

Shifting Urban Priorities: The Removal of Inner City Freeways in the United States

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ABSTRACT

Much of the original interstate infrastructure built in the 1950s and 1960s in the U.S. is reaching or is past the end of its useful life – requiring large investments for rehabilitation. At the same time, the freeway revolt has evolved into a more widespread movement, underlined by values such as sustainability. The vigorous debate over the future of urban highways and mobility continues with the development of a fairly recent phenomenon: urban freeway removal. By examining three different cases where urban freeway removal was a seriously considered option – two where the freeway was removed and replaced with a lower capacity at-grade boulevard and one where the freeway ultimately was not removed this paper works toward a theory of highway removal. The analysis suggests that freeway removal will only take place when: (1) the condition of the freeway raises concerns about its integrity and structural safety, (2) a window of opportunity exists, some event that enables a freeway removal alternative to gain serious consideration and legitimacy, (3) the value of mobility must be lower than other objectives such as economic development, quality of life, etc., and (4) those in power value other benefits more than they value the benefits associated with freeway infrastructure.

INTRODUCTION

Throughout the 1950s and 1960s, cities across the United States saw huge infrastructure investments in their downtowns in the form of freeways. Viewed as a necessity and sign of progress, they aimed to expand mobility, promote economic development and, help revitalize inner-urban areas (1). In 1956, large-scale urban freeway construction took off with the passage of the U.S. Federal Highway-Aid Act. While noted urbanists of the time voiced criticism, the initial advance of the Interstate Highway System met with few controversies, as decision-makers effectively wielded their claimed technical expertise in defusing challenges (2).

With the increasing turbulence of the 1960s in the U.S. came distrust of authority and top-down decision-making. A growing number of people began to seriously question the social and physical disruption of urban areas (3) caused by interstate highways. A collection of bottom-up, neighborhood level anti-freeway movements sprung up in cities around the United States with San Francisco being the first city to revolt. Like the other countercultural movements of the time, anti-freeway activists sought to establish participation and voice in the decisions that affected their communities.

Grassroots changes were also beginning to be reflected within government via institutional changes and the introduction of new legislation. In 1966, the creation of the federal Department of Transportation (DOT) marked a shift in national transportation policy; the first DOT Secretary advocated for more citizen involvement in highway planning and considered the “freeway revolts... a good thing” (1, p. 681). Relevant legislative initiatives followed in subsequent years (see (4)): the Federal Highway Act of 1968 required stronger housing relocation programs for displaced households and broad public hearings on highway proposals; the 1969 National Environmental Policy Act required environmental impact statements for federally funded projects; the 1970 Clean Air Act established the U.S. Environmental Protection Agency (EPA) and gave it authority to set air quality standards; and the 1973 Federal-Aid Highway Act increased the flexibility of highway funds, allowing financing of mass transportation projects.

The energy crises of the early 1970s and 1980s and growing environmental and social concerns brought the concept of sustainable development into the mainstream, as evidenced with the release of the Brundtland Report (5), after which a growing number of analysts, agencies, and advocates began pushing the idea of “sustainable transportation” (see, e.g., (6)). In the U.S., legislation like the 1990 Clean Air Act Amendments (CAAA) combined with the landmark 1991 Federal Intermodal Surface Transportation Efficiency Act (ISTEA) reflected the evolution of changing priorities.

A Paradigm Shift?

The evolution of highway policy marks an important shift in priorities. This shift may partly result from changing attitudes towards the role of large scale infrastructure, which itself might suggest a shift in

values regarding mobility relative to other values such as sustainable development and the environment. The shift also likely reflects the fact that the massive highway investments themselves – once complete – allowed focus on priorities in other areas.

Presently, many cities appear to be experiencing something of a renaissance, marked by growing populations, declining crime levels, improved quality of life, and rising property values (7). Quality of life concerns, to which traffic congestion remains a detriment, naturally accompany this resurgence. Highway infrastructures, seen as tools for alleviating congestion, also negatively impact the urban environment. Thus, some cities have decided to remove urban freeways, or portions of them, reclaiming the resulting land for housing, recreational space, commercial development and to re-knit the urban fabric that was destroyed. The result seems to be a net decrease in urban roadway capacity.

Over thirty years ago, Portland, Oregon, decided to raze Harbor Drive freeway, providing the first example of urban freeway removal in the U.S. Since then, San Francisco, Milwaukee, New York, and Toronto have removed elevated freeways and a number of other cities are currently debating the future of aging freeway infrastructure.

This apparently increasing interest in freeway removal has received little research attention to date. In this paper, we aim to begin to fill this research gap by examining the urban highway removal phenomenon in the U.S. We first provide a brief theoretical background to the politics of the urban transportation infrastructure planning process and present our research questions. We then examine three urban freeway removal cases. We then utilize the case study analyses to shed light on our initial hypotheses and propose a theory of urban freeway removal. We end with a discussion of limitations and implications of the analysis.

THEORETICAL BACKGROUND, RESEARCH QUESTIONS, METHODOLOGY

Theoretical analyses of urban and transportation planning and project implementation tend to focus on the political processes and power structures underlying the decision to build or implement something new (e.g., 2,8,9,10,11,12). Do similar theories apply in the case of the decision to “un-build” existing infrastructures, such as the removal of inner-city highways? Freeway removal represents a major planning decision, involving numerous stakeholders, significant resources, and disruption of urban fabrics and transportation systems, with both winners and losers. In this section, we briefly review some of the relevant theories, outline our research hypotheses and discuss the methodology employed.

