2. LITERATURE REVIEW

A search of the literature on automobility, parking, and historical geography revealed scholarly research into many diverse uses and eras of the street. This review is shaped around emergent themes concerning the use of the streets (which for the purpose of this study include sidewalks). These themes include automobility, streets as the site for circulation and storage of vehicles, streets as both a place and a commodity, the historical geography of streets, and the role of obduracy in maintaining current street practices. The literature in this review represents a broad spectrum of theoretical writing and historical sources.

Automobility

According to Sheller and Urry (2000 p738) automobility is the interrelated combination of key components including: private mobility that subordinates all other types of public mobilities (walking, bicycling, taking transit); environmental resources-use in terms of both production and use of automobiles, roadways, and related infrastructure; automobiles as a primary object of individual consumption that confers status upon its users; the dominant culture dictates automobiles as the most appropriate mode of mobility; and, most importantly, automobility is a machinic complex, socio-technical interrelationships which facilitate individual and mass automobility.

Key elements of this interlinked machinic complex include construction and maintenance of roads, traffic and parking control, associated environmental and healthcare costs, suburban development construction, urban planning, and economic
linkages such as oil or automobile production (Urry 2006). This machinic complex, facilitated by government planning and policy, prioritizes travel by automobile, while undermining older forms of mobility (Sheller and Urry 2000). One clear example of the machinic complex at work in the Mission District is the mandatory minimum parking requirement for new residential developments – resulting in one-to-one parking ratios in one of the most transit-rich neighborhoods in San Francisco.

The literature on conceptualizing automobility often focuses on the system-based characteristics of automobility, and the systems’ dual characteristics of flexibility and coercion. John Urry suggests that automobility is a non-linear system that “generates the preconditions for its own self-expansion” through the re-structuring of time and space (Urry 2004). The flexibility produced by automobility both enables and coerces people to travel longer distances; these longer distances necessitate the use of automobiles. Hence it is a self-perpetuating system, one that Urry (2004) likened to a viral contagion.

Böhm et al. (2006) have argued that conceptualizing automobility as only a system obscures the power relations that make the system viable. They instead propose a “regime of automobility,” one that emphasizes the “political institutions and practices that seek to organize, accelerate and shape the spatial movements and impacts of automobiles” (Böhm et al. 2006). They argue that a systems-based approach downplays human agency in the production and expansion of automobility. Likewise, they suggest that fundamental contradictions to automobility render it fragile and inherently unsustainable. These contradictions include congestion, or the collective immobility that
results from mass individual pursuit of mobility; the consumption and re-organization of urban space that transformed automobiles from choice to necessity; geopolitical interventions to secure oil and the ecological ramifications of burning this resource; and finally, the tremendous human cost associated with traffic crashes.

Böhm et al. (2006) argue that the power relations (including geopolitical factors) are invisible to drivers. Moreover, the cost of automobility in terms of human life is largely hidden. (Böhm et al. 2006 p10) credits 1.2 million deaths annually to automobility, a side effect largely ignored due to the normalization of automobility. I would further argue that the power relations regulating who has access to on- and off-street parking spaces is also largely invisible to neighborhood residents.

In addition to power relations, the dual meaning of the term automobility is also examined. The “auto” of automobility relates to both an autonomous self and as a machine or process with ability to move (Sheller and Urry 2000). They argue that autonomous people and autonomous machines result in a hybridized “car-driver” composed of people, and “simultaneously, of machines, roads, buildings, signs and entire cultures of mobility” (Sheller and Urry 2000 p739).

These frameworks of automobility emphasize its spatial dimensions; however, none explicitly examine the impact of automobility on a walkable, mixed-use, pre-automobile landscape. At the local scale, the institutions and practices of automobility dominate the landscape, even though land uses are not separated, even though public transport options exist that obviate the need for automobiles.
Likewise, this perspective on automobility fails to address the fact that although automobility is both flexible and coercive, it is also dependent upon not everyone driving an automobile. With its high population density and relatively low per household vehicle ownership, not everyone in the Mission District drives and the system – through physical adjustments to the streetscape – is able to accommodate automobility only because not everyone drives. Moreover, these scholars of mobility and automobility have largely focused on the movement and circulation of automobiles, not the impact of the (im)mobility of parked automobiles.

