for five years, Dr. Judith Coady, sociologist at the University of Connecticut, came to a similar conclusion:

"I expected to find the mall as some kind of new community, particularly for suburbia," she told the New York Times. "But I found that the mall is not a community at all... There was the appearance of community, but the interaction was truncated if there was any at all. The focus is on consumption, on the pleasure of just being there. The issues that are part of our everyday community are not discussed there, so it doesn't function as a community." (Langdon, *A Better Place to Live*, p. 21)

Residents of Burlington frequently cited Lexington's town center as a model, and many of them go to Lexington to shop or eat in the town center. The experience is never quite as satisfying as it would be in Burlington, however, since part of the attraction is meeting up with friends and acquaintances. One resident of Burlington summed up the desire for a lively, social town center:

"The only thing we miss about living in Burlington is having a 'town'... when I say that, I mean we go to Lexington to walk through Lexington center. Or you could go to Winchester center. It's very rare for me to go shopping or to the post office in Burlington. Sometimes I go to library and meet up with people. Bu there's no meeting spot to see people in Burlington. And I think that's a shame we can't go and see other people... It's nice to be able to go to Lexington and walk around. Even

though there's a lot of traffic in Lexington, it's very pedestrian. You can cross the street and they watch that so carefully that you don't have to be afraid of getting hit by a car. You can walk to the post office and walk to the library. Get your hair done. Go across and shop. It's wonderful... It drives my husband nuts that we can't do that in Burlington. We can't say to another family 'Oh, come up. We'll walk around and go biking.' "

LOCAL STREET PATTERNS

In all four neighborhoods, the research suggests a correlation between local street patterns, residents' choice of walking routes, and social activity (see Appendix E for summary of key findings). In the Oak Street neighborhood in Lexington, the grid pattern creates a well-connected street system and residents frequently walk throughout the neighborhood. Since most residents meet their neighbors while out walking, this promotes a high level of sociability. On average, residents of Oak Street know twenty-three of their neighbors. In contrast, residents of the Spruce Hill Road neighborhood in Burlington know an average of only ten neighbors; this appears to be correlated with the street pattern, since Spruce Hill Road is entirely made up of cul-de-sacs. The Duncan Multiple Range Test (Alpha= .05, D.O.F. =20) shows that the difference between Oak Street and Spruce Hill is statistically significant, even with a relatively small sample. In the Bryant Road neighborhood in Lexington and the Great Pine Road neighborhood in Burlington, which have connecting streets and dead ends, residents knew an average of seventeen neighbors.

The correlation between street pattern and sociability is likely the result of two related factors. First, people most often meet their neighbors while out walking, and people prefer not to walk down dead ends. Thus in a grid pattern residents walk through the entire neighborhood, following different paths on different days, but always moving in a loop. In a cul-de-sac development residents avoid dead end streets, often going out to the main road to create a loop outside the neighborhood. As one resident commented,

"You want to do loops when you walk because it brings you from one point and back to the same point. I don't like going up a street and turning around... I don't like to go to a point, turn around and repeat my steps. I like to do a loop." Of the twenty-four people interviewed, not a single person had a regular walking route that took them down a dead-end street. The differences in sociability between the four neighborhoods may also attributed to the presence or absence of open space in the neighborhood; in Oak Street, for example, many residents met their neighbors while out at West Farm or Sutherland Park.

In the Spruce Hill neighborhood in Burlington, the discontinuity of streets has resulted in nearly complete isolation from one cul-de-sac to the next. This was poignantly illustrated by the case of a young mother with a baby who was desperate to meet other mothers with babies, but had never walked down any of the other cul-de-sacs in the neighborhood. As a result, she had not met several mothers living on the next road. A resident of Shady Lane described the problem of pedestrian circulation in the Spruce Hill neighborhood:

> "(The cul-de-sac on Theresa Ave.) is weird because it's just dead. You go up and there are just four houses, so you're kind of stuck there. We like going up because they have kids. But it would be great if it all circled out again. You go up and come back. It's nice when (the streets) are more connecting. Dead end streets are great, but when you're walking, you just walk to the bottom, turn around and walk back... That's one of the things (our old neighborhood) had- you could get on a bike and ride to so many connecting neighborhoods. Very few dead end cul-de-sacs."

In neighborhoods with connecting streets, residents have a larger territory that they consider their neighborhood. This is due to their greater familiarity with the
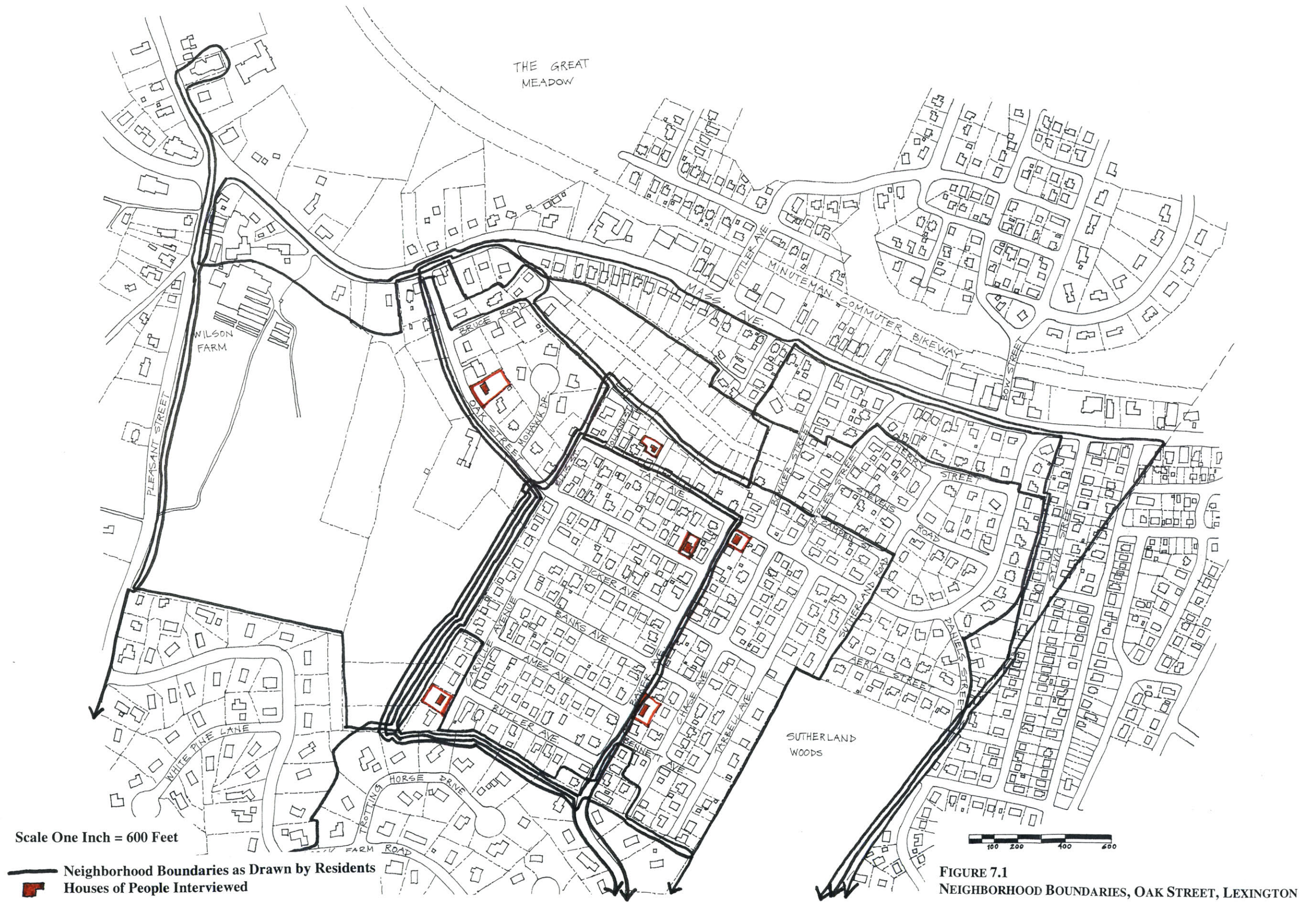
90

