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Fein, Michael R., "Tunnel Vision: “Invisible” Highways and Boston’s “Big Dig” in the Age of Privatization" (2011). *Humanities Department Faculty Publications & Research*. 33.

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Tunnel Vision: “Invisible” Highways and Boston’s “Big Dig” in the Age of Privatization

Journal of Planning History
000(00) 1-23
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sagepub.com/journalsPermissions.nav
DOI: 10.1177/1538513211425209
<http://jph.sagepub.com>


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Abstract

While most analyses of late-twentieth-century highway policy suggest a shift toward open system design, bottom-up federalism, and the devolution of transportation governance, the history of Boston’s Central Artery/Tunnel project, informally known as the “Big Dig,” runs counter to this trend. Though the project emerged in the 1970s during a time of unprecedented citizen activism in transportation planning, ultimately the privatization of political power proved to be the Big Dig’s most important legacy for twenty-first-century urban highway projects.

Keywords

Central Artery/Tunnel project, Big Dig, tunnels, urban highways, privatization, highway policy and planning, transportation governance

The American Interstate Highway System reached its half-century mark on June 29, 2006. The anniversary prompted an outpouring of public commentary on the state of America’s superhighways, a “Celebrate the Interstate!” campaign by the American Association of State Highway and Transportation Officials, and a cross-country convoy that recreated the famous trek U.S. Army Lt. Colonel Dwight D. Eisenhower took in 1919, first sparking his interest in improving the nation’s roads.¹ The triumphal spirit, however, did not last long. Less than two weeks later, 12 tons of concrete ceiling panels fell in a recently opened section of Interstate-90 (I-90) tunnels—part of Boston’s Central Artery/Tunnel project informally known as the “Big Dig”—and crushed a motorist to death.²

The troubled history of the Big Dig is a compelling story in its own right, as well as an important coda to the larger narrative of the interstate system of express highways. Most analysts of late-twentieth-century US highway policy have emphasized the downward shift in governing authority that followed the Freeway Revolts: a series of citizen movements that challenged the routing decisions and top-down planning processes of the highway builders during the interstate era.³ But the history of the Big Dig, which was developed in the aftermath of the Freeway Revolts, reveals a more complex portrait of political change in the post-interstate era. Though the project emerged in the

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1970s during a time of unprecedented citizen activism in transportation planning, ultimately the privatization of political power, rather than its localization, proved to be the Big Dig's most distinguishing characteristic.

The Big Dig's designers, particularly Fred Salvucci, conceived of the project as an alternative to the elevated highway that had slashed through Boston in the 1950s. The original expressway, a 40-foot high wall of concrete and steel, cut off Boston from its historic waterfront and displaced 20,000 residents. Engineered to carry 75,000 vehicles per day, it soon became severely overloaded, carrying more than twice that before the Central Artery tunnels opened in 2003.

The elevated expressway had been the product of the top-down, bureaucratic style of decision making that characterized the work of highway engineers during the interstate era.⁴ The depressed Central Artery was the product of a different age. Boston, like many other cities rocked by the Freeway Revolts of the late 1960s, engaged in a major reevaluation of its transportation planning review process during the 1970s. Highway planners solicited input from a wide range of citizens and experts in the crafting of transportation policy, and they ultimately terminated most of their more ambitious plans for additional expressways within the Boston metropolitan area. The notable exceptions to this construction freeze were the artery project and a proposed new tunnel under Boston Harbor. Each had its strong advocates. Neighborhood activists and Boston Mayor Kevin White favored burying the artery and reclaiming the above-ground urban landscape; the business community wanted the tunnel, with its improved airport access. During the 1970s and '80s, Governors Francis Sargent (Rep., 1969–75) and Michael Dukakis (Dem., 1975–79, 1983–91), as well as Fred Salvucci, a top Boston-area transportation expert, provided critical political support for the projects, which together were intended to reduce traffic congestion in Boston's central business district, reunite the city and its waterfront, provide new parkland, improve air quality, and complete the final link in the Seattle-to-Boston I-90 superhighway, as laid out in the original Eisenhower-era Interstate plan (Figure 1).

While these projects were rooted in a locally sensitive design process and depended on support from neighborhood groups, business interests, and local politicians and officials, they also relied heavily on federal assistance. Congressional legislators, eager to hasten the completion of the interstate system, had set a September 1983 deadline for state departments of transportation to file environmental impact statements for uncompleted sections of highway or face the elimination of those routes. With time running out and significant federal subsidies at stake, the deadline put pressure on the Massachusetts Congressional delegation to commit to the project or abandon hope of pursuing it in the future. In the end, they joined city and state officials as they aggressively sought and, in 1987, won support for the Big Dig in Washington.⁵

Federal assistance did not come without costs. The Central Artery/Tunnel project, already an ambitious one, grew more so as state transportation officials sought to comply with federal regulations. In 1984, officials at the Federal Highway Administration (FHWA) demanded that the underground expressway significantly expand the number of lane miles beyond those of the original elevated structure, since the FHWA was not in the business of funding "urban beautification projects." The project also grew larger as designers addressed federal requirements to mitigate the impact of construction on businesses and the environment.⁶

Cost estimates began rising even before the 1991 groundbreaking. In the process, the tenor of the project changed dramatically. By the middle of the decade, project managers faced intense pressure—from the US Congress, the US Department of Transportation, state and local officials, and citizens themselves—to bring the project to completion and to rein in billion-dollar cost overruns. State legislators responded with a series of changes to the rules and institutional structures under which Big Dig management operated, all of which tended to increase the power of private contractors and limit the scope of public oversight. The Big Dig was completed in 2006. But the sacrifice of transparency, oversight, and accountability in finishing the project left behind a troubling legacy, one which was sealed with the tunnel's fatal collapse in July of that year.

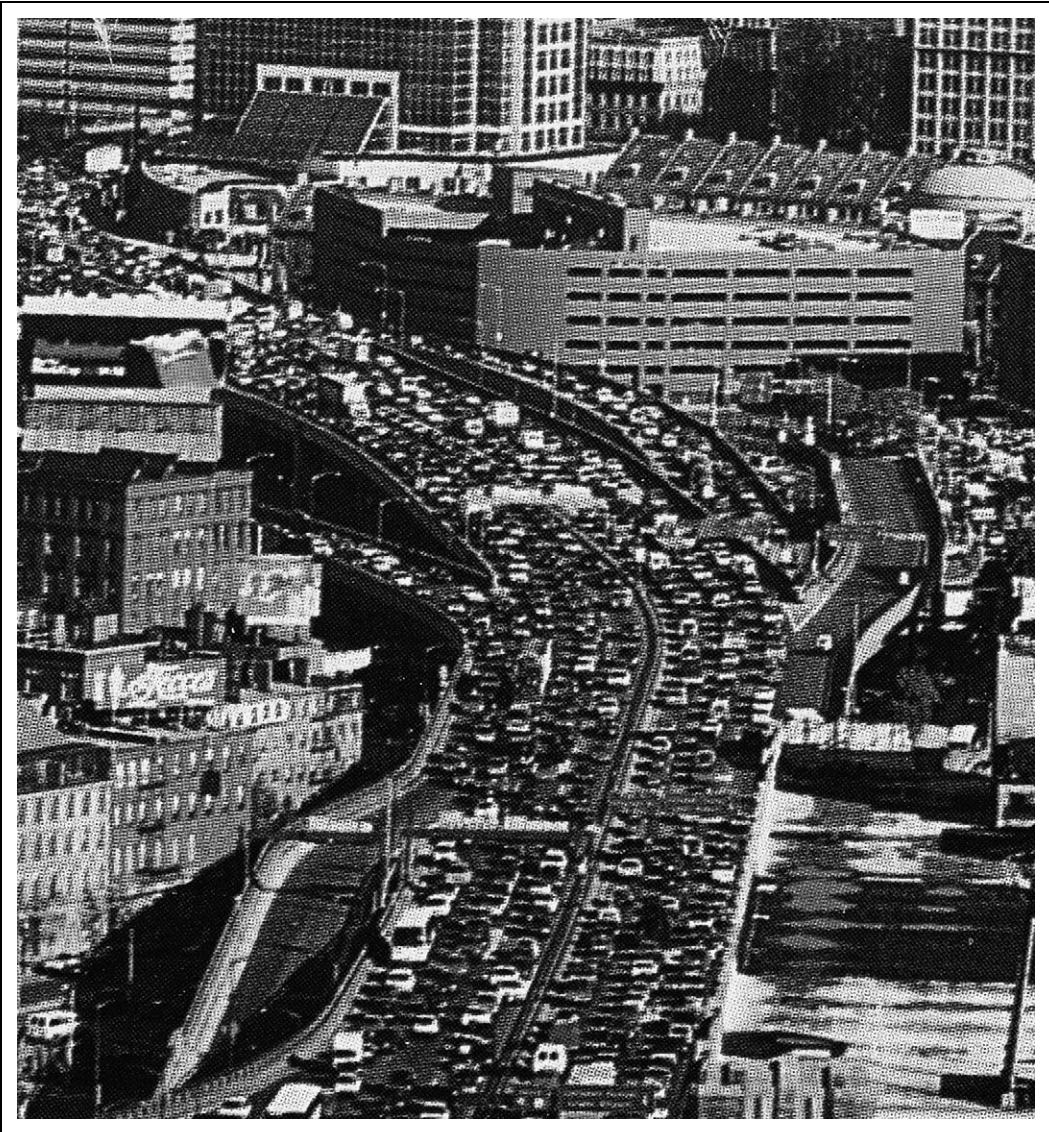


Figure 1. The overloaded Fitzgerald expressway (Courtesy of Massachusetts Department of Transportation [MassDOT] library).

