

SHIFTING LANDSCAPES OF MOBILITY:  
RECONFIGURING SPACE IN THE MISSION DISTRICT  
FOR AUTOMOBILES

A Thesis Submitted to the Faculty of  
San Francisco State University  
In partial fulfillment of  
The requirements for  
The degree

Master of Arts  
In  
Geography

by

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San Francisco, California

December, 2007

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This research documents the reconfiguration of space in the Mission District of San Francisco to accommodate the movement and storage of automobiles. It examines the shift from public to private transport and the resultant impact on the geography of mobility. There are five primary research components: a field survey of buildings and garages; comparison of public curb space and private driveway cuts; documentation of the widening of streets; GIS analysis of the total spatial area dedicated to automobility; and census analysis of vehicle access and transport modes. Research findings reveal the extensive modification of the architectural landscape and the widespread removal of front yards to accommodate garages. Seventy-five percent of surveyed residential buildings have a garage. Presence of a garage is closely correlated to building age, number of dwelling units, income, and land use. Garages and driveways also result in a significant decrease in on-street public parking spaces. Finally, this thesis proposes new uses for garages and challenges the current function of streets as solely spaces for automobility.

I certify that the Abstract is a correct representation of the contents of this thesis.

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Chair, Thesis Committee

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Date

## ACKNOWLEDGEMENTS

Many thanks to Jason Henderson and Nancy Wilkinson, not only for their guidance with this thesis but also their generous sharing of knowledge, and for making the Geography Department a stimulating and comfortable home for the past three years. Thanks are also due to the many residents of the Mission District who shared obscure building and neighborhood histories and tolerated me peering into their garages. Additional thanks go to Max Kirkeberg for introducing me to the architectural environment; to my smart and engaging fellow students; and to my partner James Kern for our epic walks spent deciphering the urban landscape.

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# **I. INTRODUCTION**

## **Purpose and Significance**

This research documents and contributes to an understanding of the shifting landscapes of mobility. It focuses on the spatial reconfiguration of the Mission District in San Francisco to accommodate and facilitate the movement and storage of automobiles. There are two primary research objectives: to identify and analyze spatial implications of a shift to automobility, and to inform current and future debates about use of street space.

This historical geography of the Mission District, an early streetcar suburb, documents the shift from public to private transport and the resultant impact on the built environment<sup>1</sup>. It also examines the largely undocumented impact of automobile storage (parking) and the increasing privatization of street space in order to accommodate parking in private residential garages. As this study demonstrates there are significant inequalities in the use and access to public street space. Finally, this study challenges a predominate assumption (of developers, planners, and even residents) that streets are primarily intended as a space for automobiles and questions the existing framework that places street function as a conduit for transportation only, excluding other potential uses of this vast public space.

It is well documented that automobility has facilitated new land use patterns of suburban sprawl, thereby necessitating increased consumption of land, space, and time

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<sup>1</sup> Public transit, for the purpose of this study, is any mass transit system or line that serves the public, irrespective of the private or public ownership of this line. Public ownership (municipalization) of mass transit in San Francisco began in 1912.

(Frumkin, Frank, and Jackson 2004; Jakle and Sculle 2004; Urry 2004). However, there has been little exploration into the shift toward automobility on early gridiron streetcar suburbs,<sup>2</sup> neighborhoods that were developed before the advent of automobility.

Although these neighborhoods typify the walkable, mixed-use principles of smart growth and new urbanism, they too have been spatially impacted by the shift from public streetcars to private automobiles. How has this landscape been physically impacted and how has it adapted to the relatively new transportation dominance of private automobiles?

This research is particularly relevant in light of a controversial San Francisco proposition placed on the November 2007 ballot that would substantially increase off-street parking facilities, through the relaxation of planning codes and regulations. Such debate over parking in San Francisco is ongoing and contentious. Municipal planning and documentation of the perceived shortage of parking spaces spans at least 80 years, tracing back to *The Ultimate Parking Solution for San Francisco* drafted by the San Francisco Traffic Commission (1927a). The parking problem is well-covered in popular media, although the debate is most frequently framed in terms of a deficit of parking spaces, not a surfeit of automobiles.

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<sup>2</sup> Streetcar suburbs are defined for this study as neighborhoods that develop along streetcar lines connecting the neighborhood to downtown.