surrounding area (see Figures 7.1 - 7.4). Residents of Spruce Hill and Bryant Road generally defined their neighborhood according to where they knew people; thus their neighborhood boundaries were highly irregular, including some houses while excluding others on the same block. In contrast, residents of Oak Street and Great Pine Road drew their boundaries along clearly defined edges such as a road or park, regardless of whom they knew in the immediate area. In all four of the areas studied, residents of cul-de-sacs and dead-end streets drew their neighborhood boundaries close to their homes, including only their immediate neighbors. Residents of through streets, on the contrary, generally drew neighborhood boundaries further from their homes. It is clear from this data that residents who frequently walk or drive through an area are more likely to identify that area as part of their neighborhood. As Langdon has pointed out,
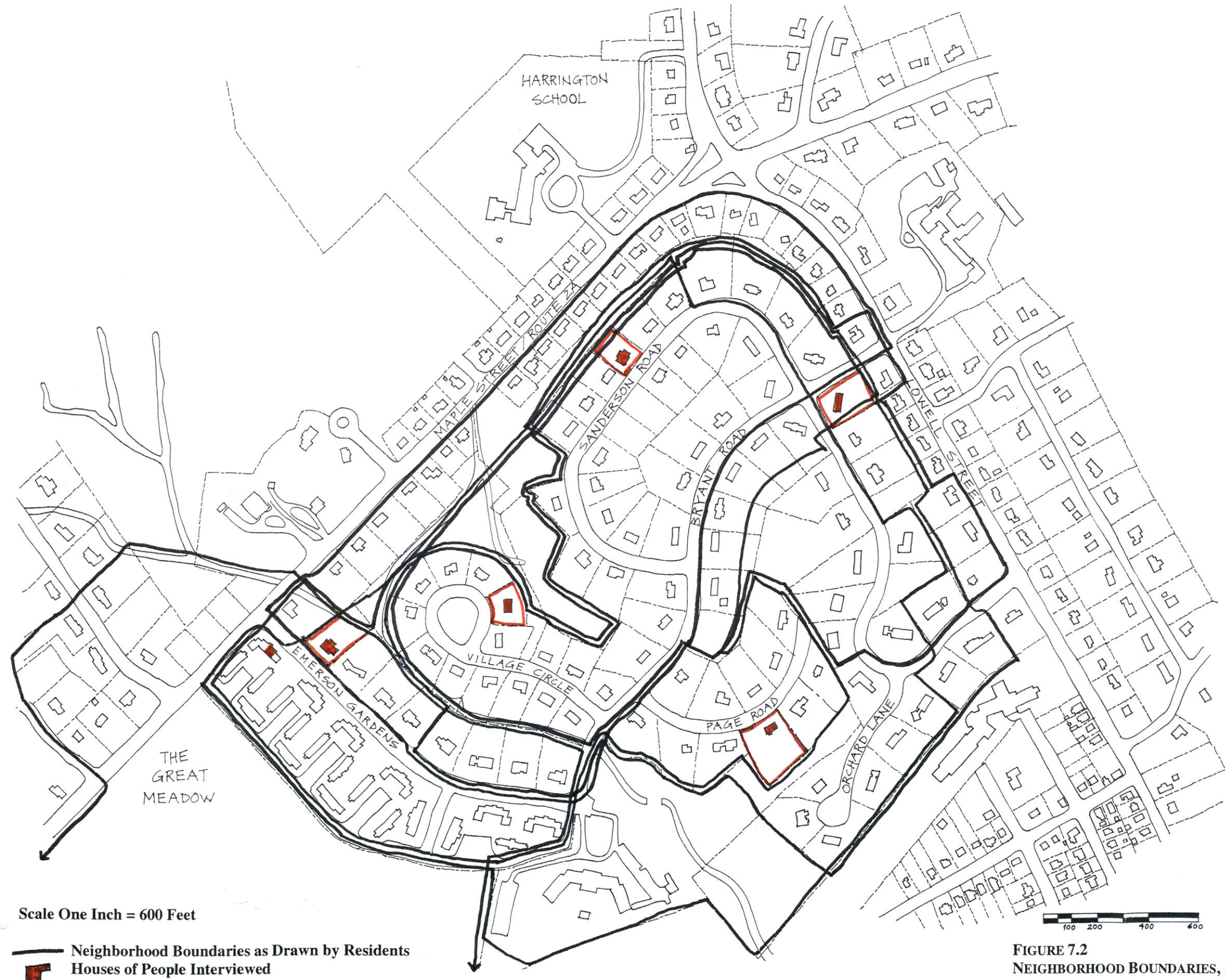
> "The continuous network (of streets) has the virtue of not reigning in a person's loyalties. It is easy for people to become acquainted with areas beyond their own neighborhood, and as they become more knowledgeable, they are likely to become more empathetic towards those places and their inhabitants... The network of streets encourages people to cast the net wide when thinking about who and what are part of their community." (Langdon, *A Better Place to Live*, p. 143)

The research in all four neighborhoods clearly bears this out, as residents of the grid neighborhood (Oak Street) 'cast their net' far wider in defining their neighborhood boundaries than residents of the loop or cul-de-sac neighborhoods.

One of the disadvantages of connecting streets compared to cul-de-sacs is the higher levels of traffic. In the Oak Street neighborhood in Lexington, through traffic is a serious safety concern, especially for children. As one resident described,

> "The main thing I dislike is the traffic. It's just people come up (the road) and they see a straightaway and they give it the gas. And it means that I can't let my kids go out. It's funny. Once I get (my daughter) around the corner, she's

THE GREAT MEADOW

WILSON FARM

PLEASANT STREET

MASS. AVE.

BRUCE ROAD

OAK STREET

MOHAWK DR.

MINUTEMAN COMMUTER BIKEWAY

FOTTLER AVE.

BOW STREET

TARBELL AVE.

PARKER STREET

CHERRY STREET

STEVENS ROAD

SYLVIA STREET

DANIELS STREET

SUTHERLAND ROAD

AERIAL STREET

TUCKER AVE.

BANKS AVE.

CARVILLE AVENUE

AMES AVE.

BUTLER AVE.

OAK AVE.

BENNET

CLARKE AVE.

TARBELL AVE.