Ironically, the Big Dig, which stemmed from popular efforts during the 1960s and '70s to restore citizen control to transportation planning, will largely be remembered as a lesson in the perils of privatization. Trapped in a kind of "tunnel vision," city and state officials pursued a set of transportation policies that had extraordinarily high costs: in dollars, in foreclosed transportation alternatives, and in human life. Importantly, not all of these costs can be attributed to privatization, as the privatizers themselves sought to escape problems engendered by the bottom-up design process: the creeping scope and extensive mitigations that stemmed from the desire to maintain local support and federal subvention. But the privatizers' willingness to sacrifice oversight and transparency compounded these costs, and made the project's cost overruns and fatal design errors appear all

the more galling in the public eye. The highly publicized nature of these costs has, to some extent, “poisoned the well,” making future expressway tunnels and other bold highway transportation initiatives much more difficult to advance. Indeed, this analysis of the Big Dig suggests that its history prompted a major reassessment of US transportation policy. As other city officials contemplated construction in the shadow of the Big Dig, they forced a reckoning with public officials’ power to deliver on the promise of the new style of intergovernmental relations that emerged in the post-interstate era. For with its scale, complexity and storied past, the Big Dig revisits precisely the same issues that brought the interstate era to an end: those of authority and accountability, transparency and oversight, and democratic involvement in the policy-making process.

The Big Dig and the Promise of “Invisible” Highways

In 1998, the US Congress passed the largest public works bill in the nation’s history, dedicating \$217 billion to address its failing transportation infrastructure.⁷ City and state transportation officials divided on how to spend this money. Salt Lake City spent \$1.6 billion to build a new, twelve-lane expressway linking its suburbs and metropolitan areas. In contrast, Milwaukee drew on \$20 million in federal subsidies to dismantle a half-built section of interstate highway that cut through its historic downtown. It was one of the nation’s largest highway deconstruction projects.⁸ The contrast between the two examples is telling: city planners believed that they had to either build on precedent, expanding the interstate highway system in order to help speed commuters in and out of the city or reject it altogether in order to revive urban life.

Boston’s Central Artery/Tunnel project appeared to promise a way out of this policy stalemate. And it is only the most notable example of a trend, dating to the 1970s, toward addressing traffic problems by routing them underground. Plans have also been widely discussed for tunnels elsewhere in the United States, most spiritedly in the states of New York, California, and Washington. Certainly obstacles, primarily cost, remained. But carving out improved urban corridors was no longer an unthinkable endeavor. Burying highways beneath, rather than above, the urban landscape—making once visible roads “invisible”—seemed to make possible the revitalization of major highway initiatives that had stalled after the Freeway Revolts.

For much of the 1950s and ‘60s, road builders had turned a deaf ear toward the negative social impact of highways. But by the 1970s, highway critics had transformed the entire framework of transportation politics. In 1966, the appointment of Alan S. Boyd to head the newly created US Department of Transportation gave opponents of urban expressways their first significant advocate for local control in Washington. Boyd’s insistence on viewing expressways as integral to community health emboldened Massachusetts anti-highway activists and city leaders, such as Boston Mayor Kevin White, to persuade Governor Francis Sargent to reevaluate existing highway plans and issue a moratorium on major highway construction in 1970. The following year, Alan Altshuler, Massachusetts Secretary of Transportation and chair of the Boston Transportation Planning Review, pioneered the “open study” planning model. Unlike earlier planning models, study leaders encouraged citizen participation, evaluated highway and transit on equal footing, worked at the community as well as the regional level, and sought to explain technical details to nonspecialists. Thus, by the mid-seventies, anti-highway groups had gained a favorable position from which to influence new projects, making it increasingly difficult for potentially disruptive highway construction to win approval in American cities.⁹

More recent highway legislation, most notably the landmark Intermodal Surface Transportation Efficiency Act of 1991 and its subsequent reauthorizations, continued to privilege local actors in the setting of transportation policy. But it remained to be seen whether major highway construction—this time in the form of underground roadways—could be resuscitated without a return to the distant, unresponsive bureaucracies, and the closed system planning style that characterized the interstate

era. The interstate system emerged out of a set of planning procedures intended to limit citizen input. Public protest helped generate a more open and responsive transportation planning process, providing a receptive forum for modern, locally sensitive tunneling projects.¹⁰ Yet, the sheer complexity of tunnel construction ensured that some aspects of project management remained insulated from public oversight. Moreover, the high cost of the Big Dig produced mounting pressure on project managers and public officials, who were soon entangled in charges of mismanagement, fraud, and criminal negligence. This misfeasance created another public backlash, similar in intensity to the Freeway Revolts, against the Big Dig. Despite the commitment to a more open process than that of the 1950s and '60s, then, the new "invisible" highways of the 1990s fueled resistance to public works megaprojects carried out by officials and engineers with little public accountability.

The Big Dig and the New Road-Building Paradigm

Boston's Central Artery/Tunnel project constituted the most expensive urban highway project in the history of the United States. The \$15 billion project replaced the six-lane elevated expressway (Interstate-93) with a 7.5-mile, eight-to-ten-lane underground expressway running beneath the city and a fourteen-lane cable-stayed bridge over the Charles River. It also provided for a third tunnel under the Boston Harbor, linking the Massachusetts Turnpike (I-90) with Logan International Airport. All told, the project consisted of 160-lane miles.¹¹ Such a costly and ambitious project could not advance without federal subvention, and it did not become viable until a 1987 battle in the US Congress resulted in 85 percent federal funding for the project. At that point, the cost of the final link in the US Interstate Highway System was estimated at \$3.2 billion. Congress continued to fund the project over the next decade, even as changes in design and scope caused its projected cost to balloon, by 1998, to \$10.8 billion (Figure 2).¹²

Several interrelated causes accounted for these cost overruns. The first was the technical complexity of the project. Tunneling beneath the city meant contending with an assortment of existing subterranean obstacles, including utilities, subway tracks, and the residue of the city's former coastline. Workers on the project routinely uncovered the remnants of old wharves, long since buried by back-fill, dating from Boston's expansion beyond the narrow peninsula that was its original shoreline. The ground was so unstable in one area that contractors had to freeze the soil in order to tunnel through it, while supporting the elevated highway still in use above. In another section, the tunnel was constructed just inches over an operational subway tube. A third area required the construction of an on-site casting basin (large enough to hold an aircraft carrier) in order to produce the tunnel segments that were too large to be brought by barge under the low bridges that crossed the Fort Point Channel.¹³

Another part of the project's complexity grew out of its guiding philosophy, which differed from that of the interstate system. Indeed, its philosophy was a clear manifestation of the backlash against interstate politics. When the original elevated expressway was built, the mantra of the age had been "you can't make an omelet without breaking eggs." Now it was closer to the physician's oath: "first, do no harm."¹⁴ As Massachusetts Secretary of Transportation Fred Salvucci wondered, when first considering a tunnel in place of the expressway during the Sargent administration, "How can we do that? It's ugly, but it's carrying two hundred thousand cars a day. We're going to put a sign up at the Charles River that says, 'City Closed for Alteration—Come Back in a Decade?'"¹⁵ And so, as the project evolved, designers had to ensure that the work could be completed without significant obstruction to the flow of traffic and commerce in and out of the city.

Thus, "mitigations"—the practice of mollifying critics through a wide variety of accommodations—amounted to \$3 billion or about one-third of the entire cost increase during the life of the project. Some of these mitigations resulted from compromises designed to win over environmentalists and residential and commercial opponents. When the project destroyed wetlands, project managers agreed to build a park elsewhere. When noise and fumes from construction bothered residents

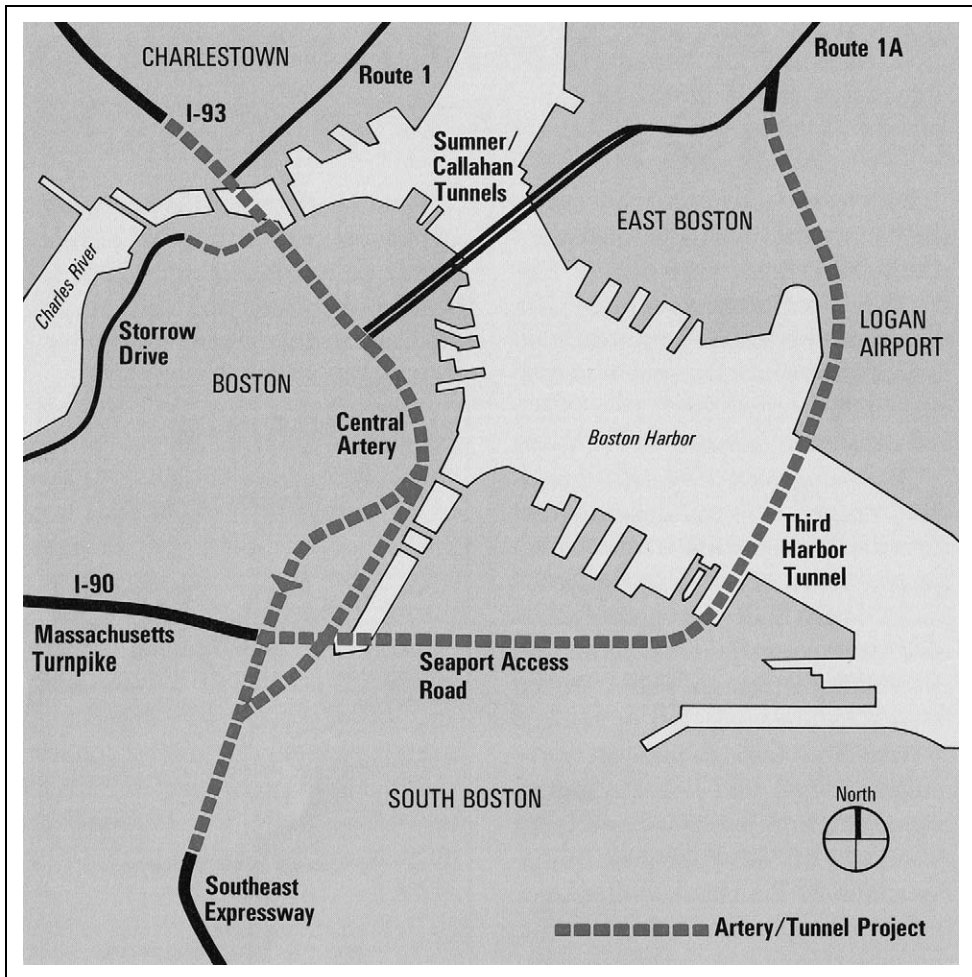


Figure 2. The Central Artery/Tunnel project (Courtesy of Massachusetts Department of Transportation [MassDOT] library).

and business owners, they paid for soundproof windows and air conditioning. Other expenditures, especially eminent domain costs, were critiqued as indefensible waste: for example, \$50 million for a parking lot intended for dirt-handling, but which was barely used; another \$15 million to house the Boston Celtics' famed parquet floor during construction.¹⁶

An additional \$3 billion in cost overruns resulted from project redesigns. Officials at the FHWA, willing to fund projects that increased traffic capacity but not "urban beautification projects," insisted that the Central Artery be widened in order to be eligible for federal funding. Popular resistance led to the abandonment of early plans for a "spaghetti-bowl" interchange across the Charles. Further controversy required the relocation of the East Boston connection. Design errors necessitated changes to the Fort Point Channel section.¹⁷ All told, delays surrounding negotiations, mitigations, and redesign led to more than \$6 billion in cost inflation.