Existing Relevant Theories

The aftermath of World War II ushered in a mega-projects era in the U.S., which included the construction of the interstate highway system. According to Altshuler and Luberoff (2), this era marked a dramatic shift in power to the government, whose role became economic developer of, and advocate for, large-scale projects. In looking at the case of an inner-city freeway in the Twin Cities (MN) in the early 1960s, Altshuler highlights the important role of “engineering principles” in creating normative propositions that showed the desirability of highway improvements, and the need to “win over” the “articulate public,” but not at the expense of traffic efficiency, increased costs and delays. In this view, highways represented *quantifiable* progress (8). Writing almost 40 years later, Garb (12), examining the planning history behind the Trans-Israel Highway (a recently opened toll road traversing the country), shows how government agencies effectively use data and other information to shape the terms of debate and create a sense of project “inevitability.” Projects’ success ultimately may well depend on well-placed “policy entrepreneurs,” who Kingdon (13) characterizes as persons willing to invest their time in certain projects that provide some form of return, such as promotion of personal or special interests.

Ardila (11), analyzing the planning process behind bus rapid transit implementation in Curitiba, Brazil and Bogotá Colombia, proposes a two-stage theoretical framework. During the first stage, the pre-condition arises – or a “minimal space for action,” (p. 23) through which discussion and debate occurs. Scholz and Walter (14), examining five case studies of different types of transportation projects to identify necessary conditions for a successful *collaborative* planning effort, seem to support Ardila’s

argument. They find that a collaborative planning process comes directly from frequent communication between the various actors involved and from effective management of stakeholder interaction. Their research also suggests, however, that once a project moves from planning into implementation, unilateral (rather than multilateral or bilateral) approaches prove critical to success. The second stage of Ardila's framework relates to the timing of decision-making, using the concept of a "window of opportunity." A window of opportunity provides proponents the chance to push their particular projects and can open for a number of reasons, such as the advent of a crisis or the election of a political figure. Such windows have limited duration.

Towards A Theory: Research Hypotheses

Existing theory provides a number of insights and key points which can be built upon. However, does freeway removal imply an entirely new type of transportation "planning," requiring a new theory? We explore a theory of highway removal by testing a number of hypotheses related to the following topics: (1) preconditions, (2) windows of opportunity, (3) the value of mobility, and (4) the values embedded in power.

First, we hypothesize that one pre-condition *must* be met before the issue of highway removal will enter into serious public debate: the existing freeway must be in such a state that concern exists over its integrity and structural safety.

Second, following Ardila (11), a window of opportunity must open for freeway removal to become a legitimate option. While a precondition must exist, an aging and unstable freeway does not guarantee that the removal option will be discussed or seriously considered. The precondition itself may be the window of opportunity; however other events can also play this role.

Third, we hypothesize that freeway removal will take place only in places that evidence a relative change in the "value of mobility." That is, relative to other objectives such as improving neighborhood quality of life, the mobility-enhancement objective loses importance. Removing a portion of a freeway requires some loss of mobility, thus the gains from tearing down a freeway must be more valuable, making the tradeoff worthwhile or desirable.

Lastly, even with the window open, and some sense of changing values, highway removal must have an empowered agent of change. A policy entrepreneur, as defined by Kingdon (13) is necessary, but not sufficient. We hypothesize that the freeway removal decision requires an *empowered* individual or collective group with an "other than-mobility enhancement" objective.

Methodology and Case Selection

To examine the above hypotheses, we employ the case study method, a relevant approach when posing "how" or "why" questions, regarding a "contemporary" phenomena over which investigators have little control (15, p. 9). Case studies can be used to generalize to theoretical propositions in situations with unclear "boundaries between phenomenon and context" and "many more variables of interest than data points" (15, p. 13).

In designing our case study analysis, we aimed to choose cases where freeway removal had occurred and where removal had been seriously considered, but ultimately rejected as an option. By choosing contrasting outcomes, we strengthen the possibilities for theoretical replication: that is, if certain conditions hold, we can expect a particular outcome (15). For this purpose, we selected cases based on the outcome of interest: freeway removal. We define removal as the demolition of an elevated freeway and its replacement with an at-grade roadway of lower net carrying capacity than the original infrastructure. We define non-removal as the decision not to demolish an elevated freeway structure (after removal was considered an option). We did not include as removal cases those where there was no reduction in throughput capacity (e.g., Boston's "Big Dig").

Within North American, we identified six cases of freeway removal: Portland's Harbor Drive, San Francisco's Embarcadero and Central Freeways, Milwaukee's Park East Freeway, New York City's Westside Highway, and Toronto's Gardiner Expressway. We ultimately selected San Francisco's Central Freeway and Milwaukee's Park East Freeway.

Choosing a non-removal case proved more challenging. Canvassing transportation professionals and others revealed cases including Seattle's Alaskan Way Viaduct and Washington, D.C.'s Whitehurst Freeway. We rejected the Alaskan Way Viaduct because, while citizen and special interest groups support removal, authorities are only considering replacement or a hybrid tunnel/replacement as official alternatives (the Alaskan Way remains an ongoing case). In the case of the Whitehurst Freeway, officials considered various alternatives, including retrofit, a tunnel, a new elevated freeway, and an at-grade roadway.