SUTHERLAND WOODS

WHITE PINE LANE

TROTTING HORSE DRIVE

FARM ROAD

Scale One Inch = 600 Feet

━━━ Neighborhood Boundaries as Drawn by Residents
🔲 Houses of People Interviewed

100 200   400   600

FIGURE 7.1
NEIGHBORHOOD BOUNDARIES, OAK STREET, LEXINGTON

HARRINGTON
SCHOOL

MAPLE STREET   ROUTE 2A

SANDERSON ROAD

BRYANT ROAD

LOWELL STREET

VILLAGE CIRCLE

EMERSON GARDENS

PAGE ROAD

ORCHARD LANE

THE
GREAT
MEADOW

Scale One Inch = 600 Feet

—— Neighborhood Boundaries as Drawn by Residents
■ Houses of People Interviewed

100 200   400   600

FIGURE 7.2
NEIGHBORHOOD BOUNDARIES, BRYANT ROAD, LEXINGTON
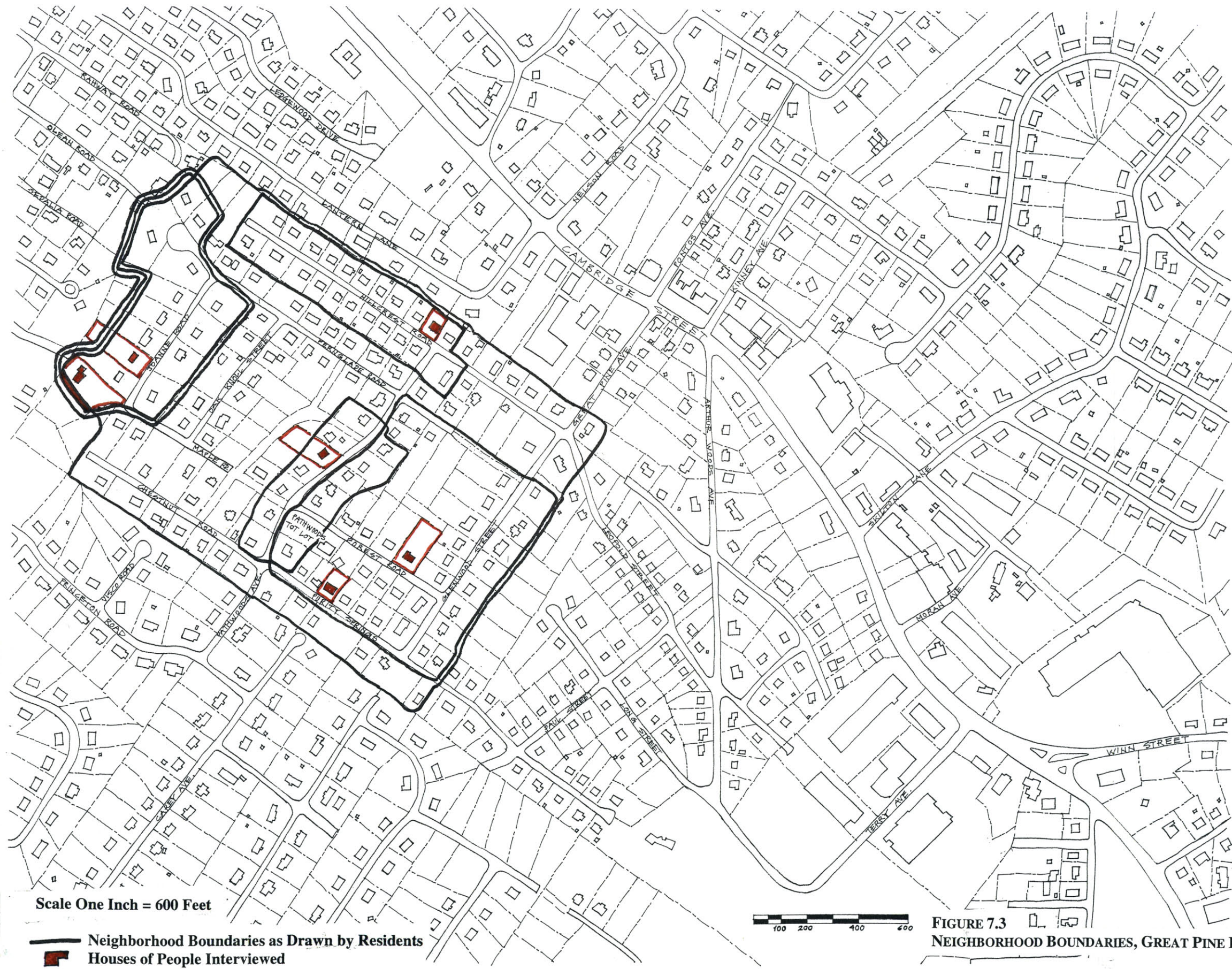
Scale One Inch = 600 Feet

— Neighborhood Boundaries as Drawn by Residents
▬ Houses of People Interviewed

FIGURE 7.3
NEIGHBORHOOD BOUNDARIES, GREAT PINE ROAD, BURLINGTON
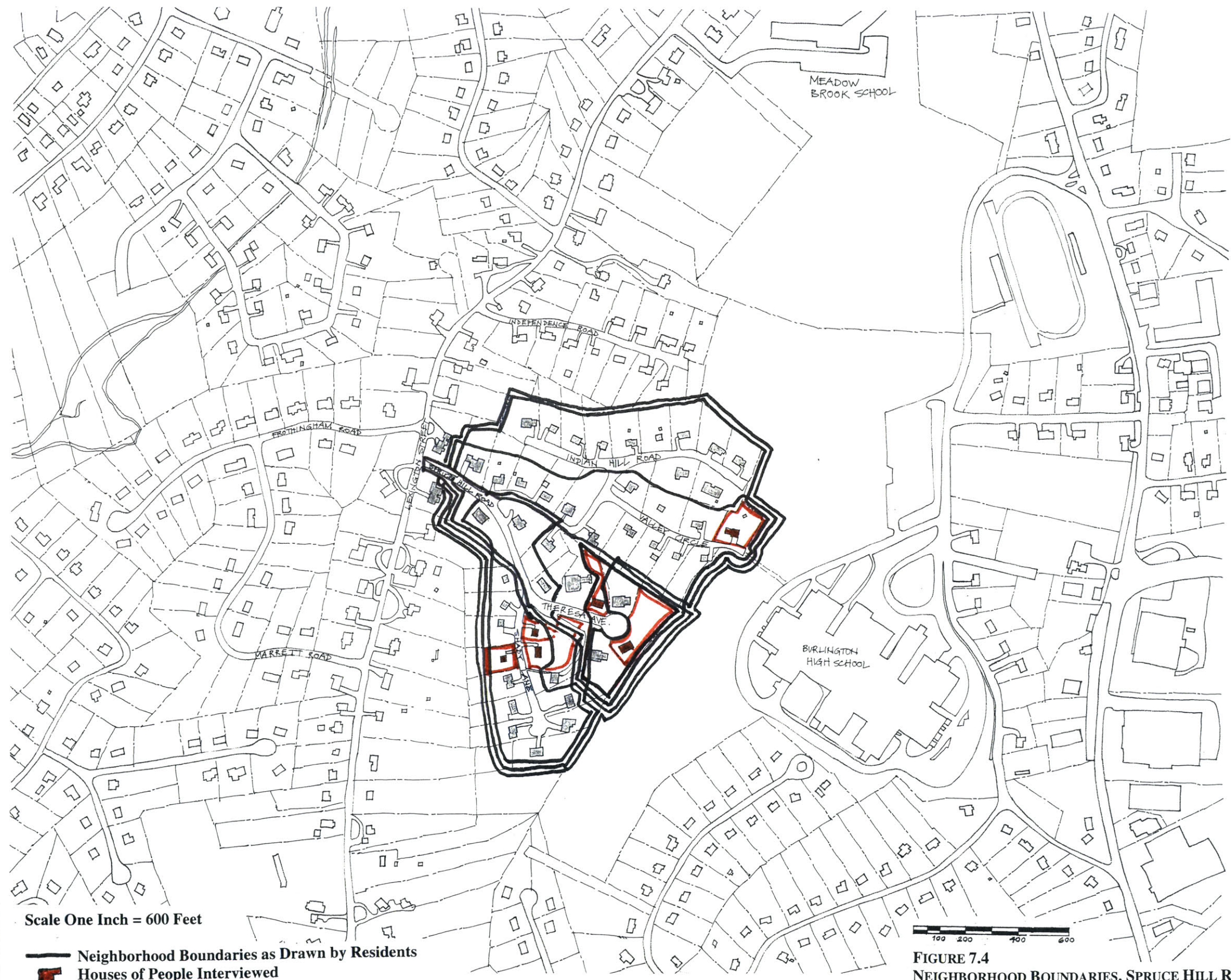
Scale One Inch = 600 Feet