In 2005, there were 465,022 registered vehicles and 719,077 residents in San Francisco, or 0.65 vehicles per resident <sup>3</sup> (California Department of Motor Vehicles 2005; United States Census 2005). These automobiles, like typical automobiles elsewhere, spend nearly all (95%) of their lifespan parked, rather than circulating (Shoup 2005). A typical parking lot consumes one acre of land in order to accommodate 130 automobiles, or about 335 square feet per automobile (Shoup 2005). Accommodating the more than 155 million sq. ft (3,576 acres) required for storage of San Francisco's automobiles consumes a substantial amount of total land area – a space equal to three and a half Golden Gate Parks. How these automobiles are accommodated is a major factor in shaping urban form and the geography of the city.

New theories on parking have emerged in recent years that reveal its hidden costs and challenge common practices of providing free parking or minimum parking requirements (Childs 1999; Shoup 2005). Since 1955, minimum parking requirements for most neighborhoods in San Francisco (including the study area) mandate a minimum of one off-street parking space per unit in new residential developments. New parking strategies proposed for San Francisco would radically alter parking management by instating parking maximums (or caps), rather than parking minimums. Recent community plans such as the Market Octavia Better Neighborhoods Plan recommend eliminating parking minimum requirements and requiring less than one-off street parking space per unit in new residential developments. Despite the conflicting ideologies in managing

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<sup>3</sup> Only aggregated vehicle registration figures are available for San Francisco. Population figures from 2005 include all age groups.

parking (through expansion or restriction of parking), there is little detailed information in San Francisco about access to residential off-street parking spaces.

Within this context of parking debate, my research provides essential baseline information on the number and type of residential buildings retrofitted to accommodate automobile storage, and reveals the disparities in access to and benefits of private garages. Moreover, my research documents how this reconfiguration of urban space decreases public access to streets. Though focused on the Mission District, results can be applied to other Victorian neighborhoods in San Francisco and similar historic landscapes scattered across the United States.

### **Mission District Street Spaces**

An empirical examination of the spatial re-configuration of streets in the Mission District to accommodate automobile movement and storage is a key element of this research. There are five primary research components: documentation of the widening of streets; a field survey of buildings and garages; comparison of public curb space and private driveway cuts; GIS analysis of the total spatial area dedicated to automobility; and census analysis of vehicle access and transport modes.

The re-configuration of space includes the cutting back of sidewalks on Capp Street, Bartlett Street, Guerrero Street, Cesar Chavez Street, and Potrero Avenue in order to provide additional travel lanes or parking spaces for automobiles. This appropriation of pedestrian space in order to prioritize automobile movement and storage has resulted (on

some streets) in overly narrow sidewalks, and street widths that accommodate excessive volumes or speeds of automobile traffic.

The study also examines the impact of automobility on the architectural landscape, including the integration of garages into residential building design and the re-configuration of buildings and sidewalks to incorporate garages. The Mission District landscape is dominated by residential buildings constructed before 1900. These Victorians were originally set back from the sidewalk about 10-25 feet, providing for semi-public, private space in the form of gardens and stoops. The opportunities for social interactions as well as the integrity of the Victorian streetscape are compromised by the addition of garages, which frequently fill in these semi-public spaces. Significantly, most of the front yards and gardens in the study area were removed to accommodate driveway access to newly installed private garages<sup>4</sup>. This represents a tremendous visual transformation of the landscape from gardens and stoops to one of garages, and from pervious garden space to impervious driveway pavement. See Figure 1.1. These garage additions have significantly altered the historic fabric of the neighborhood and diluted the architectural integrity of entire historic residential blocks.

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<sup>4</sup> Dwelling units were also removed and replaced with garages. For example, in 1988 a three-unit residential building on San Carlos Street was converted to two-units with an added garage.





**Figure 1.1 Shift to a landscape of garages. The 1880s Stick Eastlake Victorian (left) retains its front yard and set back, while the front yard of the pre-1900 cottage to the right was paved over to accommodate a driveway and garage.**

This landscape of garages is linked to the privatization of street space through the cutting of curbs for driveway access. My research incorporates quantitative methods to measure this substantial shift from public curbside street space to private. Garages and driveways serve to diminish the pedestrian experience both through a decrease in visual appeal and the potential for conflict when automobiles encroach upon pedestrian space while accessing the garage. This encroachment of the functionally segregated street spaces (sidewalks, curbs, roadway) demonstrates a continued shift toward automobility and the privatization of public spaces. Measurement and analysis of the amount of curb

space dedicated to private driveway cuts provides a better understanding of the spatial impact of garage additions.