**Parking**

Private residential garages essentially privatize street space through the appropriation of public curb space for driveway access. On-street (public) parking spaces are greatly diminished, as this study demonstrates, by the addition of curb cuts to access off-street private garages. Within the Mission District, garages and garage doors are the most visible manifestation of the impact of automobility on the built environment. Yet, there has been little scholarly attention focused on the impacts of retrofitting residential units to accommodate parking garages.

John Jakle and Keith Sculle (2004) explored the larger issues of parking and land use, including the regulation and commodification of curbside parking spaces. Their research on off-street parking, however, focused on commercial parking lots and garages, rather than private automobile storage. Likewise, Paul Groth (1990) explored the spatial
ramifications of off-street lots (as places of destination), rather than private garages (places of origin).

The majority of buildings within the Mission District study area were built before the advent of automobility; hence, the majority of garages were voluntarily added to these structures, rather than legally required. Minimum off-street parking requirements were first mandated in 1955 for most residential neighborhoods (including the Mission District) – even today, more than 50 years later, new residential developments in the Mission District are required to contain a minimum of one parking space per dwelling unit. This aspect of residential parking has received the most scholarly attention.

Shoup (1997) argued that parking is the “unstudied link” between transportation and land use. He found that minimum parking requirements significantly increase the cost of development, reduce urban density, and artificially inflate demand for parking. Reducing or eliminating these minimum requirements and exposing the hidden costs of parking would, Shoup suggests, both lower the cost of housing and decrease the incentives to drive. Shoup’s research focuses primarily on new development and on-street parking policies, leaving the issue of added garages largely unexplored (Shoup 1997). Yet he does briefly cite a survey conducted in a development outside Reading, England that found 38% of one-car garages were not used to store automobiles, while 54% of two-car garages were used to store just one automobile (Shoup 2005). This

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5 San Francisco was a late adopter of minimum parking requirements. Cleveland, Ohio, for example mandated minimum parking per unit in 1923, as did New York City in 1950 (Childs 1999).
significant shift in the use and function of garage space is largely overlooked and confirmed in the Findings section of this thesis.

The design evolution and placement of residential garages has received some scholarly attention (Jackson 1970, Groth 1990, and Jennings 1990). Scholars have traced the spatial migration of residential garages from separate garage structures at the back of the lot to integrated garages that in effect store automobiles inside the house. According to Jackson (1970), the very earliest American garages were hidden from view and isolated from the house. Later, as mass-production made the automobile accessible to the middle-class, very small garages were built in rear lots off the alleyways. It wasn’t until post-World War II, that garages attached themselves to the houses, linked directly via internal doorways. As my research demonstrates, this shift to integrated garages occurred much earlier in San Francisco.

Jan Jennings (1990) explored the conceptualization of early residential garages and the efforts of the building industry to promote and market this new, profitable building type. Jennings focused on early 20th century design strategies to make the segregated garage appear “houselike” and noted a later trend to store automobile in the basement, below the house. It is this latter garage type that has had the most profound impact on the Mission District. Yet the large-scale addition modification of residential buildings to accommodate a garage has received very little additional scholarly attention.

Surprisingly, architectural historians and preservationists have contributed little to the study of garage additions, although there has been some concern over the loss of
original 1920s garage doors. A local preservation advocacy organization, San Francisco Architectural Heritage, argued that removing these side-hinged double-doors in favor of overhead or roll-up style garage doors diminishes the architectural integrity of residences (Kernan 1992). Shoup (2005) provided an overly simplistic explanation linking the decline of historic neighborhoods to the lack of dedicated on-street parking; however, he does briefly note that the addition of garages to historic buildings is architecturally incongruent and results in the loss of curbside parking.\footnote{In his 733-page parking tome, The High Cost of Free Parking, Shoup (2005) allocates just over one page to the impact of parking in historic neighborhoods.}

The most notable study of a San Francisco neighborhood transformation is Anne Moudon’s (1986) detailed research on the evolution of vernacular building form, design, and uses in the Alamo Square. Moudon includes some discussion of the conversion of basements and building bases to garages, as well as storefronts and dwelling units. She documents the different eras of garage style and locations and argues that rows of garage doors can result in visually unappealing streetscapes (Moudon 1986).