—— Neighborhood Boundaries as Drawn by Residents
▬ Houses of People Interviewed

FIGURE 7.4
NEIGHBORHOOD BOUNDARIES, SPRUCE HILL ROAD, BURLINGTON

friends with a little girl over there. They ride their bikes up and down the
street and do all that classic suburban stuff because there's almost no traffic."

Heavy through traffic is also a problem in the Great Pine Road neighborhood in
Burlington. In contrast, residents of cul-de-sacs in Bryant Road and Spruce Hill Road
cited the lack of traffic as a major attraction of the neighborhood, and parents in these
developments were much more likely to allow their children to play in front yards and
streets.

LOCAL OPEN SPACES

Local open spaces, especially parks and conservation land, were found to be
consistently among the most significant features of residential neighborhoods (see
Appendix F for summary of key findings). As in the larger context of the town, however,
these open spaces were only significant to the extent that they were visible and accessible
from main roads. In the Oak Street neighborhood, five out of six residents chose a photo
of West Farm as representative; in contrast, only two residents of the Bryant Road
neighborhood chose the Great Meadow as representative. As discussed earlier, West
Farm is highly visible from the main road, while the Great Meadow borders a parking lot
on the edge of the development. Similarly, only two residents of Bryant Road selected a
photo of the stream, despite the fact that it is the most significant topographical feature of
the site (see Tables 2.1 - 2.4).

It is particularly interesting that five out of six residents of the Great Pine Road
neighborhood chose a photo of the Burlington Town Common more than half a mile
away as representative of the neighborhood. In contrast, only one resident of the Spruce

OAK STREET NEIGHBORHOOD
FREQUENTLY SELECTED PHOTOS
(NUMBER OF VOTES INDICATED IN PARENTHESES)

MOST REPRESENTATIVE OF NEIGHBORHOOD:
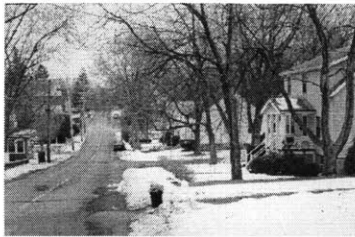
(**6**) Baker Avenue

(**5**) West Farm

(**5**) Children's play equipment

LEAST REPRESENTATIVE OF NEIGHBORHOOD:

(**5**) Toyota dealer

(**4**) Run-down house

(**3**) Mass. Ave. strip mall

(**3**) Arlington Heights

(**3**) Parking for bus passengers

(**3**) Ranch house

(**3**) Mohawk Drive cul-de-sac

TABLE 2.1

BRYANT ROAD NEIGHBORHOOD
FREQUENTLY SELECTED PHOTOS
(NUMBER OF VOTES INDICATED IN PARENTHESES)

MOST REPRESENTATIVE OF NEIGHBORHOOD:

(4) Emerson Gardens Road

(3) Sanderson Road

(3) Emerson Gardens apartments

(3) Harrington School

LEAST REPRESENTATIVE OF NEIGHBORHOOD:
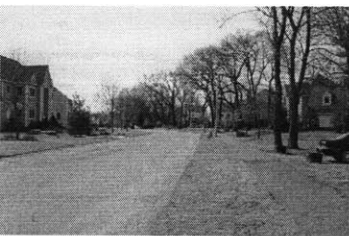
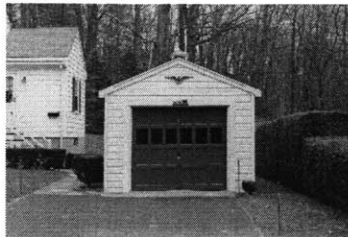**(3)** Orchard Lane
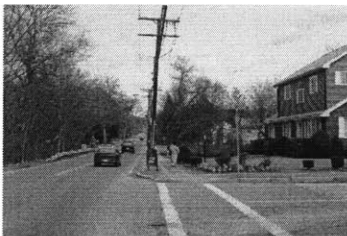
(3) Route 2A/
Emerson Gardens Road

TABLE 2.2

GREAT PINE ROAD NEIGHBORHOOD
FREQUENTLY SELECTED PHOTOS
(NUMBER OF VOTES INDICATED IN PARENTHESES)

MOST REPRESENTATIVE OF NEIGHBORHOOD:

(**5**) Town common

(**4**) Well-maintained garage
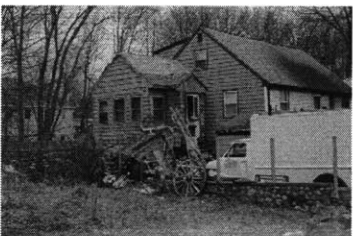and front yard
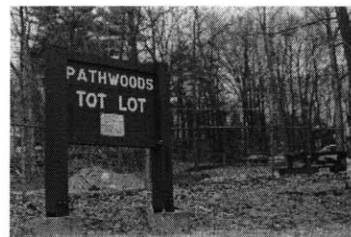
(**3**) Pathwoods Tot Lot

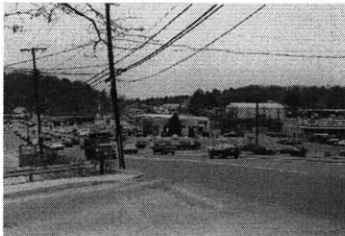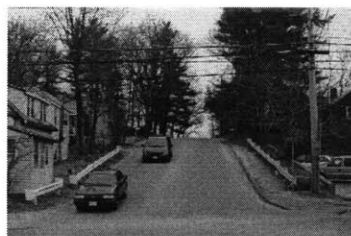(**3**) Fernglade Road cul-de-sac

(**3**) Basketball hoop
and hockey net

LEAST REPRESENTATIVE OF NEIGHBORHOOD:

(**5**) Run-down house

(**4**) Town center

(**3**) Great Pine Road from
Cambridge Street

TABLE 2.3

SPRUCE HILL ROAD NEIGHBORHOOD
FREQUENTLY SELECTED PHOTOS
(NUMBER OF VOTES INDICATED IN PARENTHESES)

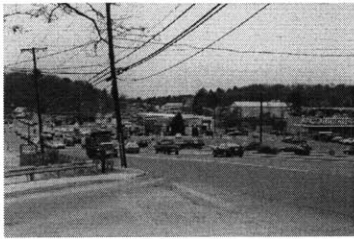MOST REPRESENTATIVE OF NEIGHBORHOOD:

(5) Modern house

(3) Shady Lane

(3) Wooded lot

LEAST REPRESENTATIVE OF NEIGHBORHOOD:

(6) Town center

(6) Strip mall

(6) Office park

(5) Burlington Mall

TABLE 2.4

Hill Road neighborhood chose the same photo, despite the fact that the neighborhoods are equidistant from the common. The most likely explanation is that Great Pine Road is the only one of the four neighborhoods studied that has no open space immediately nearby, and the common is the closest public open space. If this is the determinant, it suggests that residents identify with public open space more than any other single feature of a neighborhood, even when these spaces are somewhat distant. This conclusion is consistent with Kevin Lynch's finding that public open spaces are among the most 'imageable' elements of the urban landscape.