A wide array of political actors and business elites kept the project afloat during this period. Massachusetts Governor Michael Dukakis appointed Salvucci, a Massachusetts Institute of Technology (MIT) trained engineer, longtime transportation adviser and astute political operator, as project manager. Both remained strong state-level advocates during the design phase in the 1980s. City

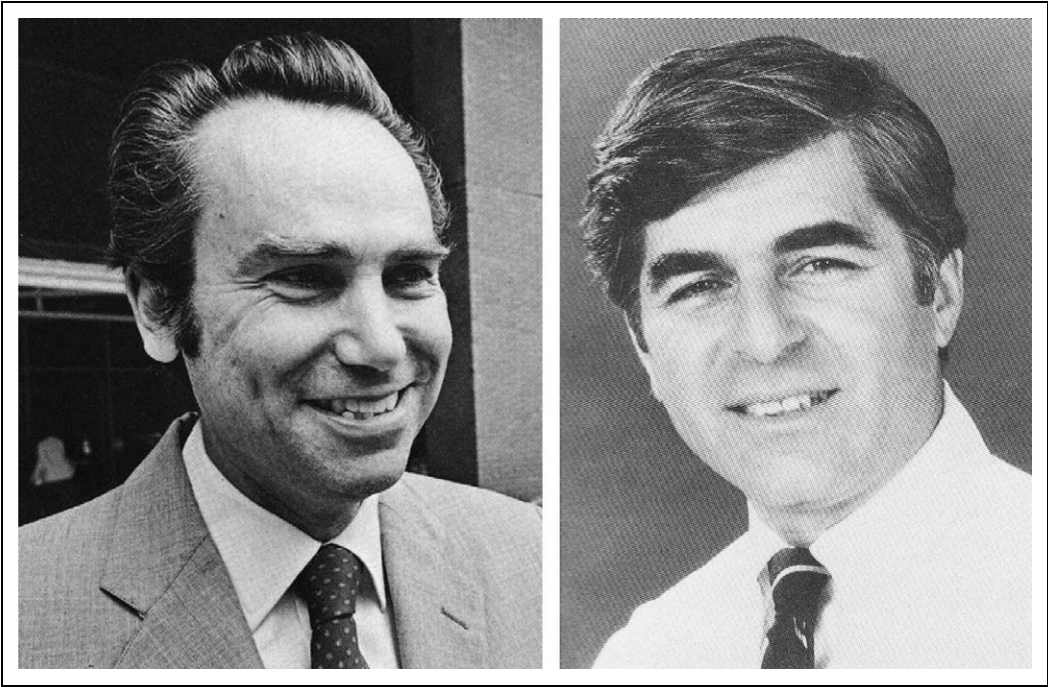


Figure 3. Secretary of Transportation Fred Salvucci and Governor Michael Dukakis (Courtesy of Massachusetts Department of Transportation [MassDOT] library).

leaders, such as Mayors Kevin White (Dem., 1968–83) and Ray Flynn (Dem., 1984–93), dropped their resistance to the project once they were able to exact concessions with regard to labor practices, routing decisions, and control of “air rights” above the depressed artery. The enormously influential Speaker of the House Thomas P. “Tip” O’Neill (Mass. – Dem.) helped override a presidential veto of the initial funding legislation in 1987. The Artery Business Committee (ABC), a group of sixty Boston executives with a million-dollar budget and representing the city’s major real estate interests, banks, and utility companies, also played a crucial role. The organization’s members preserved political support for the project, reconciling feuding officials, and ensuring that the Big Dig maintained momentum as construction proceeded in the 1990s (Figure 3).¹⁸

Analysts of the Big Dig, Alan Altshuler and David Luberoff, have suggested that this project emerged out of a new paradigm of governance that they refer to as “bottom-up federalism.”¹⁹ Under this governing paradigm, megaprojects grew out of local initiatives and relied on intensive local engagement but depended heavily on federal grants-in-aid. To this end, Altshuler and Luberoff place great emphasis on local civic constituents (e.g., the ABC) and local political leadership (e.g., the Massachusetts Turnpike Authority [MTA]) as instrumental to the success of the Big Dig. Similarly, historian Thomas P. Hughes has commented on the significance of the Central Artery/Tunnel project’s “open system” design process, which abandoned the rigid engineering hierarchies of the interstate era. Instead, Big Dig planners relied on a more horizontal organizing structure that included a range of transportation and nontransportation interest groups.²⁰ In this way, the Big Dig’s design process was consistent with other recent national shifts in transportation planning, featured most notably in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.²¹ Historian Mark Rose has pointed out that this legislation continued to fund highway construction through federal grants-in-aid, but it “devolved” the authority to plan and implement highway projects (and other

alternative transportation schemes) from engineering professionals at the federal and state level to local politicians situated within Metropolitan Planning Organizations. These entities were intended to be more responsive to community interests than federal and state engineers had been in the interstate era, but they also lacked the willingness and ability to coordinate among transportation projects, and thus faced new challenges to their effectiveness.²²

“Bottom-up federalism,” “open systems,” and “devolution” all represented a profound shift in governing philosophies, legal structures, and political institutions. These changes in governance stemmed from criticisms that highway policy had for too long been set by the distant authority of state and federal engineers, who were swayed more by the pressures of traffic surveys than by the concerns of local citizens. In significant ways, though, the building of the Big Dig ran counter to this trend toward increased democratic involvement. Despite the power wielded by the ABC and the authority vested in the MTA, ultimately it was not the localization but, more precisely, the *privatization* of the Big Dig’s administration that was its most significant feature. Privatization created a new set of incentives and structures of accountability that led the project coordinators into big trouble. And while in time the Central Artery/Tunnel project will likely be remembered for the engineering marvel that it is, from a political standpoint, the “Big Pig” is less of a model of how to blend expert authority and the democratic process than it is a warning about the thorniness of megaproject politics—and that has had significant ramifications for the future of other major urban transportation initiatives.²³

The Big Dig in the Age of Privatization

As the scope of the Central Artery/Tunnel project expanded and construction got underway during the 1990s, three developments materialized around the project’s management that became flash points in the emerging controversy over the Big Dig. The first involved the ABC, whose leaders sought to keep the project’s setbacks from becoming political fodder. The second related to the transfer of project management from the Massachusetts Highway Department to the MTA, a public corporation that, in the words of the Massachusetts Supreme Judicial Court, “was not part of the machinery of government.”²⁴ The last concerned the creation of an Integrated Project Organization scheme, which put on the staff of the MTA hundreds of personnel from Bechtel/Parsons Brinckerhoff (B/PB), the project’s lead joint venture contractor comprised of two of the world’s most experienced companies in massive infrastructure development.

As early as 1994, B/PB managers reported to the state highway department that the project was likely to approach the \$14 billion mark. Nonetheless, the contractors refrained from issuing public statements about the likelihood of cost overruns. According to B/PB Chairman John MacDonald, the firm not only faced pressure to “hold the line on project costs,” they were also “forcefully reminded” by state project directors and transportation officials that “responsibility for public discussion of project issues rested exclusively with the public officials managing the project.”²⁵ This point was underscored in a confidential March 1995 memo, in which a state-level deputy project director instructed Bechtel’s budget manager to “assemble a ‘sanitized’ review package” for federal officials that excluded detailed cost data.²⁶ By November 1995, however, rumors of the project’s ballooning cost had reached the Massachusetts Congressional delegation. Senator Ted Kennedy and Senator John Kerry (who, at the time, faced an electoral challenge by Republican Governor William Weld), sent a letter to US Transportation Secretary Federico Peña expressing “considerable concern” that the Big Dig’s “projected cost will soar ever higher and its completion date recede ever further into the future.”²⁷

Angered at the prospect of his home Congressional delegation pushing for more aggressive federal investigation into the project, ABC president Richard Dimino chided Kerry’s use of the Big Dig

“as a kind of political football.” Instead, Dimino, himself a former Boston Transportation Commissioner, called for a “full consensus of public officials to keep this project moving forward.” Four years later, in Senate Commerce Committee hearings on the very cost overruns that he probed in 1996, Kerry weakly acknowledged that he had “raised some of these questions” at that time. “But regrettably,” Kerry explained, “the nature of the political contest then sort of precluded those questions from being answered in a way that did not also carry with it a sort of political baggage, and it was a little bit lost in the electoral process.” Dimino, an unwavering advocate of the project, later claimed that he was less interested in silencing “objective critiques” of the project than he was in preventing “rhetorical shots across the bow.”²⁸ Nonetheless, it seems clear that the ABC intentionally sought to keep the Big Dig from delay, even if that meant limiting legislative oversight.

The privatization of the Big Dig included more than just the dampening of political criticism by high-powered corporate elites. It had to do with the structure of governance itself. A year after Kerry dropped his push for closer scrutiny of the Big Dig, the state Legislature and Governor Weld (Rep., 1991–97) adopted a plan to transfer ownership of the project from the Massachusetts Highway Department, a state agency, to the MTA, a public corporation. The primary reason for the Big Dig’s transfer to MTA management was to gain access to its toll revenues. These were increased in 1997 in order to cover the Big Dig’s rising price tag, a move that allowed the state to retain access to federal subsidies.

