

**ALL MEGA-PROJECTS ARE LOCAL?
CITIZEN PARTICIPATION LESSONS FROM THE BIG DIG**

Domonic A. Bearfield and Melvin J. Dubnick*

ABSTRACT. This paper examines the impact of managerial philosophy on public participation. Specifically the paper explores the historical development of Boston's Central Artery/Tunnel project, more commonly known as the Big Dig, with a particular focus on how the two men most closely associated with the conception and construction of the project approached this type of administrative reform. This paper uses the concept single and double loop learning to illuminate how each manager attempted to implement this reform.

INTRODUCTION

Scholars and practitioners in a number of academic and professional fields have increasingly focused on the importance of citizen participation in the public sector decision-making process. In public administration, considerable attention is given to the citizen participation process at the municipal and state level, particularly in activities related to budgetary decision-making (Ebdon & Franklin, 2006). The transportation policy field has engaged in a parallel, although not necessarily overlapping, examination of citizen participation, driven by the need to deal with pragmatic concerns of lawsuits that stall or completely halt the development of large-scale

* *Domonic A. Bearfield, Ph.D., is an Assistant Professor at the George Bush School of Government and Public Service, Texas A&M University. His research focuses on improving the understanding of patronage, a concept central to the study of public sector human resource systems. Melvin J. Dubnick, Ph.D., is a Professor, of Political Science at the University of New Hampshire. His primary research interests are in the areas of accountability, governance, and civic education.*

projects or by the need to comply with recent legislation requiring greater public involvement.

In this paper, we seek to create a bridge between the two fields by examining the relationship between citizen participation and the budgeting process as it evolved during the development of Boston's Central Artery/Tunnel Project (CA/T), better known as "The Big Dig." Widely considered among professional civil engineers as a marvel of modern engineering, the view of the Big Dig among New England area residents has been critically focused on the project's massive budget, costly overruns and alleged mismanagement. We argue this negative public sentiment is rooted in the distinct approaches taken by the two men who assumed overall management of the project at different stages in its three-decade history, Frederick Salvucci and James Kerasiotes. We contend that each made significant decisions to either include or exclude the public and key stakeholders from the project's decision-making process at critical junctures during the project's planning and implementation phases. To explore the implications of those project management decisions, we turn to the organizational learning literature, specifically the concept of single- and double-loop learning. We believe that an analysis of management decisions regarding the public's role in decisions designed to mitigate the impacts of mega-project construction illuminates some of the vexing questions that are starting to emerge in the citizen participation, budgeting and transportation literatures.

WHY THE BIG DIG MATTERS

The Big Dig was a massive public works project conceived in the 1970s and initiated in the mid-1980s that would transform the physical and aesthetic landscape of Boston.¹ Designed in part to deal with the traffic and congestion that had overwhelmed the city's complex road system, it was also intended to remove the scars of decades of ill-conceived transport policies plaguing the famous "Hub" city.

In July 2006, the project entered its final phases, and for many the completion could not come soon enough. Having overcome community concerns and political opposition at the highest levels of government,² as well as numerous and unique engineering challenges, the various pieces of the Big Dig seemed to be coming together. It was time to harvest the long anticipated benefits of what

was arguably the most ambitious public works endeavor of the past century.

Of course, both time and scale took their tolls on the project, and few would offer up the implementation of the Big Dig as a model for emulation. Delays and deviations from the original plan, turnovers in top management and contractors, tales of corruption and poor construction, complaints about disruptions and displacements – all were part of the historical record of a project that spanned three decades from conception and design to near completion.³ In recent years the cost overruns that drove the estimated costs from \$2.5 billion in 1985 to \$14.8 billion as of early 2008 have received most of the attention. Rather than a point of pride, the Big Dig has become a focus for derision among the government-bashing media. A July 10, 2006, accident involving a concrete ceiling panel that fell in one of the project's tunnels killing a local resident drew an even more penetrating spotlight on the Big Dig – a light that pierced through the concrete ribbons of highways, tunnels and bridges and highlighted the managerial history of the Central Artery/Tunnel Project.