In the Oak Street neighborhood in Lexington, the conservation land plays a vital role in the social life of the neighborhood. West Farm is a favorite place for walking and for sledding in the winter, and residents use it as a shortcut to Wilson's Farm at the bottom of the hill. Sutherland Park is also very popular, especially for larger groups; for example, a group of neighborhood women take their dogs to the park at the same time every afternoon in a kind of informal social club (despite the sign that says No Dogs Allowed). According to one resident, "The conservation land is a social tool in our area because people use it so much here. Mostly for walking their dogs, but also just with the kids and people going for walks." For many people, the conservation land also compensates for the smaller lots:

> "When we had all the renovations done, we went and lived at my Mom's for a few months. And all this time I was thinking 'we could live in a nice house, a nice part of town.'... And we were living there and walking the dog was nowhere near as much fun... I thought it's much better to be crammed house by house and have chunks of open space where you can go. For me, I can take the dog off the leash, he runs around. We meet the neighbors sledding. Kids play ball. It's just really a social center. It's an enormous asset."

For residents of the Great Pine Road neighborhood, the Pathwoods Tot Lot is an important neighborhood asset. One resident noted that the Tot Lot was an important factor in her decision to stay in the neighborhood:

> "We got to the point that I had three children, a live-in au pair for nine years and we were having our fourth child and it was either move or expand. And the playground was one of the big things that kept us here... I think it's a great thing to have. My kids don't spend as much time there now because they're older, but when they were little, they spent a lot of time there."

In the Bryant Road neighborhood in Lexington, there is no common gathering place such as a park or playground serving the entire neighborhood. This is contributes to lower levels of sociability, as most residents know their immediate neighbors but have few friends in the larger neighborhood, other than those they met through outside connections such as work or church. As one resident described,

> "(I would like it better) if there was a central, neutral gathering place in the neighborhood. Because the way it's set up, the way the streets run, there isn't a natural place where people congregate... I think it would be great if there was one central place where maybe there was a basketball hoop or a tennis court, that would attract more people on a regular basis."

Another resident felt the neighborhood lacked identity and character, in part because it had no common open space. As she described the neighborhood,

> "It's a pretty vanilla experience. In our old house we lived across from the meadow and my kids used to love to go walking there and that was a special thing... We're out here a lot; we walk the whole neighborhood, but it's not particularly special. And as a result out kids aren't thrilled about it."

It is not the case, however, that people in the Bryant Road neighborhood are uninterested in socializing with their neighbors. A new resident who wanted to get to know her neighbors decided to organize a block party, and the response was overwhelmingly positive:

"When we've done these neighborhood get-togethers, one of the most interesting things to me has been the turnout of the older people in the neighborhood who have said 'Gee, nobody has done this for so long. They used to do it and they don't do it anymore… It's sad to see people selling their homes in the neighborhood.' But they are as anxious to know their neighbors as those of use who are new to the neighborhood… We've done (the block party) twice now and we have 120-150 people that show up. It's great."

Clearly, residents are interested in getting to know their neighbors; however, the organization of streets and open spaces do not foster this kind of casual social activity.

FRONT YARDS

The location and orientation of houses has a significant effect on the level of activity on streets and in front yards (see Appendix G for key findings). In the Oak Street neighborhood in Lexington, where houses typically have twenty-foot setbacks and front doors with paths connecting to the street, residents frequently interact in front of their homes. The narrow side yards also contribute to sociability, as neighbors can easily greet one another from their front doors. Although some residents of Oak Street said they would prefer to have slightly more space around their homes, they also commented that the small lots contribute to a sense of 'neighborliness.' As several residents noted:

"This is a real urban village sort of space… (the houses) are close together, fairly high degree of neighborliness, lots of people walking around talking to each other."

"The houses are close, people walk places and we know our neighbors and it feels friendly and like we're part of the neighborhood."

In contrast, the houses in the Bryant Road neighborhood in Lexington have thirty to forty foot setbacks and deep side yards. Many houses have pathways connecting front doors to the driveway, rather than the street. As a result, it takes considerably longer to walk from the door to the street. Residents of the neighborhood have mixed views about

103

the effects of this layout; while some enjoyed the privacy afforded by large front and

yards, some felt the location and orientation of the houses discouraged social interaction.

One resident who had previously lived in another neighborhood in Lexington with

smaller lots described the difference between his old neighborhood and his new house on

Emerson Gardens Road:

"This is not a neighborhood. When you go out your front door, even if your neighbor is coming out their front door and getting in their cars, you might get a wave. Over on Columbus Street, you walk out your front door and go 'Hi Alan, how you doing?' That's the difference."

Another resident commented that

"The architecture of the neighborhood doesn't lend itself to social interaction. The people next door, literally there is no reason to see them. Their house is a stone's throw away, but unless they happen to be on this side of the house, which is unusual, I never see them... They're always coming and going from their cars. I use my front door, but most people don't use their front doors."

As a result of the location and orientation of houses in the Bryant Road

neighborhood, residents are much less likely to personalize their front entries. Compared

with the other three neighborhoods studied, few houses in Bryant Road have welcome

signs, seasonal decorations, flower boxes, doormats, or other items marking the front

entry. Many of these houses therefore have the appearance of a stage set, without any

distinct identity or personality. In sum, the location and orientation of houses in the

Bryant Road neighborhood do not contribute to creating active front yards.

CHAPTER SIX
Principles for Neighborhood and Town Design

The preceding research findings suggest that successful town and neighborhood design is centered around five key themes:

i)   Integrated road networks;

ii)   Visible and accessible open spaces;

iii)   Social town centers;

iv)   Walkable neighborhoods;

v)   Active front yards.

These themes incorporate many of the large and small-scale spatial patterns that contribute to form, image, and identity in the suburban landscape. The following chapter will outline principles associated with each of these themes, which can serve as a framework for interventions in existing towns and neighborhoods.

INTEGRATED ROAD NETWORKS

Key Principles

- *Develop road networks that provide many alternative routes through town*

- *Distribute arterial roads to provide maximum accessibility to neighborhoods*

- *Use arterial roads to create small neighborhood clusters*

- *Design road network to maximize accessibility and visibility of open spaces*

       To implement these principles, towns will need to plan new roads and selectively widen existing roads. This process is inevitably controversial, as residents of existing streets will not want increased traffic in their neighborhoods. To offset increases in traffic, towns may offer special benefits to these neighborhoods, such as traffic calming measures or infrastructure improvements. Ideally, the creation of new roads and the widening of existing roads should be carried out concurrently, in order to evenly re-distribute traffic.