This transfer also gave Governor Weld and his transportation secretary, James Kerasiotes, the opportunity to further insulate the project from government oversight. Unlike their predecessors, Dukakis and Salvucci, Weld and Kerasiotes were vocal critics of state bureaucracy and strong believers in privatization and the logic of market efficiencies. Riding a wave of public dissatisfaction with state government, Weld had made the privatization of public functions a hallmark of his campaign and administration, exhibiting nothing but disdain even for longtime civil servants, whom he once described as “walruses.”²⁹ He had even sought, unsuccessfully, to dismantle and privatize the operations of the MTA in 1991. The MTA had been chartered by the state in 1952 to build the Massachusetts Turnpike from the New York state line to Boston. Forty years later, it had grown into an immensely powerful institution, generating \$140 million in annual toll revenue. And though the MTA faced regular critiques for wastefulness and lack of public accountability, the legal obligations surrounding its multi-million dollar bond offerings made it practically invulnerable to Weld’s threat of eradication (Figure 4).³⁰

With the MTA seemingly impervious to reform, Weld opted in 1996 to install Kerasiotes, described by a founding member of the ABC as “a drill sergeant the likes of which I’ve never seen,” as chairman of the authority. The following year he incorporated the Central Artery and Tunnel into the newly designated Metropolitan Highway System and transferred control of those roads from the Massachusetts Highway Department to the MTA. Thus, by 1997, Kerasiotes had total control over the Big Dig as well as an agency with its own personnel and budget structure. Importantly, the MTA stood outside the review of the Executive Office for Administration and Finance, the state office described by Secretary of A&F Andrew Natsios as the “command and control center” for spending oversight.³¹

At the time of this critical shift in Big Dig control, questions of oversight were eclipsed by debate over who would bear the greatest financial burden under the MTA’s new toll structures. The ABC fended off suburbanites’ legal challenges to the increased tolls. And Kerasiotes downplayed the change in governance structure, focusing instead on the importance of fulfilling Weld’s directive to rein in project costs.³² Unlike Salvucci, Kerasiotes attached little value to public sector oversight. As he explained in a 1994 interview, he intended to manage highway projects

[I]ike I would do in my business. I would go out and I would hire someone to do something that I need to get done. Now, what level of oversight am I going to employ when I hire a contractor to build, say, my



Figure 4. Secretary of Transportation James Kerasiotes and Governor William Weld (Courtesy of Massachusetts Department of Transportation [MassDOT] library).

office space? Very little. All I want to know is, is my office going to be where I want it to be? Are the walls going to look like I want them to look? And am I going to be comfortable when I sit down in it? Other than that, I don't want to [expletive] know about it.³³

Kerasiotes sought less oversight and more accountability. Like Weld, however, he believed that market forces could provide the necessary incentives to ensure contractor accountability since private contractors relied on project success to generate future business.³⁴ With the toll issues dominating public attention and a privatizer such as Kerasiotes at the helm, few worried about the implications of falling back onto older models of governance, like those of the interstate era, in which highway construction was insulated from close public watchfulness.³⁵

With the Central Artery/Tunnel project removed from direct state supervision under the MTA, the leadership made another move—again in the name of cutting costs—that further shielded the project from public scrutiny. In 1998, the MTA and B/PB engaged in a shift in managerial structure labeled “Integrated Project Organization.” This scheme was designed to eliminate redundant personnel and streamline relations between the project manager (the MTA) and its primary contractor (B/PB) as they moved from the design to the construction phase. Close to 200 B/PB employees were moved on to the MTA payroll. This move accomplished two things simultaneously: it pushed those salaries off B/PB’s accounting sheets, and it suggested that the MTA was showing new resolve in fast-tracking the project.³⁶ It also made it increasingly difficult for key personnel—reporting to Bechtel but sitting on the MTA’s payroll—to objectively review cost-plus contracts or to engage in meaningful data sharing and cost recovery efforts related to work quality.³⁷

These developments—the strengthening of the ABC in muting political criticism, the shifting of project management to the more politically independent MTA, and the close partnering of the MTA and its chief contractor B/PB—reflected an emerging consensus in favor of bringing the project to completion as quickly as possible, and in relying on private sector initiative to do it. According to one analyst of Massachusetts politics, these moves toward privatization also “fit the anti-big-government, anti-public-employee . . . position of most Republicans and increasingly the electorate” during the 1990s.³⁸ According to Kerasiotes and others, minimizing public oversight was a necessary response to the increasingly hostile environment Big in which Dig project managers operated, beset, so it seemed, by an increasingly cynical public and ever more demanding regulators. But their strategies—dissembling to the media, hiding cost accounting details from the feds, muting public debate and upsetting the system of checks and balances that traditionally define the roles of project owner and lead contractor—carried their own set of devastating consequences. For once the MTA entered into a partnership arrangement with B/PB, it became increasingly difficult for MTA officials to exercise effective managerial oversight over its lead contractor, especially with regard to quality of work and cost control. And with the MTA’s work insulated from the Secretary of Administration and Finance’s review, the potential for the Big Dig to get into big trouble reached new heights.

Big Trouble

Any tunneling project on the scale of the Big Dig was bound to have its share of blunders: joints that leaked; tunnel sections that failed to line up; blueprints indicating open land for construction staging where a major sporting arena was located. But what really got the Big Dig into big trouble was the sort of problems that reflected on the nature of the policy-making practice, and ultimately on the rules and structures of government institutions. Though the “open study” and “bottom-up federalism”—practices adopted after the Freeway Revolts—were intended to return a significant level of citizen control to transportation planning, old conflicts over the appropriate balance between efficiency and democratic involvement in policy making returned by the 1990s. At the national level, President George H. W. Bush signed into law the ISTEA of 1991, enhancing local control over highway planning.³⁹ But, at the same time, Massachusetts voters elected Governor William Weld, a politician intent on orienting transportation in an entirely different direction.

Weld campaigned in 1990 on a popular antigovernment, antitax platform, promising to bring business-minded efficiency to a state government that he argued was beset with bloated bureaucracy. His landslide reelection in 1994 offered clear evidence of continued public support for the privatization of public functions and provided crucial backing to his efforts to transform Massachusetts highway politics. Like Weld, James Kerasiotes also thought that public sector bureaucrats were little more than a hindrance to effective administration. Famously, as transportation secretary, he kept a hatchet mounted on the wall behind his desk, put there at a time when career civil servants from the Salvucci era were being fired by the dozens.⁴⁰ As chair of the MTA, Kerasiotes also viewed the public itself as a potential obstacle to the Central Artery/Tunnel project, with citizens willing to lend support so long as it was “pain free,” built on optimistic timelines and cost estimates, with few costs charged to local governments. Within this political climate, MTA leadership (and by extension, B/PB) felt a strong incentive to feed the public a steady stream of misinformation, to rely on lax accounting practices, and to decisively shut down any threat of government inquiry that might have shed light on the project’s skyrocketing costs and lead to a backlash of the sort that shut down Interstate construction.⁴¹

The MTA-B/PB Integrated Project Organization was not even a year old when, in 1998, it confronted its first major crisis over just these sorts of issues: citing a breach of public trust, Congress refused to further fund the Central Artery/Tunnel project. Cost estimates now stood at \$10.8 billion,

and the federal government capped its share at just over \$8.5 billion. In May 2000, Senator John McCain (Arizona-Rep.), a vocal critic of the Big Dig, held Congressional hearings into the project's cost. He framed his critique in the language of small government and fiscal conservatism used to assault liberal Democratic policies, of which the Big Dig seemed an especially easy target. "In 1985," McCain proclaimed, "it was supposed to cost 2.5 billion dollars. Now we do not even know if it is going to cost thirteen point something. The taxpayers deserve a lot better than that. A lot better than that." Though Senator Kerry was quick to remind Senator McCain that Congress had, year after year, embraced the project's "vision change," McCain took the opportunity the hearings presented to heap scorn on the project's managers in front of a national audience.⁴²

Certainly there were plenty of reasons to conclude, as McCain had, that Big Dig leadership was guilty of "gross mismanagement," exacerbated by the FHWA's "complete lack of federal oversight."⁴³ MTA Chairman James Kerasiotes had been fired only a month earlier for his February 2000 disclosure that the Central Artery/Tunnel costs would increase by another \$1.4 billion. The appearance of this announcement on the same day that the FHWA had signed off on the project's finance plan further undermined McCain's confidence in the agency's "ability to fulfill its stewardship responsibilities."⁴⁴

State and federal investigations produced shocking revelations. Under Kerasiotes, the MTA had engaged in the deliberate withholding of financial data in order to maintain the public perception that the project was progressing at cost and on schedule. One way this fiction was maintained was by using a dubious \$827 million federal insurance credit—allegedly due to the project in 2017—as an offset to the project's bottom line. This and other questionable accounting practices led the Security and Exchange Commission to issue a ruling against Kerasiotes and the MTA after these misleading data were included in federally mandated reports accompanying three bond issuances.⁴⁵

While public sector administrators are not immune to this kind of creative accounting, the autonomy of public authorities often leaves them lacking the necessary vigilance to keep such misconduct at bay.⁴⁶ Though Kerasiotes and Weld had frequently made the claim that they wished to offset oversight with new levels of accountability, by the late 1990s it was clear that the steady devaluation of transparency in transportation governance was not paying off. Indeed, any short-term benefits Kerasiotes may have gleaned from concealing information from federal officials, bondholders, and the electorate were lost in a costly backlash, against both Kerasiotes, who was fired in 2000, and the MTA, which would finally be dismantled in 2009.

As this backlash unfolded, top officials at the US Department of Transportation grew concerned over how federal tax dollars were being spent on the Big Dig and began a closer review of the MTA's finance plan in 1999. Prior to this time, the finance plans were reviewed at the FHWA's Massachusetts field office. Now US Department of Transportation Inspector General Kenneth Mead gave the project a more meticulous examination. He shared a draft report with MTA officials in October that questioned the financial basis of the project, including the "improper retention of federal funds for investment purposes." Mead received what he described as an "adamant" and "overly vitriolic" retort, in which MTA project director Pat Moynihan blasted him for espousing a "backward-looking management technique that is unworkable and shows a fundamental lack of understanding of how a multibillion dollar megaproject needs to be managed."⁴⁷ State inquiries from Secretary of Administration and Finance Natsios received similarly worded tongue lashings.