A second survey of the entire study area is undertaken to document spaces of automobility including surface parking lots, public parking garages, gas stations, and places of automobile sales and repair. These spaces, along with street space (excluding sidewalks) are analyzed to determine the total land area dedicated to the automobile. Finally, U.S. Census demographic data including housing and transportation are examined to compare the relative use of automobiles within the neighborhood.

The Mission District of San Francisco is an ideal area to document the material manifestations of the shift to automobility. It was platted prior to the mass adoption of automobility and subdivided along long, narrow lot lines. For nearly 100 years, (beginning in 1852) residents and merchants of the Mission District relied primarily on public transportation in the form of omnibuses, horsecars, cable cars, and electric streetcars. Also, significantly, buildings within the study area escaped relatively unscathed from the earthquake and fire of 1906, allowing for documentation of the gradual evolution of an early Victorian landscape.

Despite the fact that residents of the Mission District still have relatively low rates of vehicle access and commute to work more often via public transportation, bicycling, and walking, rather than driving, the shift from public to private mobility has had a tremendous impact on the use and appearance of streets. Documentation of the nascent

transportation patterns and modes provides historic context for the evolution of street spaces and modification of the built environment in the Mission District

Streets in the Mission District today are primarily spaces of mobility – either on foot, on a bike, in an automobile, or on a bus. However, an original function of streets in the Mission District was to facilitate the commodification of land. The 1860s gridiron platting of the Mission District used streets as a means to divide the area into salable blocks and lots. Initially, these roads were neither graded nor paved; they existed on paper for the expedient commodification of land. Development followed as linear lines of early public transportation (omnibuses and horsecars) penetrated the area.

Streets have also emerged as a commodity in their own right. Early toll roads to and through the Mission, (as well as more recent pricing of street space via parking meters, neighborhood parking permits) generated revenue through the use of public street space. The commodification of streets also occurred through the privatization of public curb space for driveway cuts to access private residential garages. This study positions garages as the interface between public streets and the private realm. Garages are places where public streets enter private living space, the merging of public and private domains. Garages also illustrate the tension between use and exchange values.

### **Use Value and Exchange Value**

Logan and Molotch (1987) argued that real estate has both an exchange value and a use value. Exchange value is the real estate value of a property or place, while non-economic use value includes social interactions, trust and security, support networks and

identity. Modification of the built environment in order to store automobiles illustrates this tension between use and exchange values. While private garages provide convenient automobile storage and added real estate value, access to and impacts of such garages are unequally distributed and significantly reduce access to public street space.

The *exchange value* of a residential property increases significantly with the addition of a garage. In San Francisco, a garage adds approximately \$20,000 - \$75,000 per single family dwelling unit in San Francisco, an increase in value solely for the property owner (Jia and Wachs 1998; San Francisco Planning and Urban Research 1998; Baker n.d.). The construction costs incurred through voluntary garage additions (or mandated minimum parking requirements) is correlated to increased housing costs and can play a role in neighborhood gentrification (Jia and Wachs 1998).

However, a landscape of garages can simultaneously decrease the non-economic *use value* of the streets, with social and environmental ramifications. The spatial impacts of garages are multi-fold. The replacement of front yards with driveways decreases opportunities for spontaneous social interaction within the public realm, and increases housing costs, while the driveway's impervious surface increases storm water run-off (Appleyard 1970; Shoup 1997; Frumkin, Frank, and Jackson 2004). As this study demonstrates, drivers routinely park in the driveway, rather than inside the garage, furthering the visual impact of a landscape of automobility. Driveway parking invariably blocks some, or all, of the sidewalk, encroaching upon pedestrian space. Such a

landscape indicates the (mostly) accepted dominance of automobiles in all areas of public space, whether street or sidewalk.

Moreover, the space dedicated to off-street automobile storage represents space lost to retail opportunities, the addition of affordable dwelling units, and public on-street parking. Field observations in the Mission District reveal that of the remaining 19<sup>th</sup> century buildings without garage additions, many were remodeled to provide an extra dwelling unit in the building's base. These smaller, inserted dwelling units provide opportunities for relatively affordable housing. Converting building bases to garages, rather than dwelling units reflects individual and institutional decisions to increase convenience and exchange values at the expense of affordable housing.