For each of the cases, we drew from formal studies and evaluations collected from relevant agencies, local newspaper articles, and telephone interviews with those involved.

CASE STUDY ANALYSIS

We analyze the cases within a basic framework of key relevant categories, including the infrastructure conditions and its broader context, the decision-making process and institutional structure, and the funding mechanisms used for each case. Table 1 summarizes the main characteristics; for more detail refer to Napolitan (16).

Context and Infrastructure

Socioeconomics, Demographics, Environs

The three cases represent different metropolitan contexts: as of 2003, Washington DC was the largest of the three metropolitan areas, measured both by geographic size and population with 4.3 million persons versus San Francisco's 4.1 million and Milwaukee's 1.5 million (17). Between 1982-2003, population density in San Francisco and DC declined slightly, while Milwaukee increased slightly – nevertheless both of the larger metro areas (about 1,300 persons per km²) are roughly 30% denser than Milwaukee (960 persons per km²) (17).

At the neighborhood level, the area surrounding the Whitehurst Freeway – D.C.'s Georgetown – was significantly wealthier than the D.C. average. The majority of residents were either professionals or other white collar workers, while a significant portion of the remaining population were students. At the time of consideration of the Whitehurst removal the area surrounding the Whitehurst was an aging industrial waterfront situated along the Potomac River. In contrast, the Hayes Valley neighborhood in San Francisco was a lower income residential neighborhood with a high concentration of minorities as well as professionals been priced out of other neighborhoods. In the Park East Case, the area immediately surrounding the freeway consisted of abandoned industrial sites; it crossed and briefly ran alongside the Milwaukee River. In the 1990s the industrial areas surrounding the Whitehurst and Park East saw resurgence with residential and commercial developments.

Transportation System

Both Washington, DC and San Francisco have among the most extensive urban rail transit systems of U.S. metropolitan areas. San Francisco also has commuter rail and light rail service, while DC has commuter rail. Milwaukee's public transportation is limited to bus services and residents appear to be much more auto-dependent than those of DC or San Francisco. Using the ratio of total daily vehicle miles traveled (VMT) to annual public transport passenger miles traveled (PMT) as a crude metric of relative auto-dependency, we find that both DC and San Francisco have below average (for 85 US metro areas) and fairly stable levels of auto-dependency (over the period 1982 to 2003), while Milwaukee shows a higher-than-average and increasing level (17).

Looking at the specific freeway corridors of interest, the Georgetown area was and remains served exclusively by bus service (over 1 km walk to the nearest Metro station). San Francisco's Central Freeway area was roughly a similar distance to the nearest BART (heavy rail) station, and somewhat closer (approximately 500 meters) to several stations on a Muni Underground rail line.

Freeway Function, Design and Usage

Each of the freeways was built with the intention of providing a connection to the larger network serving their respective metropolitan areas. In San Francisco and Milwaukee, the anti-freeway movement halted the completion of the network in each locale. As a result, both the Central and Park East Freeways terminated in the downtown area. Similarly, the Whitehurst provided access to the downtown but rather in an indirect way as it was designed as a bypass roadway, enabling drivers from suburban Maryland to avoid Georgetown's local streets.

In Milwaukee a greater percentage of the traffic was local rather than regional whereas in San Francisco, traffic on the Central Freeway was more evenly split between local and regional commuter traffic (18). In contrast, the Whitehurst was primarily used for commuter traffic from Virginia and Maryland.

All three freeways were elevated steel structures; the Park East and Whitehurst were single-deck, four lane freeways, while the Central Freeway consisted of a single-deck, four lane highway in parts and a double-deck highway, two lanes on each deck in other parts. The Whitehurst was the shortest in length at 0.6 miles, followed by the Park East Freeway at 0.8 miles, and the Central Freeway at 1.35 miles.

The Whitehurst Freeway carried approximately 50,000 vehicles per day (19), while the Park East Freeway's most heavily traveled section carried an estimated 54,000 vehicles (20). The Central Freeway had the highest level of usage, with an average of 100,000 (21) vehicles per day.

Condition

Both the Whitehurst and the Central Freeway had become public safety hazards. The aging of the Whitehurst, exacerbated by a lack of maintenance and upkeep, resulted in the corrosion of the steel structure and cracks in the concrete deck. The Central Freeway had been significantly damaged in the 1989 Loma Prieta earthquake, making the structure unstable. The Park East, while showing signs of aging and the need for rehabilitation, had not yet become a public safety concern.

Decision Making

Process

Each case represents a fairly unique decision making process. In the City of Milwaukee, Mayor John Norquist, came into office in the late 1980s with the stated objective of demolishing the Park East Freeway during his tenure. The planning process for the Downtown Master Plan explored the removal idea in a public arena enabling support for the freeway's removal to grow. The final Downtown Master Plan identified removal as a "catalytic element" for downtown revitalization (22). With the city on board, Norquist secured the necessary funding and jurisdiction over the freeway through negotiations with the governor, the state Department of Transportation, and the county. The process was not entirely without controversy, however. During the 2000 mayoral election, the platform of Norquist's opponent, George Watts, proposed to keep the Park East Freeway, and complete the freeway system as originally proposed in the 1950s (23). Even after losing the race, Watts continued his opposition to freeway removal, launching a lawsuit to stop the razing of the spur (24). A judge threw out the lawsuit seven months later, eliminating the last barrier to removal.