In the months following the accident, *CommonWealth*, a civic and public policy focused magazine published by a nonpartisan Massachusetts -based think tank, posed the following question to several local experts familiar with the project: “As Massachusetts ponders major public works for the future, what lessons — positive and negative — can be gained from the Big Dig experience.” As one would imagine, the responses varied greatly including the need for greater accountability (Mead, 2006; Macdonald, 2006), improving public-private relations as it relates to project management (Stergios, 2006), and balancing the demands between efficiency and oversight (Natsios, 2006).

Yet, one response stood out in a very different way than the others. It was from M. David Lee, a former president of the Boston Society of Architects, who had also done work on the project. Lee wrote, “The people in charge of the Big Dig could have done a much better job at explaining the importance of this project and making the public feel part of the process” (2006, p.65). Lee argued for an aggressive and creative approach that would have communicated the complexity and challenges of the project to the public. “You needed to educate and engage the public from the first moment. You needed to make the public feel a stake of ownership in the project” (2006, p.

65). Lee's call for greater citizen participation is not what made his response so interesting. The idea of increased citizen involvement in planning and development of highway construction projects is hardly new; in fact, there is a rich legacy of discussion concerning the proper relationship between citizens, planners and engineers dating back at least to the 1950s. The problem is that the Big Dig was conceived as a project where citizens would be *substantially* involved in the process. Yet Lee's critique indicates that, in the end, the project was found wanting on this very point.

Born out of the anti-highway movement, the Big Dig was intentionally designed to show how the construction of highways did not have to result in the arbitrary displacement of families and the destruction of neighborhoods and communities. During the project's early days under Fred Salvucci (the individual usually described as the project's "master planner"), the Big Dig was perceived as a way to help *build* communities rather than destroy them. There are countless tales of project leaders meeting with residents around the city, often in groups of ten or less, to address their concerns, to listen to their needs and preferences while building support for the project (Altshuler & Luberoff, 2003).

The statement from Lee was compelling because after 30 plus years of project history it revealed how far the project had drifted from the original ideal of citizen involvement. In a 2004 lecture delivered at MIT, two years before the ceiling panel accident, Salvucci himself re-iterated the importance of citizen participation. He stated "[T]he openness of the process that allows citizens to directly participate and ask embarrassing questions...forces you to confront those questions that it might be convenient at the moment to duck" (Salvucci, 2004).

Not simply a Massachusetts problem, mega-project officials all across the country have been forced to confront the citizen participation issue. In 1996, the U.S. Department of Transportation produced a guidebook designed to assist transportation agencies in their public involvement efforts (Howard/Stein-Hudson Associates, Inc. and Parsons, Brinkerhoff, Quade & Douglas, 1996). Keever, Frankoski and Lynnott (1999) noted that while public involvement in mega-projects has typically been limited to the early planning stages there is a need to extend public involvement into the design, construction, operation and maintenance of the project.

In 2004, *Public Roads*, a magazine produced by the Federal Highway Administration (FHWA) focused on issues and innovation in transportation, addressed the topic of mega-projects. The issue dealt with a variety of concerns including risk management, planning, construction, and the escalating cost of mega-projects. Notably, there was considerable attention given to the need to increase and/ or improve public participation. In a guest editorial, J. Richard Capka (2004, p. 1), the then Deputy Administrator of the Federal Highway Administration,⁴ wrote:

A great deal more is riding on the success of the megaproject than just the individual project itself. The public will use its perceptions of the delivery of a major project as a basis to "grade" the highway leadership's ability to deliver effectively the much broader overall highway program. The public's trust and confidence in public leadership and institutions may stand in the balance. Earning and retaining that trust and confidence is the responsibility of all of us in the public sector.

Elsewhere in the issue, Sorel (2004) highlighted the use of surveys, meetings and other tools as ways to assess public preferences and perceptions. Allen and Barnes (2004) described the "highly visible" nature of mega-projects as "management in a fishbowl," which required that the public have constant access to information concerning project changes and developments. Sinnette (2004) noted that accurate and honest reporting of costs estimates and changes can be used to improve and increase public trust and confidence. This combination of high visibility, with the demand for greater transparency and an uncertain role for citizens in the planning and development process of expensive public infrastructure projects underscores the challenge faced by mega-project managers.