What is missing from this body of scholarly work on the many aspects of automobile parking is a detailed look at the impact of parking garages on the urban residential architectural landscape and the reconfiguration of space to accommodate automobile parking. Likewise, there is little discussion of the role of off-street parking in the privatization of public space.
Streets as Places and Commodities

As John Brinckerhoff Jackson noted, “roads no longer merely lead to places, they are places” (Jackson 1994, p192). This multi-functionality of streets results in a tension between streets as flows, streets as places, and streets as commodities. Public curb spaces are commodified (through metered parking and residential parking permits) and privatized through the addition of curb cuts to access private garages. Garages are also commodities. They are rented out, added to increase real estate value, and bundled with new construction costs.

The ongoing appropriation of public curb space for private off-street parking represents a struggle between what Logan and Molotch (1987) describe as use value and exchange value. Logan and Molotch (1987) have drawn on the work of Karl Marx and David Harvey to understand the tension between these two values, and further, documented how this tension shapes urban form. Without necessarily labeling them as such, many scholars have examined the use and exchange value of streets.

Use Value of Streets

David Appleyard (1970) shed additional light on the use value of streets. He compared the impact of traffic volumes on residents of streets in San Francisco with differing volumes of traffic, examining the frequency of social contacts such as “neighboring” with other residents of the street (Appleyard 1970). Residents of the street with the heaviest Average Daily Volume of traffic (16,000) reported far fewer friends and acquaintances on their block and an increased tendency to withdraw from the street.
compared to residents of the lower volume street. Appleyard made prescient suggestions on ways to reduce automobile traffic in general – such as increasing bridge tolls, increasing the number and charge of parking meters, and implementing a tax on parking facilities – however, he also recommended channeling traffic onto arterial streets.

Celik et al. (1994) argued that streets are sites of ritual, and that ritual uses both adapt to existing street spaces and change the meaning of such spaces. Civic values are lost by the disappearance of the street as a space for community. Of particular concern to Celik et al. (1994) is the appropriation of community space by automobiles and the overemphasis of street space as solely for circulation and parking of automobiles.

While Jan Gehl (1986) agreed that automobiles brought a decline in streets as social spaces, his research focused on physical design solutions that could encourage social interactions (use value). Gehl (1986) explored the possibilities for “soft edges” such as front yards and porches on residential streets to promote social interactions and opportunities to stay in public spaces on the street. Gehl argued that the duration of street activities was the most important factor in determining liveliness of a street: that is, the length of time a person spends on the street is more important in determining liveliness than the number of people on the street. Since residential streets have a limited number of users, Gehl argued that increasing the duration of time that those users are on the street will increase the street’s liveliness. Physical design elements – such as front yards, porches, places to sit – could increase the potential for longer duration activities in the street or semi-private front yard. Gehl’s research indicates 30% of residential street life
occurred on the sidewalks, while 70% occurred in the semi-private front yards. In a comparative study of two similar Danish residential streets, he found 21 times more street activity along a street with small front yards than on a street without front yards. A separate study indicated that residents used front yards twice as much as back yards, indicating, Gehl argued, people’s willingness to be in and use these “semi-private transition zones” (Gehl 1986).

Gehl’s research is particularly relevant, as the addition of garages in the Mission District occurred, in the majority of cases, through the conversion of the basement and front set-back into a garage and driveway, resulting in the loss of the front yard in order to accommodate automobile storage.