The Central Freeway followed a much rockier, drawn out path. With authority over the freeway's future transferred from the State (Caltrans) to the City of San Francisco by State Senate Bill 181 after the earthquake (25), the City embarked on a decision-making process filled with indecisiveness and the creation of new city agencies and laws. For the first six or seven years the decision making process was relatively confined to the technical evaluation of rebuild or retrofit alternatives with public involvement by way of a Citizens' Advisory Task Force (26).

The idea of removing the freeway remained an unfilled dream of Hayes Valley residents. This changed in 1997 when the Central Freeway was shut down for a period of time to demolish the upper deck. When traffic functioned without the freeway, people began to open up their minds to the idea of removal (27). However, a significant number of residents (especially those from the Sunset and

Richmond neighborhoods) and government officials still viewed the Central Freeway as critical to providing necessary access.

The Central Freeway battle was largely waged through the City of San Francisco's referendum process, which allows San Francisco voters to challenge city ordinances by gathering signatures for proposals to be placed on the election ballot. In 1997, proponents of maintaining the Central Freeway succeeded in introducing and passing Proposition H which called for the replacement of the Central Freeway with a single-deck, elevated freeway, marking the shift of the decision making process into the voters' hands. Hayes Valley residents, in turn, with the assistance of other anti-freeway supporters, placed and passed Proposition E, a measure to replace the freeway with an at-grade boulevard, in November 1998. Pro-freeway forces did not relinquish hope, however, and in November 1999 the sides squared off in two competing ballot measures. Finally, after years of debate and four ballot initiatives, the citizens of San Francisco voted to replace the Central Freeway with a boulevard.

The Whitehurst Freeway was neither a case of a strong mayor fighting for his cause nor indecision played out in an extensive public process. Like San Francisco, D.C. officials began the planning process by hiring consultants to evaluate options for rehabilitation – the thought of anything else was not an option at the time – and created a new agency to liaison with the public. The release of the proposed alternatives generated debate amongst various neighborhood and citizen and business groups. However, a strong community movement against the freeway never really appeared. The government seemed to have its mind set on a rehabilitation scheme, primarily citing cost and traffic concerns. Sharing the governments concerns, the National Capital Planning Commission granted the district approval to go ahead with its rehabilitation proposal.

Structure

Both San Francisco and Washington D.C. began the planning process with the development of alternatives. In San Francisco this process was led by the Board of Supervisors and in D.C. by the Department of Transportation. In both locales a number of committees representing different interests were involved. Milwaukee, on the other hand, had a relatively informal decision-making structure initially.

As the process evolved in each city, the decision-making structure changed. In San Francisco, residents became more active, eventually taking over the decision-making process. Similarly, in Milwaukee public involvement grew with the development of the Downtown Master Plan. In Washington D.C. the decision-making structure remained more static with the government driving the process throughout.

Jurisdiction and Roles

Jurisdictional and planning roles were not consistent across the three cases, reflecting, in part, the somewhat muddled waters of metropolitan transportation planning in the U.S. as well as the unique jurisdictional conditions of the District of Columbia (DC).

In the Central Freeway case, the State government intervened, granting control over the Freeway's fate to the city after the Loma Prieta earthquake. From there, residents and the city government largely determined the Freeway's future, not without resistance from Caltrans. Interestingly, the metropolitan planning organization (MPO) played little explicit role in the decision-making process.

In Milwaukee, the Mayor and state and county officials negotiated effective jurisdiction over the Park East Freeway, whereby the removal option was mutually agreed upon, ultimately. In this case, the MPO played a more prominent role, which partly comes from the fact that Federal monies were directly used for the teardown. The MPO evaluated the traffic impacts of the removal and formally amended the long-range plan to reflect the project.

In the case of the Whitehurst, formal jurisdiction lies with the DC government, although any major capital projects would require federal government approval. In this case, the role of the MPO seems surprisingly limited; Whitehurst freeway studies and related works appear on the MPO's listing of

Federal Funding Obligations (as required by law), but the National Capital Planning Commission (the federal government's planning agency for the region) exerted more apparent influence.

Funding Sources and Mechanisms

Federal funds, via ISTEA, provided the major funding source and mechanism for the Park East Freeway removal. The State of Wisconsin, Milwaukee County and the City of Milwaukee had been unable to agree on the future of the Park East, thus finding the necessary funding had been difficult. After a series of negotiations, Governor Tommy Thompson, the Department of Transportation and Milwaukee Mayor John Norquist came to an agreement to use a portion of ISTEA funding for the Park East's removal as well as a number of other projects. In addition to ISTEA funds, the City of Milwaukee also created a tax increment finance district in order to help cover the costs of upgrading local roads and facilities.

The District of Columbia oversaw the financing for the Whitehurst Freeway. As a rehabilitation rather than removal project the Whitehurst was eligible for funding from the Federal Highway Trust Fund. Eighty percent of the costs were financed by the federal government, while the remaining twenty percent came from the District of Columbia.

The case of San Francisco differed from D.C. and Milwaukee in that the federal government was not the primary source of funding. Instead, the State of California passed a Senate bill transferring the excess right-of-way parcels created by the demolition of the freeway to the city, which then used the profits from the sale of the land to finance the design, construction, development and maintenance of Octavia Boulevard.