VISIBLE AND ACCESSIBLE OPEN SPACES

Key Principles

- *Develop open spaces adjacent to or at the intersection of main roads*

- *Create open-space easements on existing undeveloped land*

- *Acquire small parcels for neighborhood parks and playgrounds*

- *Provide development incentives for creating linked networks of open space in new sub-divisions*

In order to create visible, accessible networks of open space, towns should develop a strategic plan for acquiring undeveloped parcels of land. In particular, open land adjacent to major streets and thoroughfares should be acquired for preservation. In many towns, including Burlington, public utility companies own large parcels of land which could be dedicated as open space in perpetuity without a transfer of ownership. Old rail lines and canal beds also present an ideal opportunity for open space linkages, providing a natural corridor for bicycle and pedestrian paths. Towns could also take advantage of existing easements by providing walking paths or trails, lighting, and signage.

At a smaller scale, suburban towns should develop a program for acquiring individual parcels of land in individual neighborhoods for 'vest-pocket parks' or playgrounds. The vest-pocket park, a concept first popularized in New York City, demonstrates that small plots of land can be effectively transformed into neighborhood parks. As demonstrated in the Great Pine Road neighborhood, single lots can also be developed as playgrounds or tot lots, providing a valuable neighborhood amenity.

Lastly, towns can encourage the development of open space networks by offering substantial incentives for the provision of parks or open space in residential neighborhoods. In a new subdivision, for example, a developer could be encouraged to set aside a minimum percentage of total land for open space in exchange for increased flexibility in permitting and approvals. In order to receive such a development bonus, the open space should be linked to existing networks of roads and open space in the surrounding area. In this way, new systems of parks and open space could be developed without major financial cost to the town.

SOCIAL TOWN CENTERS

Key Principles

- *Locate civic and institutional uses in the town center*

- *Provide recreational facilities and open spaces within walking distance of shops*

- *Encourage a mix of uses that generate activity during the day and at night*

- *Develop small-scale retail with active ground floors*

- *Provide comfortable sidewalks and benches, adequate lighting, and safe crosswalks*

- *Provide sufficient parking behind buildings*

Town centers can be greatly enhanced by the presence of civic uses and open spaces nearby. In Lexington, the town center benefits tremendously from its proximity to the Common, the Hayden Recreation Center, and various civic uses such as the town hall and library. These public uses collectively create a 'magnet' effect around the town center, contributing to its symbolic and functional importance. In existing suburbs, town centers should be developed as part of a larger fabric of civic, institutional, and recreational uses.

To create social town centers, suburban towns should develop coordinated and comprehensive strategies that address land use, zoning, traffic management, parking, and building design. The creation of a social town center requires sustained long-term investment by the town, as well as careful regulation of private development. In Burlington, for example, the town center could be dramatically improved through a joint public/private partnership effort. The town could create incentives and regulations to encourage property owners to redevelop their sites, while assuming primary

responsibility for infrastructure improvements such as walkways, landscaping, and lighting.

Town centers must be visually attractive and functionally effective, requiring interventions at both the large and small scale. At the large scale, town centers should be easily accessible by car, foot, and bicycle. Sufficient parking should be provided through a combination of on-street spaces and smaller lots located behind buildings. Storefronts should be connected by comfortable sidewalks, with pedestrian crosswalks at key intersections. Elements such as benches, lighting, and landscaping are also essential for creating a comfortable and inviting town center.

WALKABLE NEIGHBORHOODS

Key Principles

- *Create desirable walking routes, especially loops*

- *Locate open spaces and shops within walking distance of neighborhoods*

- *Provide comfortable sidewalks and paths*

- *Develop new pedestrian links between cul-de-sacs, open spaces and schools*

- *Implement traffic calming measures such as road narrowing or shared surfaces in grid neighborhoods with heavy through traffic*

Walkable neighborhoods have three important components: desirable walking routes, interesting places to go, and comfortable sidewalks and paths. Desirable walking routes are those that offer many possible choices, especially for walking in loops. Interesting places to go include parks, playgrounds and shops within walking distance of neighborhoods. Sidewalks and paths should be designed to create comfortable walking surfaces that can accommodate strollers and wheelchairs.

While towns cannot entirely re-structure street patterns in existing neighborhoods, they can create better pedestrian connections between blocks and subdivisions. In Burlington, for example, the town owns extensive right-of-way corridors in many residential neighborhoods. These could be developed as pedestrian paths, linking cul-de-sacs and dead-end streets with the surrounding area and creating better access to open spaces and schools. The development of new pedestrian paths would be particularly effective in combination with the acquisition of lots for playgrounds and parks, to create natural connections through public spaces in the neighborhood.

In a grid neighborhood where streets are already well-connected, towns should consider implementing traffic calming measures to improve the safety and sociability of streets. In all four of the neighborhoods studied, residents consistently cited traffic safety as one of the key factors in neighborhood satisfaction. High-speed traffic was described as a serious problem in the Oak Street and Great Pine Road neighborhoods, while the safety afforded by loops and cul-de-sacs was cited as a major benefit in the Spruce Hill Road and Bryant Road neighborhoods. This research finding is consistent with a traffic study carried out in nine neighborhoods in California in 1995, which found that cul-de-sacs performed better than loops or grids in terms of traffic safety and safety for play. At the same time, however, the study found that

> "Cul-de-sacs... do not necessarily maintain stronger social interaction and a sense of neighborhood than through streets. Although cul-de-sacs are the preferred residential street type and place for lot location, they are less preferred as an overall neighborhood form. This might suggest a desire for a neighborhood pattern where residents attain the clustering qualities associated with a dead-end street in their immediate surroundings, and the connective qualities associated with the grid in the larger context of their neighborhood." (Ben-Joseph, *Livability and Safety of Suburban Street Standards: A Comparative Study*, 1995, p. 1)

In order to reduce the risk of traffic accidents in a grid neighborhood, a number of options exist for creating 'safe streets'. One possibility is simply to reduce road widths in residential areas to slow the speed of traffic. This strategy has been informally adopted by residents of the Great Pine Road neighborhood, who regularly park their cars on the roadside to reduce the width of travel lanes. By adding sidewalks or landscaped strips along the road edge, the town could formalize this traffic calming system and significantly reduce the speed of traffic in the neighborhood. In Portland, Oregon, the Skinny Streets program has reduced traffic speeds in residential areas by reducing road

widths as much as twelve feet. In addition to improving traffic safety, the Skinny Streets

program has also reduced storm water run-off and the impact of grading on slopes.

(Southworth and Ben-Joseph, *Streets and the Shaping of Towns and Cities*, 1997, p. 134).

A second option for improving traffic safety in a grid system is to create

'shared streets,' in which pedestrians and vehicles share the same surface. Rather than

the traditional separation of asphalt roadways and concrete or brick sidewalks, the shared

street has a continuous surface that gives priority to pedestrians. The surface is paved in

patterned blocks, thus extending the 'play area' of the front yard into the street.

Landscape elements such as trees and gardens are also placed in the public right of way,

further defining the space as a pedestrian domain. According to Ben-Joseph, "the

combination of an alerted driver and a low vehicle speed substantially reduces the risk of

a serious accident; the maximum speed in a shared street was recorded at 13.5 miles per

hour." (Ben-Joseph, "Changing the Residential Street Scene," American Planning

Association Journal, 1995, p. 507) In addition to the benefits of improved safety, shared

streets contribute to increased social activity and children's play. A study in Germany

found that street redesign led to a twenty percent increase in children's play activity on

the street, and that play became more complex. (Ben-Joseph, 1995, p. 510) In the

Netherlands, where shared streets (known as 'woonerfs') were first popularized, the

concept has been endorsed through government guidelines and regulations and is a

central feature of neighborhood planning. Shared streets have also been widely adopted

in Germany, England, Sweden, Denmark, France, Switzerland, Israel, and Japan.