**Exchange Value of Streets**

The tension between use and exchange values has received significant scholarly attention. In their examination of residential minimum parking requirements, Wenyu Jia and Martin Wachs (1998) documented the increased value of San Francisco dwelling units due to the presence of off-street parking. They found that residential units with off-street parking cost ten percent more than equivalent units without parking, a finding that bolsters this study’s contention that garages benefit developers and property owners at the expense of affordable housing (Jia and Wachs 1998). In the Mission District, it is not just affordable housing opportunities that are lost; off-street private parking also results in decreased access to on-street public parking.
P.J. Atkins (1993) documented a 19th century struggle over access to street space in London, where street barriers restricted access to affluent neighborhoods. Bars and gates erected to prevent non-local traffic from entering affluent West End neighborhoods essentially privatized public space and created what Atkins called a “pseudo monopoly of elite urban space” (Atkins 1993). He noted that the anti-barrier forces primarily worked within the legal system, though at times, they did engage in clandestine destruction of the gates and bars. The estimated 300-400 gates likely did not constitute a major inconvenience, rather as Atkins argued they incurred the public’s wrath as a symbolic exclusion imposed by the privileged; the public also became increasingly unwilling to accept restriction on their movement.

The decades long, ultimately successful effort to allow public access resulted in a democratization of space and a shift from exclusive private space to inclusive public space (Atkins 1993). It occurred during an era of public frustration and revolt against turnpike tollbooths and toll bridges and is illustrative of public reclamation of public spaces. Although the claims to public space occurred in different eras and geographic areas, Atkin’s research highlights the tension over appropriation of public space – an appropriation that continues to occur in the Mission District. However, in the Mission District, there has been little organized opposition to, or likely, understanding of the extent and impact of appropriation of public curb space for private driveways. Unlike gates and barriers, driveway curb cuts are less visible, yet nonetheless represent a significant privatization of public space.
The appropriate width for public streets and sidewalks is a topic that continues to generate much research and debate. Southworth and Ben-Joseph (2003) consider the amount of space dedicated to streets to be an unnecessary waste; residential streets, for example, make up 80% of the nation’s road miles, yet carry only 15% of the total vehicle miles traveled. They advocate shrinking this street space and promote policies such as Portland’s current Skinny Street program, which narrows street standards to as low as 26 feet with parking, or 20 feet without parking. In 1947 and 1950 respectively, the developer-allied Urban Land Institute and National Association of Home Builders opposed what they considered FHA’s excessively wide recommended street width and advocated lower street standards for residential streets (Southworth and Ben-Joseph 2003). Their opposition was economic: wider street standards added to the cost of providing street infrastructure by an estimated 38-54% (Southworth and Ben-Joseph 2003).

Little scholarly attention has been paid, however, to the widening of streets and cutting back of sidewalks in order to accommodate the shift to automobility. McShane (1994) briefly mentioned cutting back street sidewalks in order to provide extra width for automobile traffic. This occurred with some regularity within the Mission District study area; a 1940 newspaper photograph shows Works Progress Administration workers cutting back Capp Street sidewalks in the Mission District in order to provide “better access to second largest retail in the city” on Mission Street (News Call Bulletin 1940.)
Historical Geography of Streets

A number of themes emerged in the theoretical writings about streets and from archival documents about San Francisco’s streets. Much of the theoretical literature focused on a specific street, and a surprising number of the articles and books focused on 19th century streets. These streets were most often major corridors of large cities; less scholarly attention was paid to smaller vernacular streets.

The evolution of generic buildings is also an overlooked area of scholarly study according to Paul Groth who argued that vernacular buildings and landscapes “are especially valuable texts of social and cultural history” (Groth 1988, p41). In the seminal text How Buildings Learn, Brand (1997) examines the process of transformation that buildings undergo, from their original, intended uses to converted uses that suit successive waves of inhabitants. In a similar fashion, I am interested in the process in which a streetscape learns, how the relationship between individual buildings and the street are transformed. It is the garage, the interface between street and building, that I’ve focused this research.

As Lewis (2003) notes, landscapes are the surviving records of human alteration of the landscape. The visible and obscured patterns of street space can be read and interpreted to gain understanding of how the street space was used. The founder of American landscape studies, John Brinckerhoff Jackson wrote, “A rich and beautiful book is always open before us. We have but to learn to read it.” (quoted in Lewis 2003, p.86). Shifting ideologies of public space, urbanism, and street design have manifested in
remarkably diverse patterns of street space and negotiations for use. These patterns can have a tremendous impact on land uses; a key example of this is the width of streets and resulting consumption of land. Likewise, the contested nature of street space has serious implications for the type of public that uses the space.