Costs

Pre-demolition estimates for the Park East Freeway put the total cost at \$25 million; the true cost was closer to \$30 million. The predicted cost estimates for the construction of Octavia Boulevard in San Francisco ranged from \$25 million to \$35 million. The cost estimate for the Whitehurst Freeway, prior to construction was approximately \$48 million.

Table 1. Case Study Characteristics

	Central Freeway	Park East Freeway	Whitehurst Freeway
Infrastructure			
Originally Constructed	1959	1969-1971	1949
Function	Downtown connection	Downtown connection	Bypass road
Design	Elevated, steel, single and double-deck, 1.35 miles long, 4-lanes	Elevated, steel, single-deck, 0.8 miles long, 4-lanes	Elevated, steel, single-deck, 4 lanes, 0.6 miles long
Usage	Split between local and commuter traffic, 100,000 vehicles per day	Primarily local traffic 54,000 vehicles per day	Primarily commuter traffic, 50,000 vehicles per day
Condition	Damaged due to earthquake, public safety concerns	Aging and deteriorating, no immediate public safety concerns	Severely deteriorated, public safety concerns
Site	Residential neighborhood	Industrial neighborhood	Industrial, mixed-use
Transportation Network	Heavy rail, regional service Bus, local service	Bus, local service	Bus, local service
Socioeconomic/Demographic	Lower income, higher rate of minorities, young professionals	NA – no residential units within the immediate area	Higher than average incomes, Professionals & white collar workers, students
Decision Making			
Decision Making Process and Structure	Initially government led, switched to voter led, 4 ballot propositions and strong community activism with no consensus reached	Initially led by the mayor, integrated into Downtown Master Plan, consensus reached	Government led, no real change over time in structure, some debate and community involvement
Jurisdiction	Initial authority with State DOT, transferred to city via state legislation, which also gave city control over the right-of-way parcels	Resolution agreed upon by the Mayor, Governor, and County officials to obtain ISTEA funding transferred jurisdiction from WISDOT to the City, which controls right-of-way parcels	DC government has authority, although FHWA consensus is necessary if federal funding is used for major capital projects, such removal or rehabilitation
Roles	With jurisdiction transferred to City, Caltrans' role was implementation of alternative. Legally separate authority managed project, overseeing the agencies involved as well as financing	MPO amends 2020 regional transportation system plan to include the removal of the Park East in order to comply with State requirements and to study the potential traffic impacts.	FHWA approval was necessary. The National Capital Planning Commission also had to approve the district's plan in order for it to move forward.

Dates of Removal/Removal Consideration	1996 (first pieces removed), 2003	2002 (removal begins)-2004 (completed)	1983 (first considered), 1990 (final decision)
Financing			
Funding Sources	Revenue from sale of excess right-of-way parcels, Caltrans	ISTEA (federal), state, and city funds.	Federal Highway Trust Fund, city funds
Funding Mechanisms	Senate Bill, Transportation Authority	ISTEA, tax increment finance district	District of Columbia, federal government
Costs	\$25 to \$35 million	\$30 million	\$48 million

UNDERSTANDING THE PATH TO FREEWAY REMOVAL

To understand the path to inner-city freeway removal, we now examine, using the case analysis, our four hypotheses.

A Necessary State of Disrepair?

With respect to the precondition that a freeway's condition must represent a public safety concern before serious consideration of its removal, the three cases support this point, although Milwaukee to a lesser degree. In San Francisco, a small number of activists and Hayes Valley residents were interested in tearing down the Central Freeway long before the earthquake. However, until the earthquake rendered the infrastructure unsafe, there had been no significant discussion regarding an alternative future for the freeway.

Similarly in Milwaukee there was always a small group of supporters behind removing the Park East Freeway. While a general consensus existed by the 1990s that the freeway's structural integrity would be reduced in subsequent years, it did not pose an immediate danger.

The Whitehurst Freeway in Washington D.C. had become unsafe due to aging and the lack of maintenance and upkeep. The city was thus forced to contemplate the Whitehurst's future.

“Windows of Opportunity”

Following Ardila (11), we hypothesized that a window of opportunity must exist for freeway removal to become a legitimate option. While the state of disrepair itself will generate discussion about rehabilitation or reconstruction, this discussion will not necessarily include the removal option. The window of opportunity may be the precondition itself; however it could also be a number of other later events.

In San Francisco, the damage done to the Central Freeway was enough to start a discussion of what should be done with the structure, however this only included various rebuild alternatives. Only in 1997, after a temporary shutdown for the upper deck to be demolished, did the idea of tearing down the freeway receive serious consideration. When fears of massive gridlock did not materialize, the idea of removing the freeway became plausible in the larger public and government's minds. In this case, the true window of opportunity opened via the relatively unique “experiment” of the temporary shutdown.

In Milwaukee the window of opportunity may have been the election of Mayor Norquist. But, the window may have truly opened during the development of the Downtown Master Plan in 1998. Prior to that point, the Mayor had been working with state and county government to negotiate sources of funding. The creation of the Downtown Master Plan provided Norquist with a venue to express his vision and gain support. The interest of Harley Davidson in locating its proposed new museum in downtown Milwaukee also helped push the window open.

Washington D.C. was the only case where the precondition *was* the window of opportunity. When the district began the planning process with the development of alternatives for the Whitehurst Freeway, one of the four alternatives identified was an at grade arterial with service road. The proposal called for a six-lane roadway to replace the elevated structure.