The shared street concept offers great potential for combining the social advantages of a grid system with the safety afforded by a cul-de-sac. As Ben-Joseph has noted,

> "The shared street concept holds promise for the neo-traditional development. Advocating a highly interconnected street network (usually a grid), neo-traditional supporters claim it will reduce travel distance and time and extend accessibility by offering more route choices... Yet, increased accessibility on all the streets raises the likelihood of cut-through traffic and of speeds inappropriate to residential neighborhoods- the original impetus for abandoning grids in favor of discontinuous street systems, more than sixty years ago. Shared streets in a connected system can eliminate the deficiencies of the grid. Speed will be reduced and through traffic by non-residents discouraged, yet connective factors such as access points and route choices will be much more numerous than in the typical hierarchical, discontinuous street system. This design would thus combine a high degree of livability and safety in the residential streets while maintaining links to the larger neighborhood." (Ben-Joseph, 1995, p. 512)

In existing grid neighborhoods, redevelopment as a 'shared street' would reduce traffic risk and increase social activity. Likewise, in new subdivision developments, a grid pattern can be combined with shared street design to create safe and highly sociable neighborhoods.

ACTIVE FRONT YARDS

Key Principles

- *Develop zoning regulations for minimum setbacks of twenty feet*

- *Develop zoning regulations to encourage narrow, deep lots in new subdivisions*

- *Require developers to provide pathways from front doors to streets*

The development of active front yards is difficult for towns to regulate, since it relies on the detailed design of houses and subdivisions. Towns could enact a minimum setback rule of twenty feet instead of the standard thirty feet, which would permit houses to locate closer to the street while still allowing developers flexibility in design. Towns could also develop zoning regulations to encourage the subdivision of new developments into narrow, deep lots; this would result in narrow side yards and deep backyards. Finally, towns could require developers to provide pathways from front doors to streets.

Conclusion

The five key themes of integrated road networks, visible and accessible open spaces, social town centers, walkable neighborhoods, and active front yards provide a coordinated framework for redevelopment of the suburban landscape. The principles described above offer some ways in which these themes might be implemented; however, they are by no means an exhaustive list. Interventions around these five themes may be large or small, immediate or long-term; ideally, they should be part of a larger effort that includes region-wide planning. At both the neighborhood and town level, implementation of these principles can contribute to creating more meaningful and satisfying environments. With time, these strategies offer real prospects for significantly improving the suburban landscape.

APPENDIX A

Demographic and Socio-Economic Characteristics of Lexington and Burlington

*Figures based on 1990 Census

	Lexington	Burlington
1990 Population	28,974	23,302
Percent White	92.2	94
Percent Black	1.0	1.2
Percent Asian/ Pacific Islander	6.5	4.5
Percent high school graduates	12.5	18.5
Percent college graduates and beyond	41	22.3
Per Capita Income, 1989	$30,718	$20,374
Median Household Income, 1989	$67,389	$55,952
Median Family Income, 1989	$76,410	$60,323
Persons in Poverty, 1989	747	726
Persons per Household	2.70	2.96
Persons per Family	3.07	3.34
Total Housing Units	10,841	8,054
Percent Single-family	81	77
Percent Owner-Occupied	80	77
Median Value, single family home	$282,800	$191,100
Median Rent	$902	$822

APPENDIX B

Land Use in Lexington and Burlington

Source: Metropolitan Area Planning Council Community Profiles, 1986

Land Use Category	Percent of Total Land, 1980 **Lexington**	Percent of Total Land, 1980 **Burlington**
Industrial	2%	8%
Commercial	1%	4%
Residential	47%	45%
Transportation	3%	3%
Open and Public	6%	3%
Agricultural	4%	1%
Open	3%	4%
Forest	25%	24%
Wetlands	7%	5%
Outdoor Recreation	3%	2%
TOTAL OPEN SPACE:	48%	39%

APPENDIX C

Interview Questionnaire

PART I

1)   How many people are in your household? What are their ages?

2)   What are the occupations of those who work?

3)   How long have you lived in this town, this neighborhood, this house?

4)   Where did you live before moving here? What type of housing did you live in?

5)   Why did you choose to live in this town, this neighborhood?

6)   What do you remember most about your first impressions of the neighborhood?

7)   In what ways has the neighborhood, town changed since you first moved in?

8)   Does this neighborhood seem like a typical suburb to you? Why?

9)   What do you know about the history of this neighborhood? How did you learn about it?

10) What do you like about your house and its location in the neighborhood? What do you dislike?

11) Do your closest friends live in the neighborhood, town, or elsewhere?

12) Have you gotten to know your neighbors? If so, how did you meet them?

13) What do you like and dislike about the neighborhood in general?

14) In what ways does the town, neighborhood best meet your needs? In what ways does it fail to meet your needs?

15) How long do you plan to live in this neighborhood, house?

16) Would you recommend this neighborhood to one of your friends if he or she were looking for a place to live?

17) Are there good places for kids of all ages to play? If so, where?

PART II

Here is a map of your neighborhood. Your house has been shaded in.

1)   Color in the houses of your closest acquaintances in the neighborhood, if any.

2)   Outline the exterior place or places that you consider to be the sole domain of your family, for example, those places where others belong only at your invitation. (blue)

3)   Is there an exterior area that you share with other families, for example, an area where certain families belong, but not the entire neighborhood? Outline this area. (orange)

4)   Are there any places in the neighborhood that you feel are particularly pleasant? Please circle these areas on the map. (green)

5)   Are there any places in the neighborhood which you feel are particularly unpleasant? For example, as you walk around the neighborhood, are there any places which you feel are unattractive, or where you feel particularly unwelcome, uneasy, or uncomfortable? Please circle these areas on the map. (purple)

6)   If you were to walk away from you home at what point in each direction do you begin to feel that you are out of your immediate neighborhood?

Here is a map of the town.

7)   What are the most important places in the town? This includes places that you would want to show a visitor, as well as places that you especially like or frequently visit for any reason. Please circle these on the map.

8)   Where do you do your shopping?

9)   Where do you go for entertainment? (ie movies, concerts, museums, restaurants)

10)   Where do your children (if any) attend school?

11)   What is your route to work (if any)? Draw the route you travel on the map.

Part III

Here are 30 photographs that I took of your neighborhood and some nearby areas. Suppose you were trying to describe your neighborhood to a friend who had never been here.

1)   Pick out the 5 photographs that you feel best describe your neighborhood. If there are pictures that you do not see but you think I should have taken, please tell me what they are.

2)   Pick out the 5 photographs you feel least describe your neighborhood.

3)   For each photo selected try to tell me what you know about each scene and what your feelings are about what is pictured.

4)   Let's talk about the photos you did not choose. Why did you feel that these were less important?