Such dismissive treatment of state and federal agents introduced serious doubts that the long-standing state–federal road-building relationship was in good order. During the 2000 McCain hearings, US Department of Transportation Secretary Rodney Slater repeatedly emphasized that the MTA's actions "significantly tarnished the Federal–State partnership that dates back to 1916," when the landmark Federal Aid Road Act was passed. In order to "move forward expeditiously to repair the breach of trust between Federal and State officials," Slater returned federal oversight from its district office in Massachusetts to Washington, DC, and instituted a new policy of "trust, but

verify.” He also insisted that any remaining federal funds for the Big Dig be contingent upon an “enforceable commitment to a balanced, Statewide program,” one that requires that “the Massachusetts Highway Department reach agreement with the local officials.”⁴⁸

Slater’s concern for “balance” echoed anxieties voiced by others about the impact of the Big Dig’s financial woes on additional projects financed under the federal ISTEA program and its 1998 reauthorization (Transportation Equity Act [TEA]-21), such as bridge repair and transit improvements. Senator Kerry had lauded the road-building paradigm established under ISTEA and TEA-21 for having “created a process by which we were supposed to really have a negotiation between State and local officials [that] the Federal Government would sign off on.” He began the hearings by expressing concern that the TEA-21 money “might become a victim of this overrun.” Inspector General Mead confirmed these worries when he informed the Congressional committee that in order to pay down Central Artery costs, Massachusetts officials had effectively committed almost half of the state’s federal transportation dollars “through the year 2011, which is, in fact seven years after the scheduled completion of the project.”⁴⁹ Spiraling costs did more than erode the confidence of federal officials; they threatened to destabilize the entire road-building paradigm established under ISTEA and TEA-21.

Turnpike Authority officials’ efforts to keep these figures undisclosed meant that citizens were kept in the dark about the long-term consequences of the Big Dig, and their representatives were hamstrung in their efforts to pursue transportation alternatives. In Washington, DC, one Massachusetts congressman was “chastised” over Big Dig costs when he approached a House committee on a separate matter regarding aid for public transportation. City officials in the greater Boston area expressed concern that “the Big Dig [was] siphoning off” funds needed for local bridge and highway repair.⁵⁰ Subsequent reports validated these concerns, indicating that financial obligations held by the MTA raised the total cost of the Big Dig to \$22 billion, including \$7 billion in debt that will not be retired until 2038.⁵¹

The root of the trouble, according to Natsios, who in 2000 left his post as Secretary of Administration and Finance to straighten out the rocky finances of the MTA, was the poor trade-off between public accountability and greater project efficiency. Responding to Senator McCain’s request that witnesses speak to ways in which Congress could “improve fiscal accountability on the Central/Artery Tunnel project and all federally funded transportation projects,” Natsios pinpointed the decision to transfer the project to the Turnpike Authority. This, he claimed, was intended

to facilitate construction because State rules and regulations do cost more money. They increase the level of accountability, but they also reduce efficiency and extend the level of time, the amount of time it costs to do things because Government wants to be more accountable. We sometimes see efficiency and accountability as the same thing. They are not, and if you carry one or the other too far, they affect the other in a negative way. If you are too efficient, you will reduce accountability. If you are too accountable, and you go too far in controlling things, then you can reduce the efficiency of it, and I think there is a balance.

Natsios informed the committee that he had gone “back to the legislative records” to analyze the debate that took place over this decision, and he found that “the focus was on transportation, not on governance systems.”⁵²

Natsios’s argument cut to the heart of the matter. The “governance system” that produced the original Massachusetts Turnpike (and the interstate highway system into which it was incorporated) prioritized traffic efficiency over accountability to a broader range of public demands, including healthy citizens, cities, and environments. The centralized authority responsible for highway construction in the 1950s and early 60s took a heavy beating in subsequent decades. The result was a more level balance between efficiency and accountability in the late-twentieth century. But as a

result of this negotiation of political authority, highway planners found it much more difficult to push forward large projects on the scale of the interstate system.

The desire to fast-track a megaproject such as the Big Dig in the 1990s might have led politicians back to the age-old debate over the relative virtues of public process and expert authority. But as Natsios's remarks suggest, this debate over alternative systems of governance never really happened: Massachusetts legislators ignored the lessons of the interstate era and the subsequent Freeway Revolts as a new balance was struck. They interpreted accountability in a narrow, financial sense, reflective of a consensus built around the virtues of privatization and skepticism of statist solutions to public problems.⁵³ Though plans for the interstate system were produced in the 1950s (at a time of great faith in the works of government) and plans for the Big Dig were developed during the 1970s (at a time of deep public cynicism), the implementation of each project relied on a set of political actors and institutions that devalued the role of deliberative democracy in transportation policy making.

In 2005, when the Big Dig again became a topic of Congressional hearings, this time before the House Committee on Government Reform, the question of "governance systems" returned to the foreground. By this time, the project was 96 percent complete, but a major tunnel leak in September 2004 sparked new investigations. The leak spilled 300 gallons of water per minute onto the roadway, causing a 10-mile backup and a predictable stream of questions over the tunnels' safety, the cost of repair, and the relative responsibility of contractors, project managers, and public officials. While subsequent investigations found the tunnels to be safe, they disclosed a troubling history of missed opportunities to ensure construction quality and keep future repair costs down.

Again, the structure of public-private collaboration and consequent limitations on oversight appeared to be at the root of the Big Dig's predicament. Inspector General Kenneth Mead reiterated his earlier frustrations with the MTA's "deliberate misrepresentations." But this time he singled out the "Integrated Project Organization" for having "hindered the Authority's ability to oversee Bechtel/Parsons because Bechtel/Parsons had effectively become partners in the project." This relationship resulted in an anemic rate of cost recovery, so much so that in the eight years leading up to 2003, it yielded just \$30,000. By 2005, when that figure approached only \$4 million, state legislators recommended that State Attorney General Thomas Reilly take control of cost recovery for some of the \$2.13 billion in "contract modifications" that stemmed from substandard workmanship. Reilly agreed to take on the task, "a role normally performed by the owner or managing agency [i.e., the MTA]" because he had serious misgivings about the MTA's oversight capacity. Though much of the previous cost-recovery efforts had targeted subcontractors, Reilly intended to focus "squarely on Bechtel . . . which had responsibility for quality assurance on this project."⁵⁴

Ultimately, placing Central Artery/Tunnel project management in the hands of a public authority, operating in virtual partnership with its chief contractor—the consequence of trading public oversight for greater efficiency—turned out to be a poor gamble. As the Integrated Project Organization approached the end of its tenure in December 2005, MTA Chairman Matthew Amorello, who, like his predecessor, had run the authority with imperial disregard for public opinion, offered up the half-hearted wish that there had been more "direct public management over the project," though, he conceded, "that's 20-20 hindsight."⁵⁵ In the final analysis, Mead agreed that the project's "problematic history presents many lessons in how not to manage a public works mega-project."⁵⁶ When improperly installed bolts led to the collapse of 12 tons of concrete ceiling panels in the I-90 tunnel on July 10, 2006, crushing a motorist to death, the Big Dig's legacy—already in question—was sealed.

"Invisible" Highways and the Legacy of the Big Dig

Even as cost recovery proceedings, the patching of leaks, and the ceiling collapse investigation continued, officials in other metropolitan areas in the United States expressed serious interest in

expansive tunneling projects as they debated solutions to their own transportation problems. Of course, the history of the Big Dig—part triumphal narrative, part cautionary tale—loomed large in these conversations.⁵⁷ In the short-term, “tunnel vision” captured the attention of transportation planners. Between 2000 and 2006, New York highway engineers seriously entertained the possibility of replacing the aging Tappan Zee Bridge with a tunnel underneath the Hudson River, a proposal that grew out of a grassroots citizen campaign.⁵⁸ In California, new tunnel-boring technology made feasible a controversial South Pasadena tunnel that has advanced through several phases of study by Los Angeles County transportation officials but still faces significant public resistance.⁵⁹ And in Washington, Seattle politicians backed a \$4.25 billion tunnel plan that would bury an elevated section of State Route 99, the earthquake-damaged, half-century-old, 4-mile Alaskan Way Viaduct.

The delays, rising costs, and growing public distrust associated with the Big Dig cast a shadow over all these projects, but it most profoundly influenced the fate of the Seattle tunnel. At first, Washington state officials strongly opposed the plans, citing Boston’s experience with the Central Artery/Tunnel. Congressional legislators were similarly reluctant to support the plan. When House Transportation Committee chair Don Young (Alaska – Dem.) agreed to provide a limited federal subvention of \$220 million, he reportedly added a note to the dollars: “No Big Dig.”⁶⁰ By February 2008, Seattle voters agreed, rejecting the tunnel proposal and supporting the reclamation of the waterfront urban street system. According to Seattle Deputy Mayor Tim Ceis, a tunnel advocate, “the Big Dig experience was certainly used against us,” as anti-highway activists kept discussion of Boston’s fatal tunnel collapse—and the fact that B/PB was to be the lead contractor on the tunnel project—in the public spotlight. Nick Licata, City Council president and opponent of the tunnel plan, summed it up this way: “The Big Dig is the nightmare that we all have here in Seattle.”⁶¹

Indeed, with the legacy of the Big Dig looming large, state and local politicians, transportation officials and stakeholder advisory groups, despite a year-long assessment, failed to reach consensus on how to proceed. By November 2008, most observers thought the tunnel carried too high a risk and too high a price tag. Indeed, on December 11, officials at the Washington State Department of Transportation announced that the only affordable options were to replace the viaduct or to tear it down and reroute State Route 99 through the city’s street system. Then a remarkable turnaround happened. Faced with the prospect of through traffic snarling city streets, Seattle’s Chamber of Commerce joined forces with a local transportation think tank and other downtown stakeholders to revive a hybrid tunnel plan. The new proposal, approved by Governor Christine Gregoire in 2009, retained the elevated expressway north and south of the city but routed traffic underground through a 2-mile long, four-lane, single-bore tunnel traversing Seattle’s waterfront district.