### **Streets as Place and Commodity**

Streets are evolving and contested spaces. Streets are sites of power and control, of rebellion and protest, and more commonly as a stage for the ordinariness of everyday life. Streets also consume a tremendous amount of land for travel lanes and parking. In urban areas in the U.S. nearly half the surface land is consumed by streets, parking lots, and automobile infrastructure (Southworth and Ben-Joseph 2003). Yet, streets are often conceived of as void, or negative spaces. This study seeks to turn the street inside out, to focus on the street as a spatial entity, capable of changes in form and function.

One aim of this study is to expand current debate regarding use of street space. Alternative uses of street space could include the creation of parks, playgrounds, recreational facilities, public gardens, community centers or housing. Over the past

decade, a range of social movements and organized groups have challenged the automobile's hegemony of public street space. Such groups include Rebar, a San Francisco arts collective which organizes PARK(ing) Day, a physical re-conceptualization of on-street parking spaces into mini-parks or other temporary uses; Critical Mass, a monthly unorganized reclamation of public streets by bicyclists; and the San Francisco Bicycle Coalition, which works within the political system to claim bicycle space from traditionally automobile-dominated street spaces.

Streets are commonly conceived of as the mechanism to facilitate the flow of people, vehicles and capital. Yet they have a more hidden function as well – streets are the essential framework that structure how land is used. The layout and nature of streets – grid, curvilinear, private, wide, narrow, or gated – determines not only how land is used and divided, but what kind of access is available and what kinds of people are welcome to use it.

The link between streets and the commodification of land has early roots. According to John Brinckerhoff Jackson (1980), the design of medieval streets was directly linked to the commodification of land through the incorporation of linear measurements to delineate land for assessment, sale, and taxation (Jackson 1980). Jackson argued that modern streets have two competing roles: they promote “growth and dispersion” and in contrast, are magnets for attracting new clusters of development. In San Francisco, influential early traffic planners called for a hierarchical classification of streets, noting "Property values predicated upon the use of a certain street for through

movement or upon the absence of through traffic may be undermined by a shift of the traffic system" (Dohrmann 1928, p7).

A rapid transformation of transportation patterns and modes has changed the ways streets are used and are conceived of as places. The theories and motivations behind street layout and design undergo periodic shifts from Baron von Haussmann's radical reconfiguration of medieval narrow Parisian streets into wide radial boulevards, to the rigidly rectilinear grid placed with no regard as to the topography of San Francisco, and the curvilinear streets of conventional suburban developments. The culture of automobility is enacted on streets, and the layout of streets reinforces automobility as the dominant, normalized mode of transport.

### **Shifts to Automobility**

The current discourse on parking in San Francisco is framed as a relatively recent problem, yet the contested struggle for parking and use of streets in San Francisco has a long history. Automobile use in San Francisco skyrocketed in the 1920s, permanently altering the balance of street space between private and public uses. There were just 12,000 automobiles registered in San Francisco in 1914, but by 1930 that number had increased more than tenfold, to 146,000 automobiles (McClintock 1937). Traffic engineering emerged as a profession in the 1920s, and with it came a nationwide trend to produce citywide transportation plans (McClintock 1925). Decisions concerning street width and access increasingly favored the automobile over all other modes; the most

visible changes included the widening of streets and removal of fixed streetcar tracks in the late 1930s and 1940s.

The current debate over parking, pricing, and use of street space can be informed by a review and analysis of past street development, use, and plans that have produced the present landscape of mobility. This historical geography of street space will contribute to our understanding of the material implications of a spatial reconfiguration of a streetcar suburb; it will document the privatization of public street space for private automobile storage, as well as examine who benefits most from this privatization; and it will inform the current debate surrounding use of street space in San Francisco. It is further hoped that this report on challenges to the obduracy, or resistance to change, of current street function can inspire new thinking and debate over future use and function of this vast public space: the street.

In the following chapters I review the existing literature of streets, parking and automobility; detail the methods used to document the reconfiguration of the built environment; describe the study area and provide a historic context for the shift to automobility; report research findings for the building survey, land use and census analysis, privatization of curb spaces, and amount of space devoted to automobility; and finally, I discuss the implications of this shift to automobility and suggest proposals to facilitate alternative uses of street space.