Evidence of Changing Values Towards Mobility?

Even with the window of opportunity open, what might cause it to be taken advantage of? Will freeway removal only occur in places that evidence a reduced “value of mobility” relative to other objectives?

In San Francisco, a definite struggle took place between the value of mobility and the value of neighborhood quality of life and cohesiveness, evidenced in the face-off between residents of different neighborhoods. Elected officials followed a similar division, supporting the viewpoint of their constituents. As the state's builder of freeways, Caltrans clearly valued mobility. Commuters from outside the city were also in favor of keeping the freeway as they benefited from its ease of access to the city while not suffering the negative effects of living in the freeway's vicinity. Government officials and San Francisco residents were almost equally divided on what should be done with the Central Freeway, as evidenced by the back-and-forth on referenda.

In Milwaukee, the Mayor and his planning director viewed the Park East Freeway as a hindrance to realizing the full potential of the downtown area. With the freeway gone, land could be opened up for new development that would help revitalize an underutilized part of the city. Businessmen and some government officials expressed concern over loss of access with the removal of the freeway, however, the potential for economic growth as seen in the success of a nearby upscale residential development in the 1990s and the Harley Davidson museum interest helped to win over many of the initial opponents. The Embarcadero Freeway precedent in San Francisco proved to win over many of the initial opponents as well as quell their concerns over loss of mobility. The Park East was also essentially over-designed for its current use – as noted in a SWRPC study which stated that the freeway’s removal would have minimal impact (28) – helped to reduce the apparent severity of any tradeoff.

In Washington D.C., government officials and much of the public never really viewed freeway removal as a real option. The District’s initial reaction to the four alternatives was that the city would most likely re-deck the Whitehurst. After the final report was released, the district maintained its support for renovating the freeway with the reasoning that it would allow commuters to travel faster than the other alternatives. Most Georgetown residents and those living in Northwest D.C. were in favor of rehabilitation, citing faster commutes and keeping traffic off of neighborhood streets. The few advocates for an at-grade boulevard believed that this alternative would cost less, improve Georgetown’s appearance, and only cause minor traffic problems.

Who is in control and what do they value?

Even with the window open, and some sense of changing values, highway removal must have an empowered agent of change. The “other-than-mobility” value must be embedded in power, be it the power of a given individual or a collective group.

Each of the three cases shows a struggle over the value of mobility versus other values amongst stakeholders. In San Francisco and Milwaukee the freeway removal alternative won out because the objectives of neighborhood quality of life and economic development were embodied in the power structure.

In San Francisco voters held the value, and ultimately the power. While initially the general public was basically left out of the discussion of what to do with the Central Freeway, once the idea of removing the freeway moved into the mainstream, the public took control of the decision making process utilizing the relatively unique referendum process, which places a great deal of legitimacy on collective processes in making large scale decisions. This provided a legal venue through which the public made the final decision.

Another area of distinction is the role and strength of the neighborhood unit. In San Francisco, neighborhoods are powerful influences in government decisions and the city has a history of influential neighborhoods that mobilize around issues. Thus, the referendum process could be fully utilized by these competing neighborhoods as they had the collective manpower to secure the necessary signatures to place measures on the ballot. The outcomes of the three elections show that there was a close divide between those voters who valued mobility and those who valued other aspects of quality of life and economic development.

In Milwaukee the values of economic development and revitalization were initially embodied in the mayor. Through the planning process for the Downtown Master Plan he was able to convince governmental officials, businessmen and the general public of the benefits of tearing down the Park East Freeway and subsequently gained their support. He was also willing to negotiate over federal ISTEA funds with the Governor of Wisconsin and County of Milwaukee to ensure that the project received funding. In fact, in this case, we might question whether a true change in the value of mobility occurred or whether the mobility value was simply “shifted” to another part of the metropolitan area, since Norquist negotiated a suburban interchange with state officials in “exchange” for the freeway removal.

In contrast, in the Washington D.C. case the proponents for freeway removal were not in a position of power. Those favoring an at-grade boulevard were given some consideration, however those responsible for making the final decision, Mayor Marion Berry and the National Capital Planning

Commission voted in favor of keeping the elevated structure and retrofitting it to ensure mobility was maintained, if not increased.

Towards a Theory of Highway Removal

Overall, the cases analyzed offer support of our hypotheses. In each case, a window of opportunity did open, allowing the idea of freeway removal to become a legitimate and mainstream option. An open window does not suffice, however; freeway removal will only move forward if other values exceed the perceived “value” of mobility.

In each of the three cases, a collective group or individual valued some other objective more than mobility. In San Francisco it was the Hayes Valley residents, in Milwaukee it was Mayor John Norquist and in Washington D.C. it was a special interest group. Ultimately freeway removal will only happen if this “other-than-mobility” value is embedded in power. In the removal cases, the value of neighborhood quality life was embedded in the voters of San Francisco and the value of real estate development was embedded in the Mayor, government officials, and the public. In the non-removal case, the value of improving the physical environment of Georgetown and cost savings relative to rehabilitation were not embedded in power, thus the Whitehurst remains.