As was the case with the ABC in Boston, the support of business elites was essential. Indeed, Citizens for a Better Waterfront, a protunnel group instrumental in its success, received tens of thousands of dollars from land developers and engineering firms, including an indirect donation of \$10,000 from B/PB. Despite the support from the Big Dig’s lead contractor, officials at the state department of transportation went to great lengths to distinguish the two projects, even producing a fact sheet that emphasized the comparatively modest nature of the tunneling project, and the clearer financial and jurisdictional arrangements put in place to protect against the sorts of delays, cost overruns, and changes in administration that marred the Big Dig.⁶²

Despite the negative connections many attached to the Big Dig, then, tunnel projects still retained a significant measure of support. For instance, Harry Capers, Tunnels Committee Chairman for the American Association of State Highway, and Transportation Officials, claimed that tunneling projects will stay in style since they appeared to “generate less political dust than surface roads.” Capers argued that tunnels were “catching on” because of the “new interest in invisible highways—getting them out of sight.”⁶³ Others saw in the support for the Seattle tunnel evidence of a larger trend toward tearing down the elevated expressways of the 1950s. The Congress for the New Urbanism, a neighborhood development organization, cited San Francisco, Milwaukee, and Portland as model

cities in this regard, and developed a North American list of “freeways without futures” that included highways in Seattle, Bronx, Buffalo, New Haven, New Orleans, Syracuse, Louisville, Trenton, Toronto, and Washington, DC.⁶⁴

With the Big Dig precedent producing resentment and reticence, and with interstate-era infrastructure continuing to age, federal officials at the US Department of Transportation have found themselves divided over whether to advance the localization or the privatization of road-building authority. On one hand, United States Department of Transportation (USDOT) leadership has maintained its commitment to promoting local voices in the setting of state transportation agendas, as it did in ensuring that future transportation expenditures in Massachusetts would go to a more balanced program consistent with ISTEA protocols. On the other hand (and more recently), Secretary Mary Peters (2006–09) transformed the Department of Transportation during the Bush administration into a strong advocate of public–private partnerships as a means of rescuing the nation’s failing bridges and highways.⁶⁵

Ironically, then, while urban leaders have used the Big Dig “nightmare” to justify more cautious, nonfreeway solutions to their traffic problems, many federal and state officials have continued to embrace—and expand—Boston’s legacy of highway privatization. The Illinois and Indiana legislatures led the way in this area in 2005 and 2006, negotiating multi-billion-dollar, decades-long leases of the Chicago Skyway and the Indiana Toll Road to an international consortium. Proposals for such public–private partnerships (often called PPP or P3 arrangements) have grown in frequency across the United States, where states and localities face looming infrastructure costs and shrinking public budgets.⁶⁶

Such P3 arrangements remain controversial, with one high-ranking Congressman questioning whether such partnerships constituted little more than the “outsourcing” of the “political will” that was necessary to finance bold transportation initiatives.⁶⁷ Indeed, as Alec Montgomery, head of the Royal Bank of Scotland’s New York City-based infrastructure finance arm, explained: “there’s a debate brewing in Washington as to how prudent it is to sell these public projects to outside investors. On one hand, investors would be motivated to keep costs down, and there’s a good chance you wouldn’t see such boondoggles as the Big Dig. But on the other hand, there’s got to be a fear that investors will put profits ahead of the people.”⁶⁸ Interestingly, while Montgomery voiced popular anxieties about privatization schemes, he still viewed the lessons of the Big Dig in a rather narrow way: as little more than a “boondoggle” that would have been avoided had efficiency-minded managers and private investors been at the helm. Of equal importance, however, is the fact that the Big Dig’s problems stemmed, in part, from *too much* faith in corporations and quasi-public agencies intent on insulating their work from public oversight.

These trade-offs between businesslike efficiency and public-minded accountability were at the heart of the closed system planning process that characterized the building of the interstate highway system and its controversial urban arterial segments in the 1950s and 60s. The road-building paradigm that emerged in the decades after 1970 fostered greater public input into transportation planning, but it also allowed megaprojects to grow in size, cost, and duration. These developments, in turn, created new pressures to limit project transparency, as Massachusetts citizens elected leaders who traded away hard-won forums for civic deliberation in their efforts to control the costliest urban megaproject in American history.⁶⁹ In so doing, they allowed Big Dig management to revert to the old governing structures of the interstate era, when public authority was concentrated in distant, unresponsive bureaucracies.⁷⁰ In June 2009, Governor Deval Patrick sought to end what he referred to as the “Big Dig culture” by signing a major transportation reform bill that would eventually eliminate the Turnpike Authority and transfer its highway, bridge, and tunnel management functions to the newly created Massachusetts Department of Transportation (MassDOT). As late as August 2009, two months before their final meeting, MTA board members were still operating under a cloak of secrecy, refusing to make public more than the barest details of their \$430 million budget.⁷¹ Even

after MTA operations were absorbed by the MassDOT, old patterns persisted. In February 2010, a 110-pound light fixture fell from the tunnel ceiling. Despite the echoes of the 2006 ceiling collapse, officials at the transportation agency remained silent about the hazard for weeks. They also avoided putting their investigative findings in writing, even as it became clear that 25,000 salt-corroded fixtures would need to be replaced at a cost of \$200 million. When asked why engineers appeared wary of disclosure, MassDOT Secretary Jeffrey Mullan (2009 to present) suggested that these habits were deeply ingrained in the “old practice at the Turnpike Authority.”⁷²

In light of this culture of concealment, rooted in what one study of modern megaprojects termed a “democracy deficit,” it is no wonder that the move toward further highway privatization has been seen by many transportation analysts and public officials as especially alarming.⁷³ Certainly business-minded efficiency and shareholder accountability have the potential to reduce construction time and control expenses on transportation megaprojects. Big Dig managers held out just these sorts of promises. But their misgivings regarding the public’s role in transportation policy making and their flawed handling of the project fed a popular distrust that threatened to engulf not just the Big Dig, but other major undertakings, such as the replacement of the Alaskan Way Viaduct. To those operating in the shadow of the Big Dig, from federal officials to city leaders, it was clear that the diminution of government also carried high costs. Indeed, the Central Artery/Tunnel project offers up a powerful case study in the hazards of privatization and deregulation, and the limits of Americans’ current methods of transportation governance. For the great paradox of late-twentieth-century highway politics was that the Big Dig, once lauded as the product of a locally sensitive, late-twentieth-century road-building paradigm, ultimately undercut long-running efforts to expand public control of transportation planning.

Acknowledgment

For their guidance in the preparation of this article, the author is grateful to Mark Rose, Ray Mohl, Gijs Mom, Louise Dyble, Chris Silver, Marjorie Feld, and several anonymous reviewers. Lynn Matis at the Massachusetts State Transportation Library also offered exceptional assistance. Finally, the author thanks the Johnson & Wales University Faculty Development Fund for its financial support.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Notes

1. American Association of State Highway and Transportation Officials, “Interstate 50th Anniversary: A Symbol of Freedom” <http://www.interstate50th.org/> (accessed online, August 13, 2009).
2. Milenna de Valle was killed on July 10, 2006. John R. Ellement, “Section of Ceiling Tumbles in Tunnel,” *Boston Globe* 11 (July 2006). Other fatalities related to design flaws would follow, including nine motorists killed over a six-year span through gruesome dismemberment by so-called “ginsu guardrails.” In April 2011, state officials indicated their intention to remove the widely spaced guardrails with edges that functioned as cutting blades even in low-speed accidents. Matt Carroll, “State Plans to Remove Many Rails in Tunnels,” *Boston Globe*, 15 April 2011; Carroll, “Widow Files Lawsuit over Big Dig’s ‘Ginsu Guardrails,’” *Boston Globe* 11 (May 2011).
3. Mark Rose, “Reframing Highway Politics, 1956-1995,” *Journal of Planning History* 2 (August 2003), 212–36; Alan Altshuler and David Luberoff, *Mega-Projects: The Changing Politics of Urban Public Investment* (Washington, DC: Brookings Institution, 2003); Thomas P. Hughes, *Rescuing Prometheus*

- (New York: Pantheon, 1998); Robert Jay Dilger, "ISTEA: A New Direction in Transportation Policy," *Publius* 2 (1992), 67–78.
4. Though the Fitzgerald Expressway was steeped in the power politics of mid-century highway construction, it was born out of a longer struggle to reconcile the contradictions between Boston's "lingering nineteenth century landscape" and the "growing presence of the automobile." The structure reflected the self-consciously modernist values of its designers: its "sparse I-beam aesthetics" signaled an embrace of mid-century architectural modernism; its elevated nature reflected an early-twentieth-century concern for separating pedestrians and motor traffic in central business districts. But this vision of modernity was quickly displaced by new realities. As traffic rapidly outstripped the highway's capacity, it became known more for its disruptive presence in the cityscape, subjecting city residents to rumbling noise and motorists to constant congestion. Amy D. Finstein, "Before the Big Dig: Boston's Central Artery as a Construct of Mid-Century Modernity." *ARRIS: Journal of the Southeast Chapter of the Society of Architectural Historians* 16 (Winter 2005): 69–81. Finstein, "Lofty Visions: The Architectural Intentions and Contrary Realities of Elevated Urban Highways in America, 1900-1959" (PhD dissertation, Architectural History, University of Virginia, 2009). See also Karl Haglund, *Inventing the Charles River* (Cambridge, UK: MIT Press, 2003).
 5. Altshuler and Luberoff, *Mega-projects*, 87–8, 97.
 6. Haglund, *Inventing the Charles*, 316–19.
 7. This far exceeds the total \$128.9 billion spent on the interstate system between 1958 and 1991, according to Congressional reports. FHWA, "Interstate Cost Estimates" <http://www.fhwa.dot.gov/programadmin/interstate.cfm> (accessed online July 27, 2010).
 8. Timothy Egan, "Freeways, Their Costs and 2 Cities' Destinies," *New York Times*, July 14, 1999. See also Raymond A. Mohl, "Freeways and Expressways," *The Encyclopedia of American Urban History* (Thousand Oaks, CA: SAGE, 2007), 284–87; Francesca Napolitan and P. Christopher Zegras, "Shifting Urban Priorities?: Removal of Inner City Freeways in the United States," *Transportation Research Record: Journal of the Transportation Research Board* 2046 (2008), 68–75; Philip Langdon, "Freeways Give Way to Boulevards—Slowly," *New Urban News*, July/August 2008 <http://www.newurbannews.com/julaug08freeways.html> (accessed online August 10, 2009); Congress for the New Urbanism, "Freeways without Futures" <http://www.cnu.org/highways/freewayswithoutfutures> (accessed online August 10, 2009).
 9. Raymond A. Mohl, "The Interstates and the Cities: The U.S. Department of Transportation and the Freeway Revolt, 1966-1973," *Journal of Policy History* 20 (2008); 193–226; Edward Weiner, *Urban Transportation Planning in the United States: An Historical Overview* (Westport, CT: Praeger Publishing, 1999), 65–6; Alan Lupo, Frank Colcord, and Edmund Fowler, *Rites of Way: The Politics of Transportation in Boston and the U.S. City* (Boston, MA: Little, Brown and Company, 1971), 107.
 10. On open systems, see Hughes, *Rescuing Prometheus*, 197.
 11. Massachusetts Turnpike Authority (MTA), <http://www.masspike.com/bigdig/background/> (accessed online June 22, 2006).
 12. Altshuler and Luberoff, *Mega-projects*, 116.
 13. Dan McNichol, *The Big Dig* (New York: Silver Lining Books, 2001).
 14. On the philosophy of "Do No Harm" planning, see Altshuler and Luberoff, *Mega-projects*, 220.
 15. James Tobin, *Great Projects* (New York: The Free Press, 2001), 242.
 16. Scott Simon, "Big Dig—Most Expensive Road in U.S. History," National Public Radio Broadcast (June 22, 1996); Maggie Mulvihill, "Pols to Probe Big Dig's Unused \$50 M Land Parcel," *Boston Herald*, April 27, 2000; Charles M. Sennott, "Land Takings Draw Scrutiny," *Boston Globe*, September 13, 1994.
 17. Haglund, *Inventing the Charles River*, 316–19; Interview with David Luberoff, "Great Projects: The Building of America," Great Projects Film Company, 2002 http://www.pbs.org/greatprojects/interviews/luberoff_1.html (accessed online June 13, 2011). Hughes, *Rescuing Prometheus*, 224; John MacDonald, Chairman, Board of Control, B/PB, Testimony before the House Committee on Government Reform, "'Big Dig' Highway Project," April 22, 2005 [hereafter HCGR Hearings, 2005].