Many scholars have studied the early evolution of street spaces (Groth 1981; Jackson 1980; Jackson 1985; Miller 1988; and Jackson 1994). During the Middle Ages, a city’s labyrinth of streets and passageways were defined by the buildings – rather than the streets themselves defining where buildings were placed (Jackson 1980). Medieval towns were internally accessible via narrow alleys and passageways. He called these precursors to streets the “crooked interval between houses” (Jackson 1980, p65).

The gridiron pattern of streets (such as the layout of the Mission District) is also the focus of scholarly work. Groth (1981) argued the grid, introduced in 450 B.C. in Greece, was a symbol for rational urban life, of egalitarianism and order – not simply as a tool for land commodification. He argued that grids are still the most efficient pattern of urban development. Grids are also flexible; additional alleys and streets can later be cut into large lots to adjust street layout and separate land uses (Groth 1981). Servants quarters, trash, and garages were placed in these back alley streets – resulting in access to land that was “socially hierarchical” (Groth 1981, p73). Evidence of these less desirable land uses is still visible in the 11 short alleys located within the study area.

The segregation of street space by function occurred well before the advent of automobility. Ehrenfeucht (2006) described the separation of carriage space from
pedestrian space after the introduction of raised sidewalks. This division both increased the amount of space specifically devoted to carriage and horse transport and muddled the legal meaning of the word “street.” As Ehrenfeucht (2006) notes, the spatial differentiation between pedestrians and other mobilities resulted in nuanced activities segregated by street, gutter and sidewalks. She argued that public sidewalks were “used to enact social differences on spaces to which all residents had access” (Ehrenfeucht 2006).

Use of public street space has long been divided by class and status. Jackson (1994) wrote of the class division of street space in 17th century Europe: while the upper classes rode in carriages or on horses, the workers and lower classes were on foot. This is how the word pedestrian has two meanings, both to describe a walker and to describe the “labored, commonplaces” and lack of style (Jackson 1980).

In the 19th century, sidewalks were also commonly used for street vending and to display wares; this economic value of sidewalks often resulted in the prioritization of sidewalk paving over street pavement (Ehrenfeucht and Loukaitou-Sideris 2007). They argued that as sidewalks became better paved than streets, pedestrians increasingly limited their movements to the sidewalks in order to both avoid horses and carriage traffic as well as muddier, unpaved streets. As streets were paved with asphalt, they were increasingly given over to automobiles.

McShane (1979), however, argued that the asphalt-automobile paradigm prioritized traffic circulation over social and other uses of the street. McShane
documented late 19th century resident’s concerns that smoother asphalt paving would increase circulation and traffic on their residential street (McShane 1979).

Ehrenfeucht and Loukaitou-Sideris (2007) documented that by the 1880s, ordinances designed to prioritize the free circulation of pedestrian movement on sidewalks had limited economic, social, and political activities such as street vending, and free speech and gatherings in Los Angeles. Property owners abutting the sidewalk were also required to maintain sidewalks, while the municipality maintained and paved the streets, a further spatial segregation of responsibility, a trend Ehrenfeucht and Loukaitou-Sideris (2007) noted was occurring nationwide. In contrast, according to early San Francisco Municipal Reports property owners adjacent to new streets were responsible for initial grading and paving of the streets, but subsequent street maintenance was the responsibility of the municipality.7

**Historical Geography Methods**

Historical geographers of the street (Goheen 1994; Atkins 1993; Ehrenfeucht and Loukaitou-Sideris 2007) used archival data to focus on public access to the street. For example, Goheen (1994) analyzed petitions for use of public spaces (including streets) to examine the complex struggles over appropriate use of the streets. He described street space as the preferred site for “enacting collective rituals” and documented the violent confrontations over perceived claims to this shared public resource. Ehrenfeucht’s and

7 Often, property owners delayed the grading of streets (official grades were set and adjusted by the City) until well after buildings were constructed. On streets with slopes this resulted, occasionally, in buildings perched high above the graded street below, accessed by added flights of stairs.
Loukaitou-Sideris (2007) analysis of public ordinances governing use of public street space revealed the process of functionally segregating streets and sidewalks and regulation of the use of street space. Atkins’ (1993) review of public debate and public meetings informed his research on single issue pressure groups’ campaign to democratize public space.