WHAT IS A MEGA-PROJECT?

According to Altshuler and Luberoff (2003), the term mega-project emerged in North America in the late 1970s as a way to describe large-scale development and infrastructure projects typically carried out (or at least substantially financed and overseen) by the public sector. Since then scholars and others have used the term to describe a wide variety of highly visible, expensive and often controversial public transportation and construction projects. Major examples of mega-projects have included the Channel Tunnel

connecting France to Great Brittan, Denver International Airport, and the CA/T – The Big Dig.

Sykes (1998) described nine characteristics that differentiate mega-projects from regular public infrastructure projects. These are size, public opposition, time, location, market impact, unique risks, financing difficulties, insufficient experience, and unpopularity. Perhaps the dominant characteristic used to determine the difference between a regular project and a mega-project has been cost. According to Altshuler and Luberoff (2003), the minimum cost of a mega-project is 250 million dollars; however, one billion dollars has emerged as a commonly accepted minimum cost floor (Bruzelius, Flyvbjerg & Rothengatter, 2002; Sinnette, 2004).

Because of the cost and proliferation of mega-projects, the media, public interest groups, and elected officials in oversight positions have placed the projects under increased scrutiny. However, according to Flyvbjerg, Bruzelius and Rothengatter (2003) there has been a mega-project paradox, where societies increase the number of mega-projects in development and production even though, historically, mega-projects have performed poorly in terms of cost estimation and citizen support. They noted that this paradox has not been limited to the United States, but exists worldwide. By under estimating the risk associated with mega-projects, “nations may be affected in both the medium and long term by the success or failure of just a single project” (p.4). Despite the risk, the taste for mega-projects has continued to increase in the United States and abroad.

PARTICIPATION, THE BUDGET AND MEGA-PROJECTS

Given the importance of the budget to the administrative decision- making process, it is not a surprise that advocates of citizen participation have attempted to increase opportunities for citizen involvement in the budgetary process. This has included the use of citizen surveys (Watson, Juster & Johnson, 1991), advisory committees (Callahan, 2002), budget simulation techniques (Blomquist, Newsome & Stone, 2004), referendum and ballot initiatives (Beckett & King, 2002), public meetings (Adams, 2004) and focus groups (e.g., citizen panels). Some have argued that involving citizens in the budget process can produce positive results including increased confidence in the budget and municipal management (Preisser, 1997; Irvin & Stansbury, 2004).

However, research has shown that the actual implementation of citizen participation in the budgetary process has been both slow and uneven (Ebdon, 2000; Miller & Evers, 2002). Ebdon and Franklin (2006) argued that gaps in the research literature might limit the development of effective citizen participation programs concerning the budget. Miller and Evers (2002) noted the normative drive for citizen participation might cause researchers and administrators to “underestimate the structural complexity in budgeting and underestimate the time and effort required for anyone to understand budget issues and processes” (p. 235). According to Callahan (2002), organizations routinely limited opportunities for citizen involvement in the budget process, perceiving the activity as “too expensive and time consuming” (p. 297).

Yet, even in the face of organizational resistance, citizens have discovered other means to insert themselves into the budget process. In the wake of the National Environmental Protection Act (NEPA) of 1970, citizen groups have used the environmental mitigation process to influence the budgetary decision making of public works projects (Altshuler & Luberoff, 2003; Bushouse, 2002; Hughes, 1998). They have also used the mitigation process to negotiate funding for a variety of projects including parkland, wetland protection, and various forms of public transportation. During the 1990s, Congress passed both the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21). Both acts required local agencies to involve citizens in the development of transportation projects (Dilger, 1998). It is not clear if managers working on transportation projects have embraced the increase in participation (Gage & McDowell, 1995; Wolf & Farquhar, 2005).

In terms of mega-project management, the role of citizen participation can be either seen as of practical value or problematic. This would depend on whether participation has been regarded as a means to facilitate the project or as another constraint or imposition from a hostile or uninformed public. With this in mind, it is useful to understand the role of innovation and reform in mega-project management.

MEGA-PROJECTS AND REFORM

While mega-projects have been largely associated with application of the latest technological innovations in civil engineering and related fields, they have also been subject to any number of innovations associated with various so-called administrative reform movements (Light, 1997). These managerial innovations are of two general types: emergent and doctrinal.