18. David Luberoff, "Civic Leadership and the Big Dig," Working Paper 11, Rappaport Institute for Greater Boston, May 3, 2004.
19. Altshuler and Luberoff, *Mega-Projects*, 220.
20. Hughes, *Rescuing Prometheus*, 197.
21. These planning models have been cemented in subsequent federal legislation, the Transportation Equity Act for the twenty-first Century (TEA-21), enacted in 1998, and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), authorized in 2005.
22. Mark Rose, "Reframing Highway Politics," 215.
23. See, for instance, the comments of Kenneth M. Mead, Inspector General, US Department of Transportation, Testimony, HCGR Hearings 2005; Howie Carr, "Big Dig aside, hacks stay high on hog," *Boston Herald*, February 20, 2000.
24. *Jordan Levy and Christy Peter Mihos v. Acting Governor and Secretary of the Commonwealth*, SJC-08730, Supreme Judicial Court of Massachusetts, 436 Mass. 736, decided May 7, 2002.
25. MacDonald, HCGR Hearings, 2005.
26. Raphael Lewis and Sean P. Murphy, "Lobbying Translates into Clout," *Boston Globe*, February 11, 2003.
27. Frank Phillips, "Handling of Artery Questioned by Kerry; Weld Management Assailed in Letter," *Boston Globe*, January 12, 1996; Luberoff, "Civic Leadership," 29.
28. Senator John Kerry (MA-D), Testimony before the Senate Commerce, Science and Transportation Committee, "The Boston Central Artery Tunnel," May 3, 2000 [hereafter SCST Hearings 2000]; Luberoff, "Civic Leadership," 29.
29. Dornic Bearfield and Melvin Dubnick, "Sowing and Reaping at the Big Dig: The Legacies of Neomanagerialism," *Administration Theory and Praxis* 29 (2007): 132–9; Richard A. Hogarty, *Massachusetts Politics and Public Policy: Studies in Power and Leadership* (Amherst: University of Massachusetts Press, 2002), 93.
30. Elihu Rubin, "Interchange: Highways and Displacement in the Postwar American City," Presented at the University of California International and Area Studies Breslauer Symposium, 2006. <http://repositories.cdlib.org/ucias/breslauer/27> (accessed online July 29, 2009); Frank Phillips and Peter J. Howe, "Inspector General Slams Turnpike Agency in Report," *Boston Globe*, October 30, 1991; Howe, "Turnpike Agency Plans to Sell Bonds for Repairs," *Boston Globe*, April 3, 1992. See also Louise N. Dyble, *Paying the Toll: Local Power, Regional Politics and the Golden Gate Bridge* (Philadelphia, PA: University of Pennsylvania Press, 2009) on the political staying power of the Golden Gate Bridge and Highway District.
31. Scot Lehigh and Peter J. Howe, "Weld Seen Intent on Ending Turnpike Authority," *Boston Globe*, August 9, 1991; Michael Levenson, "The Real Builder of the Big Dig; Tunnel Collapse Focuses Attention on Kerasiotes' Tumultuous Tenure," *Boston Globe*, August 3, 2006. Later, when Acting Governor Jane Swift sought to remove two MTA officials, the Supreme Judicial Court of Massachusetts would conclude that the authority structure granted the MTA board near total immunity from executive oversight: "Because the Legislature has determined that the public would be better served by an independent Authority that operates more like a business than a government agency, because lenders and investors have a need to be secure in the identity of management, because of the importance to the public, lenders, and investors of an independent Authority free from the changing winds of politics, because of the need to preserve that independence, and because the Governor has no broad power of oversight of the Authority here, the "substantial evidence" test should be applied. Removal of a member of the Authority in the circumstances of this case is not a decision to which deference is accorded. Rather, it is a decision that must be given very close scrutiny." *Jordan Levy and Christy Peter Mihos v. Acting Governor and Secretary of the Commonwealth*, SJC-08730, Supreme Judicial Court of Massachusetts, 436 Mass. 736, decided May 7, 2002.
32. Robert Keough, "And the Buck Stops . . . Where? When the Political History of the Big Dig is Written, Two Factors Should Receive a Fair Share of the Blame: Turmoil at the Top and a Lack of Accountability," *Boston Globe*, July 23, 2006. Testimony of MTA Chairman Andrew S. Natsios, SCST Hearings 2000.

33. Charles M. Sennott, "Divided Ground: Project—Little Else—Links Kerasiotes, Salvucci," *Boston Globe*, September 11, 1994.
34. Bearfield and Dubnick, "Sowing and Reaping at the Big Dig," 135.
35. Natsios, SCST Hearings 2000; Luberoff, "Civic Leadership," 31. On the problems associated with the transfer of highway projects to state authorities, see Michael R. Fein, *Public Works: New York Road Building and the American State, 1880-1956* (Lawrence: University Press of Kansas, 2008). See also Gail Radford, "From Municipal Socialism to Public Authorities: Institutional Factors in the Shaping of American Public Enterprise," *The Journal of American History* 90 (2003): 863–90.
36. MacDonald, HCGR Hearings, 2005; Fred Salvucci, "Reconstructing a Tragedy," *Boston Globe*, July 21, 2006.
37. Robert A. Cerasoli, Office of the Inspector General, Commonwealth of Massachusetts, "A Review of the Central Artery/Tunnel Cost Recovery Program" (December 2000); Martijn Leijten, "Manageability of Complex Construction Engineering Projects: Dealing with Uncertainty," Paper delivered at Second International Symposium on Engineering Systems, MIT, 2009. <http://esd.mit.edu/symp09/submitted-papers/leijten-paper.pdf> (accessed online June 13, 2011)
38. Bruce A. Wallin, "The Need for a Privatization Process: Lessons from Development and Implementation," *Public Administration Review* 57 (1997): 11–20; Bearfield and Dubnick, "Sowing and Reaping at the Big Dig," 134. Note that Weld's successful 1994 reelection bid for governor produced the largest electoral landslide in state history. See also Brian Balogh, *A Government Out of Sight: The Mystery of National Authority in Nineteenth Century America* (Cambridge: Cambridge University Press, 2009) for the argument that public authorities have often operated through seemingly private organizations.
39. Rose, "Reframing American Highway Politics"; Dilger, "ISTEA."
40. Charles M. Sennott, "Divided Ground"; Thomas C. Palmer, Jr., "Red Tape Alert: The Axeman Cometh," *Boston Globe*, July 29, 1993.
41. Altshuler and Luberoff, *Mega-Projects*, 236–9; Jeffrey Huang, "Are Investors Listening When Politicians Speak? Assessing the Securities Fraud Liability of Political Officials Who Manage Large Civic Works Projects," *American Criminal Law Review* 39 (2002): 147–69, esp. 165.
42. Senator John McCain, Senator John Kerry, Testimony, SCST Hearings 2000.
43. McCain, Testimony, SCST Hearings 2000.
44. McCain, Testimony, SCST Hearings 2000.
45. The Securities and Exchange Commission (SEC) found Kerasiotes negligent but not fraudulent since his wrongdoing was not intended to result in personal enrichment. Kerasiotes and the MTA agreed in settlement to be subject to stiffer fines in the case of future transgressions but no fines were levied in this case. *In the Matter of the Massachusetts Turnpike Authority and James J. Kerasiotes*, Securities Act Release No. 8260, A.P. File No. 3-11198 (July 31, 2003), US Securities and Exchange Commission, Washington, DC, December 2003. www.sec.gov (accessed online, June 30, 2006).
46. On accounting gimmicks in public administration, see Bianca Bosker, "Bill Gates on States' Accounting: 'The Guys at Enron Never Would Have Done This,'" *Huffington Post*, 3 (March 2011). On the necessity of vigilance in public authorities, see Alan Greenblatt, "A Smarter Dig," *Governance*, September 2006. <http://www.governing.com/topics/economic-dev/Smarter-Dig.html> (accessed online June 14, 2011). "The real lesson out of Boston Harbor isn't that public management is better or worse than private management on a megaproject. It's that public-private partnerships are delicate and need constant vigilance. Even in successful privatization efforts, oversight, and competency on the government side remain a must."
47. Mead, Testimony, SCST Hearings 2000.
48. Secretary of Transportation Rodney Slater, Testimony, Senate Commerce, Science and Transportation Committee (SCST) Hearings 2000, emphasis in original. On the state–federal relationship dating to 1916, see Bruce Seely, *Building the American Highway System: Engineers as Policy Makers* (Philadelphia: Temple University Press, 1987).
49. Slater, Kerry, Mead, Testimony, SCST Hearings 2000; Rose, "Reframing Highway Politics."