This analysis leads us towards an initial theory of highway removal. Urban highway removal will occur in locations where a policy entrepreneur for freeway removal exists and a window of opportunity opens such that they are able to push the idea to a wider audience. Once the window has been opened, and the idea of freeway removal becomes a legitimate option, there must be an individual or collective group who supports the freeway removal. Ultimately, for the alternative of freeway removal to be selected over other alternatives, those in power must value other benefits more than they value the benefits associated with freeway infrastructure.

Limitations of Analysis and Alternative Explanations

Findings from this initial inquiry into the freeway removal phenomenon should be viewed cautiously. First, given the cases selected, our hypotheses and theory only apply to limited pieces of the freeway network. In Milwaukee and San Francisco, the removed piece of freeway formed part of a larger network that was never completed, essentially freeway “stubs.” Proponents of the Park East Freeway removal cited studies showing its underutilization relative to capacity. The Whitehurst Freeway serves more as a bypass road, with few viable alternatives and difficult connections to the larger networks on both ends. Therefore, our findings may not apply to freeways which serve different functions.

Another possible and somewhat simpler explanation for the failure of the non-removal in the DC case is the existence of precedents. When considering the future of the Whitehurst Freeway, interested parties had just one precedent to point to, Portland, Oregon, which may have pre-empted more serious consideration of the removal option. In Milwaukee, proponents used San Francisco’s Embarcadero as an example. In the Central Freeway case, proponents could point to the Embarcadero removal and the Central Freeway’s own temporary closing as precedents. If precedents are indeed the key, this argues well for future removal cases, as the number of precedents grows.

Furthermore, we have necessarily simplified the description of the decision-making process and structure in each case. Each of the freeways studied here represented (unfinished) products of the interstate era, but at the time the relevant removal decisions were being considered, “ownership” varied. In the California case, the state government gave the City control of a former Caltrans asset; in the Milwaukee case, effective control over the freeway was granted from the state to the city, via a negotiation; in the DC case, the city “owned” the freeway, but with strong federal oversight (due in part to DC’s unique jurisdictional condition). Our simplified depiction does not necessarily affect the conclusions we can draw from the cases, since the two removal cases had different “ownership” and jurisdictional structures. But, jurisdictional issues may also well affect outcomes in other cases – a city cannot simply decide to remove an interstate that runs through its boundaries.

Finally, a number of other conditions that may have been relevant to the final decision were not included in this analysis, due to lack of time and information. These include a more in-depth analysis of

transportation conditions including transportation alternatives and mode split in the corridor surrounding the freeway, and further exploration of economic and demographic trends.

IMPLICATIONS

A Paradigm Shift: A New Framework

From the 1950s to the present day, the role of the freeway in the U.S. city has come full circle as values have moved away from pure engineering “efficiency” towards more equal consideration for other values, suggesting that a paradigm shift is underway. An opportunity now exists to deal with the question of what to do with aging infrastructure in a more systematic way. The freeway removal decision tends to arise in a relatively ad hoc and informal way, based on a series of events and circumstances rather than an explicit evaluation of all the alternatives – *including* removal – and their impacts.

The three cases show that a great deal of variation exists in how authorities deal with the freeway removal question. Overall, a “fix-it first” attitude prevails. The standard approach when developing alternatives requires a “no-build” option to be considered together with several build/rehabilitate options. Perhaps the time has come to add a “tear-down” option to the standard approach; shifting towards a more systematic rather than accidental way of evaluating options. This expanded evaluation framework would also enable more reflective decision making, providing time to review all options and better understand the opportunity costs associated with using valuable urban land for infrastructure versus real estate development, open space, etc.

Areas for Further Study

Concerns over the traffic effects of removing a piece of the transportation network are valid and a significant hurdle to gaining widespread acceptance for freeway removal. In San Francisco, most citizens and government officials did not consider removal of the Central Freeway as a real option until the city had to function without it for several months. Many people feared gridlock; however once it was evident that traffic effectively dispersed, people began to open their minds to removal. Convincing businessmen that removing the Park East would not adversely affect them or their customers’ access, was a key to Norquist’s ability to advance his proposition. He supported his case with a study done by the Southeastern Wisconsin Regional Planning Commission stating that the existing network could support demand without the freeway.

These cases highlight the need to integrate a pre- and post-project traffic study – not common practice. A traffic study evaluating the potential impacts on the city and regional network can be an important tool for changing perceptions. Formal traffic studies also have the ability to give a greater sense of legitimacy to an alternative otherwise viewed as quite radical.

A post-project evaluation would provide insight into where traffic went and what, if any, congestion was generated, subsequently showing the real role of the infrastructure from an accessibility standpoint. The travel demand analysis that would underlie assessment of the freeway removal phenomenon is a direct inverse to the ongoing analysis of, and debate around, the phenomenon of “induced” demand. Induced demand represents basic economics: adding additional travel capacity reduces travel time costs. In the short run, demand goes up in the form of people “entering into” the travel market and/or shifting from other routes, modes, and times of day. In the longer run, new demand emerges. Freeway removal pushes these forces in the opposite direction. If induced demand rests upon the phrase “if you build it, they will come,” freeway removal opens the question “if you remove it, where will they go?”

CONCLUSIONS

The United States Federal Highway System, called by some the “Greatest Public Works Project in History,” recently celebrated its 50th anniversary. This massive infrastructure project transformed the nation, accelerating suburbanization and leading to unprecedented levels of motorized mobility at a national scale. The interstate highway system brought undeniable benefits to the country, but all benefits

have their costs. In this case, they included social, economic, environmental, and aesthetic costs that led to growing opposition – and, eventually, a full-scale “freeway revolt”.