Typically, emergent reforms are born of necessity or in response to some immediate problem. Over time, such responses are articulated as a coherent and logical approach to management. Historians of management (as opposed to managerial thought and theory) regard the development of the “visible hand” (Chandler, 1977) as such an emergent form of reform, and today’s stress on “best practices” is an explicit acknowledgement of the role of emergent reforms in a wide range of collective endeavors.

In contrast, doctrinal administrative reforms reflect a manifestation of an articulated worldview – a plan or strategy – that seeks realization through explicit changes in the structures and processes of governance. Creating order out of perceived chaos, productivity out of perceived potential, efficiency out of perceived imperfect operations – these are the goals of administrative reform driven by principles accepted as established and proven doctrines. To the extent that these doctrines are tied to utopian visions, the results can prove to be both transformational and tragic (see Scott, 1998). To the extent that they are accepted as pragmatic guidance, they become part of the ongoing argumentation and experimentation over improvements in governing (see Hood & Jackson, 1991).

Between the two extremes of emergent and doctrinal, reforms can take a mixed form designed with varying degrees of emergent and doctrinal intent (e.g., political, social and even theological) to reframe the way those empowered to bring about change will view the world (see Benford & Snow, 2000). Relying on more than the forces of historical emergence to foster this change, such reforms reflect a conscious social effort to motivate and mobilize actions that fit within a desired new perspective or world view regarding some aspect of social or political life. At the same time, try as they might, they do not achieve the level of consensus or coherence necessary to impose their explicit “orthodoxy” on the world. Rather, over the long term

through a variety of means ranging from advocacy to education, relying on tactics from moral panics and demonizing folk devils (Bearfield, 2007) to the cultivation of “scientific” support for their positions and perspectives, these movements (when successful) do more than reform practices; in the process they transform the political and organizational cultures in which they operate.

Early Reform Efforts

During the 1950s the city of New York was home to several well-publicized battles between community activists and mega-project master planner Robert Moses. Described as both hero and villain, Moses was responsible for the construction and design of most of the major highway infrastructure in and around New York City. Despite his immense power, or perhaps in reaction to it, during this period various groups around the city began to organize in opposition of his ubiquitous roadway projects.

In the *Power Broker*, Moses biographer Robert Caro (1974) detailed an early 1950s battle between Moses and a group of residents from the East Tremont section of the Bronx over a one-mile stretch of the Cross Bronx Expressway. Faced with the destruction of their neighborhood, residents organized to protest the proposed route and took the additional step of meeting with engineers to propose an alternative route that would displace fewer families without incurring additional costs.

Jane Jacobs (1961), activist and author of *The Death and Life of Great American Cities*, detailed another battle during this period, this time between Moses and the residents of Greenwich Village. In this case, community residents organized to block a proposed highway that would have severed Washington Square, a neighborhood park in the heart of Greenwich Village, in half. The action to stop the highway was not what made this particular protest unique. Instead, it was what Jacobs described as the “remarkable intellectual step of envisioning improvement”(p.361) for how the park should be used. In this case, instead of waiting for the trained administrators to present an acceptable alternative to the highway plan, community leaders presented their own plan for the park and the surrounding roadways. In short, Jacobs captured an early instance of citizens asserting their desire to be a part of the planning and administrative process.

The end of the 1950s also saw the emergence of several large anti-highway protests. Known collectively as the Highway or Freeway Revolts, they began in San Francisco in 1959, as protests against new highway construction. Soon protests appeared in several cities across the country including Baltimore, Minneapolis, Boston and Miami. These highway revolts signaled a new era in the relationship between highway builders and citizens. Like many of the 1960s movements, the highway revolts were not single-issue protests. Instead, they reflected the successful mobilization of coalition groups representing a wide variety of issues. According to Rose (2003, p.215) “many in and out of government attacked highway construction as antienvironmental, antiurban, and racist.” The protests resulted in a variety of outcomes. While some highway projects were halted, others were completed with little to no problem (Mohl, 2004). The protests also inspired several questions, including ‘What role should citizens play in the development of these highway projects?’