For this thesis, I incorporate both historical research and a present-day survey of the built environment in order to document the reconfiguration of public space and private buildings to accommodate automobiles. This combination of archival research, to document past changes of the streetscape, and an present-day inventory of existing conditions helps inform the process by which the shift to automobility impacts current street function and form.

**Obduracy**

Street networks, and in particular, automobility are often conceived as inevitable, static, and unchangeable; however, some scholarly attention has been paid to the contestation of city infrastructure. Hommels (2005) explored this tension between attempts to change the spatial pattern of cities and the obduracy of urban buildings and infrastructure. She examined why highly contested spaces, including established urban layouts such as streets, maintain their obduracy, despite attempts to accommodate “new” policies and ideas. Hommels argues that “unbuilding” of cities and infrastructure is possible, though it often involves costly, long-term contentious debate. Her case studies of “unbuilding activities” reveal that transportation networks are particularly obdurate, as
they generally were built with tremendous capital investment. However, she argues that monetary concerns are not the primary factor for maintaining obduracy, while “user practices can also significantly contribute to increasing the embeddedness of urban structures” (Hommels 2005 p179).

It should be noted that Hommels (2005) focused on large scale freeway projects, rather than the use and function of a residential gridiron layout, such as the Mission. Indeed, there is significant capital sunk, literally, into the underground water, sewage, and utility systems; nonetheless, cultural factors of automobility are likely much more important than economic in maintaining street obduracy in the Mission District. Such a street network is not as deeply embedded or intertwined as a major highway project, and is, likely, much less obdurate. My research will attempt to explain in part, how this obduracy developed, why it remains evident in the street’s spatial layout, and to highlight historic and contemporary challenges to the obduracy of streets.

Scholars argue that such change would be rapid, rather than gradual. Hommels (2005) suggests that a radical break from the past is one strategy for reducing obduracy of urban forms. Urry (2004) has drawn on Malcom Gladwell’s concept of a tipping point, which frames change in terms of a phenomenon being contagious: small causes have the potential to create large effects, and change can occur in abrupt, non-linear fashion, when the system ‘tips.’ Urry (2004 p33) argues that a major break from the current system of automobility can only occur through non-linear, interlinked changes that would tip mobility into “post-car” system. Importantly, though, Urry (2004 p36) argues that older
models of public mobility (trains, buses, streetcars) won’t be resurrected; that individualized transport (both produced and thence necessitated) renders older models obsolete. Böhm et al. (2006) even suggests that automobilities are not necessarily dependent upon automobiles. This study explores both the potential tipping points in a shift to transport beyond automobility as well as potential new uses for public streets.

**Discussion**

Jackson (1994, p192) noted the “docile acceptance” of the tremendous shift from traditional roads and public transportation networks to private automobiles. As my research demonstrates, there was little discourse or resistance to the addition of garages into the landscape, or the widening of street space in order to accommodate automobiles.

However, although normalized, the dependence on automobiles is also relatively recent; in older, transit-rich city suburbs such as the Mission District, automobiles are not a requirement for mobility. As scientists have explicitly articulated the link between automobility and global warming, shifts to other modes or models of transportation are increasingly possible, even necessary, and deserve additional attention. Moreover, there have been few challenges to the assumed dominance of automobiles in the street – the city’s largest public space.

The social contestations and spatial implications of this automobile domination of traditionally pedestrian space are overlooked areas ripe for further research. The modification of the built environment – both the architectural landscape and the street itself – is a largely neglected area of scholarly research. My research fills in some of
these gaps by providing a detailed analysis of the impact of this shift to automobility in the Mission District. In the following section I describe the study area and trace early development and transportation modes in order to provide historic context for the shift to automobiles.