50. Laura Brown and Cosmo Macero, Jr., "Big Dig May Bury Smaller Projects; Big Dig Cost Overruns Threaten to Wash Out Local Road Projects," *Boston Herald*, February 5, 2000.
51. Sean Murphy, "Big Dig's Red Ink Engulfs State," *Boston Globe*, July 17, 2008; Casey Ross, "State Tries to Rescue Pike from Huge Debt \$800 M Would Be Refinanced; Treasurer Objects to 'Bailout,'" *Boston Globe*, July 16, 2008.
52. Natsios, Testimony, SCST Hearings 2000.
53. Even when, in 2004, Republican Governor Mitt Romney persuaded the Legislature to enact his plan to restructure the Commonwealth's transportation system leadership, installing the State's Secretary of Transportation (a political appointee directly accountable to the Governor) as MTA chairman, he was largely motivated by the cost-cutting prospects of an eventual merger between the MTA and the state agency, MassHighway. Chapter 196 of the Acts of 2004, "An Act Restructuring the Transportation System of the Commonwealth" (approved July 21, 2004). The sections of the act dealing with the composition of the MTA board would not take effect until July 1, 2007.
54. Mead, Testimony, HCGR Hearings 2005; Massachusetts Attorney General Thomas Reilly, Testimony, HCGR Hearings 2005. Attorney General Reilly, who took over cost recovery in 2005, pushed for a settlement of \$108 million. Following the 2006 tunnel collapse, a new \$458 million settlement was reached that released Bechtel from further liability. Sean P. Murphy and Scott Helman, "Big Dig Settlement Talks May be Heating Up," *Boston Globe*, June 4, 2006; Department of Justice, "Bechtel Infrastructure Corp., PB Americas Inc., and Consultants Agree to Pay \$458 Million to Settle Federal & State Claims," press release, January 23, 2008. www.usdoj.gov (accessed online August 17, 2009).
55. Jeremy Hobson, "Twenty-year Big Dig Contract Comes to a Close," National Public Radio, Morning Edition, December 30, 2005; Keough, "And the Buck Stops . . . Where?"
56. Mead, Testimony, HCGR Hearings 2005.
57. According to independent research funded by the MTA, the Big Dig has improved traffic flow in Boston by 62 percent, increased average speed from 10 mph to 43 mph and decreased average peak travel time from 19 to 2.8 minutes. It has also resulted in \$7 billion in private investment, 10 million square feet of new retail space, thousands of new housing units and hotel rooms, and 43,000 jobs. *Economic Impacts of the Massachusetts Turnpike Authority and the Central Artery/Third Harbor Tunnel Project Executive Summary* (February 2006). Mac Daniel, "Big Dig Benefit: A Quicker Downtown Trip: Turnpike Authority Report Cites Business Gain," *Boston Globe*, February 15, 2006. On the other hand, \$7 billion in debt payments stretching until 2038 threaten to hinder any efforts at statewide transportation improvement over the next generation. Murphy, "Big Dig's Red Ink."
58. Lydia Polgreen, "Tunnel is Among 156 Ideas for Changing Tappan Zee Bridge," *New York Times*, March 26, 2003; Jesse W. Brodey, "A Moveable Feat," *New York Times*, September 18, 2005; Corey Kilgannon, "One Man's Vision: The Tappan Tunnel: Once Viewed as Comic Relief, and Unorthodox Proposal is Gaining Respect," *New York Times*, September 26, 2001; Matthew Purdy, "A Tunnel Too Far, Or Is It?" *New York Times*, May 16, 2001; Matthew Purdy, "A Transportation Dreamer Follows His Inner Mole," *New York Times*, January 5, 2003; Yilu Zhao, "From 156 Options, Down to 15 Ways to Go on Tappan Zee," *New York Times*, July 24, 2003; "Final Report for Long-Term Needs Assessment and Alternative Analysis, I-287/Tappan Zee Bridge Corridor," April 2000. <http://www.tzbsite.com/tzblibrary/studies/2000-04/study-200004.pdf> (accessed online July 3, 2006); "Tappan Zee Bridge/I-287 Environmental Review, Alternatives Analysis Report" (January 2006) <http://www.tzbsite.com/tzblibrary/stage1/aa/cover.pdf> (accessed online June 30, 2006).
59. Dan Weikel, Jeffrey L. Rabin, and Daryl Kelley, "With Traffic at a Crawl, Planners Talk of Tunnels," *Los Angeles Times*, September 18, 2005; Gary Scott, "Study: Tunnel for 710 Feasible," *Pasadena Star-News* June 14, 2006; Editorial, "Tunnel Visions," *Los Angeles Times* June 15, 2006. Parsons-Brinckerhoff, "Route 710 Tunnel Technical Feasibility Assessment Report," June 7, 2006. http://www.mta.net/images/710_final_report.pdf (accessed online July 1, 2006); "Study of \$3 Billion Freeway Tunnel Under South Pasadena OK'd," *Associated Press State & Local Wire*, March 22, 2007.

60. Joel Connelly, "Was String Attached to Federal Cash for Viaduct?" *Seattle Post-Intelligencer*, March 10, 2006; Andrew Garber and Susan Gilmore, "Gas Tax Stays, But Don't Expect Big Road Projects to Get Going Soon," *Seattle Times*, November 10, 2005; George Howland Jr., "State to City: Forget Tunnel," *Seattle Weekly*, August 24, 2005.
61. Noah Bierman, "No Big Dig Copycats: As Other Cities Consider Removing Elevated Highways, Activists Cite Boston as a Reason Not to Go Underground," *Boston Globe*, March 14, 2008; Curt Woodward, "For Some, Seattle Highway Fix Conjures Images of the Big Dig," *Associated Press*, August 20, 2006.
62. Angela Galloway, "Big Dig' Players among Biggest Pro-Tunnel Donors," *Seattle Post-Intelligencer* August 24, 2006; Matt Rosenberg, "A Deep Bore Tunnel to Replace The Alaskan Way Viaduct," *Cascadia Prospectus*, July 30, 2008. http://www.cascadiapropectus.org/2008/07/a_deepbore_tunnel_to_replace_a.php (accessed online August 1, 2010); Cascadia Center, "Large Diameter Soft Ground Bored Tunnel Review" (November 2008) <http://www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=3591> (accessed online August 1, 2010); Andrew Garber, Mike Lindblom and Emily Heffter, "City, County, State Agree to Replace Viaduct with Tunnel", *Seattle Times*, January 12, 2009; Washington State Department of Transportation, "A Comparison of the Big Dig and the Alaskan Way Viaduct and Seawall Replacement Program" (January 2010) http://www.wsdot.wa.gov/NR/rdonlyres/BC1A5D8E-C199-41FD-903B-4EC7FD663D8E/0/011210_AWV_BigDig_fs_web.pdf (accessed online August 1, 2010); Emily Heffter, "Council members on Boston trip to learn lessons on 'Big Dig,'" *Seattle Times*, June 8, 2010.
63. Weikel, Rabin and Kelley, "With Traffic at a Crawl, Planners Talk of Tunnels."
64. Mohl, "Freeways and Expressways"; Congress for the New Urbanism, "Freeways without Futures."
65. National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*, December 2007; Phineas Baxendall, *Road Privatization: Explaining the Trend, Assessing the Facts, Protecting the Public* (Boston: US PIRG Education Fund, 2007).
66. Texas, Kansas, Colorado and New Jersey are among the states that are also seriously considering privatizing existing toll roads. The investment bank Goldman Sachs has played a major role in advising states in how to structure P3 highway deals, including one under discussion in New Jersey, where Governor John Corzine himself was a former Goldman Sachs chief executive officer. See Daniel Schulman and James Ridgeway, "The Highwaymen: Why You Could Soon Be Paying Wall Street Investors, Australian Bankers, and Spanish Builders for the Privilege of Driving on American Roads," *Mother Jones* (January/February 2007). Massachusetts engaged in two studies (in 1992 and 2005) of possible P3 arrangements regarding the Mass Pike, yet neither received much interest by public officials. Goldman Sachs, "Privatization Turnpike Report," 1992 (copy held in Massachusetts Transportation Library); Mac Daniel, "New Report Touts Privatizing Mass Turnpike; Romney, Amorello Still Deeply Divided," *Boston Globe*, May 26, 2005.
67. Rep. Peter DeFazio quoted in Testimony of Hon. Mitch Daniels, Governor of Indiana, "Understanding Contemporary Public Private Highway Transactions: The Future of Infrastructure Finance?" Hearing before the House Subcommittee on Highways, Transit and Pipelines, 109th Cong., 2nd Sess., May 24, 2006.
68. Ken MacFayden, "Q&A: Infrastructure Investing Hits U.S. Shores," *Bank Loan Report*, January 22, 2007.
69. Charles M. Sennott, "Project Poses a Test for Privatization: Critics See Conflict in Bechtel's Overseeing Its Own Artery/Tunnel Design Work," *Boston Globe*, September 12, 1994.
70. On the failure to translate public input into meaningful change, see Jeremy L. Korr, "Building a Better Beltway: Challenges in Increasing the Inclusiveness of American Highway Planning," Paper presented at the Conference on the International History of Transport, Traffic and Mobility, Dearborn, Michigan, November 4, 2004.
71. Press Release, Massachusetts Governor's Office, "Governor Patrick Signs Bill to Dramatically Reform Transportation System," June 26, 2009; Noah Bierman, "Few Details, Some Curves in Hunt for Mass. Pike Budget," *Boston Globe*, July 5, 2009.
72. Sean P. Murphy and Scott Allen, "Worries About Lights Were Kept in the Dark," *Boston Globe*, July 10, 2011.

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73. Bent Flyvbjerg, Nils Bruzelius, and Werner Rothengatter, *Megaprojects and Risk: An Anatomy of Ambition* (Cambridge: Cambridge University Press, 2003), 5, 9.

Bio

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