FROM CENTRAL ARTERY TO BIG DIG: DOING HIGHWAYS DIFFERENTLY?

The Big Dig was initially conceived as a single project, the physical depression of the Central Artery in Boston. Originally built in the 1950s, the Central Artery did not alleviate Boston’s traffic problem as it was originally designed to, but instead, as many have argued, actually contributed to making the city’s traffic congestion problems worse. Like many projects during the period, despite the protest of community groups, the construction of the Artery resulted in destruction of neighborhoods and the displacement of hundreds of families (Altshuler & Luberoff, 2003). A large, elevated, visually unappealing structure, the Central Artery loomed both figuratively and literally over the City of Boston for decades.

In 1970, the newly elected Governor of Massachusetts, Frank Sargent, convened the Boston Transportation Planning Review to study transportation issues. Chaired by Alan Altshuler, a professor of political science and urban planning at the Massachusetts Institute of Technology who had published a classic study of technocratic indifference to citizen and community concerns (Altshuler, 1965),⁵ members included Bill Reynolds (an engineer and highway builder) and Fred Salvucci (then transportation advisor to Boston Mayor Kevin

White), among others. Trained as an engineer at MIT, Salvucci was also active in the anti-highway movement. It is important to note that citizen participation was an important part of the planning review process, with ten percent of the budget dedicated to “community liaison and technical assistance” (Faramelli, 1976, p.108).

After two years of study, the committee released a report in 1972 suggesting the depression of the Central Artery and the removal of the existing construction. Although Salvucci is the person most often associated with the decision to depress the Central Artery, Bill Reynolds originally conceived the idea. According to Salvucci, Reynolds stated, “This big ugly elevated road (the Central Artery) is like a neon sign flashing, ‘Roads are bad.’ And it’s just a bad advertisement for our industry and I’m convinced that the only way we’ll fix this anti-highway attitude is by correcting the mistake and putting it underground” (Salvucci, 2002).

Despite the committee’s recommendation, the Sargent administration did not consider the artery depression a priority, and instead focused their attention on a special purpose tunnel to Logan Airport exclusively for buses and taxis (Hughes, 1998; Altshuler & Luberoff, 2003). However, Sargent was not able to gain support for the tunnel idea. Ed King, the then director of the Massachusetts Port Authority (MassPort), an independent public agency charged with the operation of Logan Airport, opposed the special purpose tunnel, preferring instead a tunnel for general use (Altshuler & Luberoff, 2003). King also advocated a tunnel that would open up into the residential neighborhood of East Boston, as opposed to opening on Logan Airport property. King’s idea was vehemently opposed by residents and activists, who argued that the tunnel would essentially bisect the neighborhood (Altshuler & Luberoff, 2003; Salvucci, 2002). One of those in opposition of the tunnel was Michael Dukakis, a state legislator with a strong anti-highway background – and the man who would defeat Sargent in the 1974 gubernatorial election.

Once elected, Dukakis turned to Salvucci to serve as the Secretary of Transportation. While Dukakis was initially cool to the Central Artery project, Salvucci convinced the governor by highlighting that the depressed artery could be combined with new public transportation projects that would relieve congestion in the city. He also emphasized a commitment to making sure that the project could be done without displacing residents and businesses, while reuniting

the largely Italian North End, a community that was essentially walled off by the elevated artery, with the rest of the city (Hughes 1998). Soon, the depression of the Central Artery emerged as a central part of the Dukakis transportation plan.

The Salvucci Era

In 1978, Dukakis lost the Democratic primary to Ed King, who would eventually become the next governor of Massachusetts. The artery depression was off the table during the King years largely because King was said to despise the idea (Altshuler & Luberoﬀ, 2003). During this period Salvucci accepted a teaching position at MIT. However, in 1982, Salvucci returned to public oﬃce as Transportation Secretary when Dukakis was once again elected governor. While out of oﬃce, Salvucci re-conceptualized the project, combining the depressed Central Artery and the tunnel to Logan Airport (Salvucci, 2002), thus creating the Boston Central Artery/Tunnel Project (CA/T).