		SPATIAL STRUCTURE *Elements and patterns in the landscape*	APPEARANCE/ PERCEPTION *Image of the landscape/ residents' perceptions of the environment*	BEHAVIOR/ CONSEQUENCES *Behavioral responses to structure/ consequences of spatial form*
ROAD NETWORKS	Lexington	• Well-connected network of main roads provides many routes in and out of neighborhoods • Residential areas, open spaces, and town center linked by main roads	• Residents do not perceive traffic as a problem	• Traffic to residential areas is distributed on many roads, minimizing congestion
	Burlington	• Large areas of residential development feed into a single arterial road, creating high volume of traffic • Residential areas and open spaces are disconnected from main roads	• Residents perceive traffic as a serious problem	• Traffic to residential areas is carried on few roads, creating heavy congestion at peak hours
OPEN SPACE NETWORKS	Lexington	• Highly visible and accessible open space network • Town common and Hayden Recreation Center located at the intersection of five main roads	• Town appears semi-rural • Residents chose Reservoir, Great Meadow, Whipple Hill, town common, and Hayden Recreation Center as 'important places'	• Residents frequently use open spaces, even those that are distant from their neighborhood
	Burlington	• Inaccessible and isolated open spaces • Town common/ Simonds Park located at the intersection of five main roads • Recreation area separated from town by Route 128; no direct access from main road	• Town appears totally developed • Residents unanimously chose town common/ Simonds Park as the most 'important place' in Burlington • Residents did not choose parks or recreation area as 'important places'	• Residents do not use distant and inaccessible open spaces (except for recreation center, which offers programmed activities)
TOWN CENTERS	Lexington	• Town center provides comfortable and attractive environment for pedestrians	• Residents unanimously chose town center as the most 'important place' in Lexington • Center helps residents feel connected to larger community	• Residents enjoy walking, socializing, spending time in town center
	Burlington	• Town center is dominated by traffic and parking lots	• Only one of twelve residents chose town center as an 'important place' • Residents expressed a strong dislike for town center area	• Residents use town center for business only; they do not walk around or socialize

APPENDIX D
KEY FINDINGS FOR TOWN DESIGN

		SPATIAL STRUCTURE *Elements and patterns in the landscape*	APPEARANCE/ PERCEPTION *Image of the landscape/ residents' perceptions of the environment*	BEHAVIOR/ CONSEQUENCES *Behavioral responses to structure/ consequences of spatial form*
LOCAL STREET PATTERNS	Oak Street, Lexington	• Grid pattern	• Residents drew neighborhood boundaries far from home • Neighborhood boundaries follow clear edges (streets, open space) • Residents chose photo of through street (Baker Ave.) as most representative of neighborhood; photo of cul-de-sac (Mohawk Drive) as least representative	• Connected streets offer many possible walking routes (loops) • Residents walk throughout the neighborhood, following many different paths • On average, residents know 23 of their neighbors
	Great Pine Road, Burlington	• Discontinuous grid pattern	• Extreme variation in neighborhood boundaries • Residents chose photo of cul-de-sac (Fernglade Road) as most representative of neighborhood; photo of through street (Great Pine Road) as least representative	• Discontinuous streets offer limited number of walking routes (loops) • Residents do not walk down dead-end streets • On average, residents know 17 of their neighbors
	Bryant Road, Lexington	• Loops and cul-de-sacs	• Irregular neighborhood boundaries; residents excluded streets/ houses where they don't know anyone • Residents chose photos of through street (Emerson Gardens) and loop street (Sanderson Road) as most representative of neighborhood	• Discontinuous streets offer limited number of walking routes (loops) • Residents do not walk down cul-de-sac streets • On average, residents know 17 of their neighbors
	Spruce Hill Road, Burlington	• Cul-de-sacs	• Residents drew neighborhood boundaries close to home • Residents chose photos of their own street as most representative of neighborhood	• Cul-de-sacs offer very few walking routes (loops) • Residents rarely walk through neighborhood; prefer to walk in a loop outside neighborhood • On average, residents know 10 of their neighbors

APPENDIX E
KEY FINDINGS FOR NEIGHBORHOOD DESIGN: LOCAL STREET PATTERNS

		SPATIAL STRUCTURE *Elements and patterns in the landscape*	APPEARANCE/ PERCEPTION *Image of the landscape/ residents' perceptions of the environment*	BEHAVIOR/ CONSEQUENCES *Behavioral responses to structure/ consequences of spatial form*
LOCAL OPEN SPACES	Oak Street, Lexington	• Highly visible and accessible open spaces (West Farm, Sutherland Park)	• 5 of 6 residents chose photo of West Farm as most representative of neighborhood • Open spaces are perceived as strong 'edges' bounding the neighborhood	• Open spaces frequently used by residents (individuals and groups) • Open spaces are centers of neighborhood social activity
	Great Pine Road, Burlington	• Pathwoods Tot Lot is highly visible and accessible • No large open spaces in neighborhood • Closest open space (Regan Park) is inaccessible due to cul-de-sac street pattern	• 3 of 6 residents chose photo of Pathwoods Tot Lot as most representative of neighborhood • 5 of 6 residents chose photo of town common as most representative of neighborhood	• Pathwoods Tot Lot is frequently used by parents with young children • Regan Park is rarely used by residents
	Bryant Road, Lexington	• Great Meadow is located behind parking lot; no immediate access from neighborhood • Wetlands and stream are visually hidden and inaccessible; no pedestrian path along stream	• 2 of 6 residents chose Great Meadow as most representative of neighborhood • None of residents chose stream as representative of neighborhood	• Great Meadow is infrequently used by residents • Wetlands and stream are unused by residents
	Spruce Hill Road, Burlington	• High school fields are not visible from neighborhood • High school fields are accessed via pedestrian path from end of cul-de-sac	• Residents did not include high school fields within neighborhood boundaries	• High school fields are infrequently used by residents

APPENDIX F
KEY FINDINGS FOR NEIGHBORHOOD DESIGN: LOCAL OPEN SPACES

		SPATIAL STRUCTURE *Elements and patterns in the landscape*	APPEARANCE/ PERCEPTION *Image of the landscape/ residents' perceptions of the environment*	BEHAVIOR/ CONSEQUENCES *Behavioral responses to structure/ consequences of spatial form*
LOCATION/ ORIENTATION OF HOUSES	Oak Street, Lexington	• 20 foot setbacks (typical) • Front doors with pathways connecting to street • Narrow side yards	• Most residents feel socially connected to their immediate neighbors	• Most residents enter and exit houses through front door • Residents frequently personalize front entries with welcome signs, seasonal decorations • Residents frequently interact with neighbors in front yards
	Great Pine Road, Burlington	• 30 foot setbacks (typical) • Front doors with pathways connecting to street • Narrow side yards	• Most residents feel socially connected to their immediate neighbors	• Most residents enter and exit houses through front door • Residents frequently personalize front entries with welcome signs, seasonal decorations • Residents frequently interact with neighbors in front yards
	Bryant Road, Lexington	• 30 to 40 foot setbacks (typical) • Front doors with pathways connecting to driveway, no connection to street • Deep side yards	• Some residents feel disconnected from their immediate neighbors	• Many residents enter and exit houses through garage • Residents rarely interact with neighbors in front yards
	Spruce Hill Road, Burlington	• 30 foot setback (typical) • Front doors with pathways connecting to street • Deep side yards	• Most residents feel socially connected to their immediate neighbors	• Most residents enter and exit houses through front door • Residents frequently personalize front entries with welcome signs, seasonal decorations

APPENDIX G
KEY FINDINGS FOR NEIGHBORHOOD DESIGN: FRONT YARDS

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