Today, much of the original urban freeway infrastructure is reaching or has already passed the end of its useful life – requiring large investments for rehabilitation. At the same time, the freeway revolt has evolved into a more widespread movement, searching for alternative solutions to automobile-dependent mobility. Highway development and pressures for highway improvements and expansions remain important and strong, but today a vigorous debate over the future of urban highways and mobility continues.

Initiated over 30 years ago in Portland, Oregon, urban freeway removal has apparently become an increasingly considered option in U.S. cities. Our analysis of three different cases suggests that urban freeway removal will only take place when: (1) one precondition is met: the condition of the freeway must be such that there is concern over its integrity and structural safety, (2) a window of opportunity exists; the window may be the precondition itself or an event like a public hearing, or planning process, or a temporary closure of a roadway, (3) the value of mobility must be lower than other objectives such as economic development, quality of life, etc., and (4) those in power must value other benefits more than they value the benefits associated with freeway infrastructure.

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REFERENCES

- 1 Mohl, R. Stop the Road: Freeway Revolts in American Cities. *Journal of Urban History*, Vol. 30, No. 5, July, 2004, pp. 674-706.
- 2 Altshuler, A. and Luberoff, D. *Mega-Projects: The Changing Politics of Urban Public Investment*. Brookings Institution Press, Washington D.C., 2003.
- 3 Rose, M.H. *Interstate: Express Highway Politics, 1939 – 1989*, Revised Edition. The University of Tennessee Press, Knoxville, 1990.
- 4 Weiner, Edward. *Urban Transportation Planning in the US: A Historical Overview*. U.S. Department of Transportation, Office of Economics, Washington, DC, 1992.
- 5 World Commission on Environment and Development. *Our Common Future*. Oxford University Press, New York, NY, 1987.
- 6 Zegras, C. Mainstreaming Sustainable Urban Mobility. *Transport Policy-making and Planning for Cities of the Developing World* (Dimitriou, H. and R. Gakenheimer, Eds.), Routledge, forthcoming in 2008.
- 7 Glaeser, Edward L. and Joshua D. Gottlieb. *Urban Resurgence and the Consumer City, Preliminary Draft*. Harvard University, Cambridge, MA, 2006.
- 8 Altshuler, A. *The City Planning Process: A Political Analysis*. Cornell University Press, Ithaca, NY, 1965.
- 9 Flyvbjerg, B. *Rationality and Power: Democracy in Practice*, University of Chicago Press, Chicago, 1998.
- 10 Ardila, A. and Salvucci, F. Planning Large Transportation Projects: Six-Stage Model. *Transportation Research Record* 1777, 2001, pp 116-122.
- 11 Ardila, A. Transit Planning in Curitiba and Bogota: roles in interaction, risk, and change. Unpublished PhD Dissertation, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, MA 2004.
- 12 Garb, Y. Constructing the Trans-Israel Highway’s Inevitability. *Israel Studies* 9, no. 2, Summer, 2004.
- 13 Kingdon, J.W. *Agendas, Alternatives, and Public Policies*, 2nd edition. New York, Harper Collins College Publishers, 1995.
- 14 Scholz R.W. and Walter, A.I. Critical success conditions of collaborative methods: a comparative

- evaluation of transport planning projects. *Transportation*, 34, 2007, pp. 195-212.
- 15 Yin, R.K. *Case Study Research: Design and Methods*. Third Edition, Beverly Hills, Sage, 2003.
- 16 Napolitan, F. Shifting Urban Priorities: The Removal of Inner City Freeways in the United States. Masters Thesis, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, 2007.
- 17 Texas Transportation Institute. Base Statistics for the 85 Urban Areas, data compiled for the 2005 *Annual Urban Mobility Report*, College Station, 2005: http://mobility.tamu.edu/ums/congestion_data/.
- 18 California Department of Transportation, District 4. *Central Freeway Evaluation Report*. Systan, Inc., et al. San Francisco, May 1997.
- 19 *Whitehurst Freeway Corridor System Modification Study: Final Impact and 4(f) Evaluation*, Volume 1 of 2, August, 1985.
- 20 Southeastern Wisconsin Regional Planning Commission. *Amendment to the Regional Transportation Plan-2020: Park East Freeway Corridor*. Waukesha, Feb 2001.
- 21 Department of Parking and Traffic City and County of San Francisco. *Central Freeway Areawide Traffic Study*. Wilbur Smith Associates, et al. San Francisco, November 1995.
- 22 City of Milwaukee Department of City Development. Park East Corridor Newsletter. October, 2003.
- 23 Borowski, G. Mayoral Candidates Trade Old Jobs and New Ones. *Milwaukee Journal Sentinel*, March 3, 2000, p. B1.
- 24 Sandler, L. Watts Sues to Save Spur. *Milwaukee Journal Sentinel*, August 29, 2001, p. B1.
- 25 Senate Bill 181 passed in September 1991.
- 26 Final Report: Central Freeway Areawide Traffic Study, 1995.
- 27 King, J. 15 Seconds That Changed San Francisco. *The San Francisco Chronicle*, October 20, 2004, A1.
- 28 *Amendment to the Regional Transportation Plan-2020: Park East Freeway Corridor*. February, 2001.