Once back in oﬃce Salvucci initiated a process to build public support for the project. Initially public meetings were held around the city, including in influential East Boston⁶ (site of the proposed Logan Airport Tunnel) and the North End (the largely Italian neighborhood concerned about the eﬀects of a potential decade long project) (Altshuler & Luberoﬀ, 2003). East Boston residents were concerned that the tunnel to Logan would open up into the neighborhood. East Boston was also problematic because both Salvucci and Dukakis had built their reputations fighting earlier versions of the East Boston tunnel (Luberoﬀ, 2002). In the North End, the destruction caused by the original (elevated) Central Artery still lingered in the memories of many neighborhood residents.

In both cases Salvucci was able to bring residents into the decision-making process. In East Boston, Salvucci met with residents to explain the Logan Airport tunnel project and was able to mobilize support by assuring residents that the tunnel would open up on Logan Airport property, as opposed to opening up directly into the neighborhood (Luberoﬀ, 2002, Altshuler & Luberoﬀ, 2003). In the North End, Salvucci initially tried to hold public meetings to explain the project but protestors frequently disrupted the events. Instead, Salvucci held a series of “coffee klatches” where he would meet with

residents in small groups to explain the process. According to Salvucci (2002):

We basically put the word out, “Look, get ten people together, serve cookies and coffee. The secretary of transportation’ll come and explain and answer any questions you have about the artery.” And I had these story boards that we had put together that [were] basically relatively simple diagrams to explain what the process was where the problems would be, why I thought it was feasible, why I thought it would be good for the neighborhood. And then people could ask any question they had on their minds ...You had a nice cup of coffee and talked about it, and people could see we weren’t trying to hide anything, but we were able to get the explanation out (p. 17).

Salvucci (2002) remarked that someone once described the process of dealing with citizen directly, as opposed to negotiating through “power brokers”, as “retail rather than wholesale” (p.17). He also stressed the importance of having a two way communication process that would allow citizens to share in the decision making process, stating:

I’m an engineer. We know how to build things, but you didn’t necessarily know what invisible fabric you’re cutting across when you take a certain action. You get that feedback from a community meeting that says, ‘Hey, you guys don’t understand this is what happens on this street and if you did it that way, you’re gonna disrupt these three stores and my kids aren’t going to be able to get to school’(2002, p. 18).

As part of the project’s community involvement process Salvucci also engaged in costly and controversial environmental mitigation. In the wake of NEPA of 1969, agencies involved in the construction of large public works projects have frequently used environmental mitigation, a negotiation between the agency and community and environmental groups, to mitigate the damage caused by the construction. The practice has emerged as a way to avoid lawsuits and legal battles that could result in halting the project (Altshuler & Luberoff, 2003). After negotiating mitigation agreements, Salvucci placed them into the project’s planning and budgeting documents as a way to ensure that the preferences expressed by community groups would be honored by the next administration.

The Kerasiotes Era

After a failed presidential run in 1998, Dukakis decided not to seek another term as governor of Massachusetts, a decision that would effectively end Salvucci's role as "master planner." Salvucci walked away from the project when his term ended in 1991. Following the departure of Salvucci, James Kerasiotes, emerged to take over responsibility for the project.

The ascendance of Kerasiotes marked a period of great change for the project. In the years following his takeover several stories appeared in the Boston media highlighting the different managerial approaches between the two men, something we will explore later in the section. However, there were also changes occurring in both the national and local political environment that would have an effect on the next phase of the project.

The first issue was the growing national interest in the privatization of public services. In Massachusetts, William Weld, who was elected to replace Dukakis as governor, announced that privatization would be "one of the themes by which this administration will be remembered" (Locy, 1992, p. 22). In a bit of irony, throughout his tenure, Kerasiotes was plagued by questions concerning the relationship between the Big Dig's managerial staff and the private contractors hired to work on the project.

The second issue was the project's rapidly growing budget. As mentioned earlier, in the 1980s the estimated cost of the project was approximately \$2.5 billion dollars. However, by 1993, Kerasiotes announced that the cost had risen to approximately \$7.7 billion. While increases of this size are not entirely unusual for large, complex, public projects, the announcement of the new figures caused a great deal of concern in both the media and the public (Altshuler & Luberoff, 2003).

During Salvucci's tenure the decision was made to give initial responsibility for managing the CA/T to the Department of Public Works (which would later become the Massachusetts Highway Department), a department under his jurisdiction as Secretary of Transportation (Hughes, 1998). However, cost-cutting measures during the 1980s left the department without the necessary staff to take on such an ambitious project. To compensate, Salvucci adopted the widely used "belt and suspenders" approach. Under this

approach, government looked to the private sector when working on large infrastructure projects, to take advantage of the expertise found in innovative companies and contractors. At the same time, government would also increase its own internal expertise by building an agency staff capable of providing proper oversight (Tobin, 2001). Ultimately, the goal was to decrease the need for external experts to maintain the project after its completion (Sennott, 1994). In accordance with the “belt and suspenders” approach, in 1985 the State of Massachusetts entered into an agreement with Bechtel/Parsons Brinkerhoff (B/PB), a joint venture between two major public works construction firms, Bechtel Corporation and Parsons Brinkerhoff, to assume responsibility for project management.

With private contractors playing such a major role in the Big Dig, Salvucci preferred to have close public sector oversight of the private project managers. To accomplish this, he instituted what he called a “second opinion committee” comprised of officials (usually the chief engineers) from three major public agencies which had significant stakes in the implementation of the Big Dig construction project (the Massachusetts Bay Transit Authority, MBTA; the Massachusetts Port Authority, MassPort; and the Massachusetts Turnpike Authority, Masspike). In lieu of relying on the understaffed Department of Public Works, Salvucci used the “second opinion committee” to review the decisions and operations of the private contract managers.

This arrangement would last only to the end of Salvucci’s tenure. Adhering to what Salvucci later described as an “excessive view” of privatization, and convinced that oversight as well as engineering decisions should be left to the private project managers at B/PB, Kerasiotes eliminated the “second opinion committee” (Levenson, 2006; Sennott, 1994). It was an action Salvucci (2004) termed “a frontal lobotomy on the capacity of government to manage the project.” In short, under Kerasiotes the oversight function was essentially contracted out to B/PB, with the company left in charge of overseeing a large portion of its own design.

When the Boston media raised questions concerning the potential conflict of interest issues caused by this relationship, Kerasiotes suggested that the market-based forces would govern the behavior of the private contractors. According to his thinking, the Big Dig represented a valuable piece of advertising that private

contractors would use to generate future business. Because of this, Kerasiotes reasoned, contractors had a built-in incentive to do quality work, since substandard work could damage both their reputations and future revenue (Sennott, 1994).

With B/PB in charge of oversight of the day-to-day management, Kerasiotes turned his attention to the budget, building a reputation in Massachusetts circles as a person ruthlessly committed to maintaining central control of the project's finances. In September of 1994, nearly a year after the announcement of the new \$7.7 billion dollar budget figure, Kerasiotes assured a crowd of local businesspersons the project could be completed for that amount. However, a key project executive from B/PB, Theodore G. (Tad) Weigle, appeared to contradict Kerasiotes by suggesting that the budget figures were not final, and in fact could increase given the project's complexity. In response, Kerasiotes, with the support of Governor Weld, campaigned for Weigle's removal from the project. In a matter of weeks, Weigle was removed from his post by B/PB (Palmer, 1994).

This was the first in a series of moves that resulted in a dramatic increase of Kerasiotes's power. In 1995, Governor Weld proposed legislation that would give the Masspike control of the C/AT. The bill was passed by the legislature during the summer of the same year. The following year Kerasiotes was named chairman of Masspike to go along with his role as transportation secretary. The *Boston Globe* described the scope of his newly appointed power as "If it moves, honks or rides on rails, Kerasiotes controls it" (Howe, 1996, p. 17). Still, questions concerning the project's cost would continue under Kerasiotes.

In early 1995, faced with a meeting of federal highway officials seeking more information on cost estimates, Kerasiotes requested that B/PB (in one of the company official's words) "sanitize" the figures in order to pare them down so they could come close to the \$7.7 figure. This was accomplished by highlighting only summary figures and not indicating excluded costs. A year later a report from the United States General Accounting Office noted that the \$7.8 billion dollar estimate eventually presented by the Massachusetts Highway Department in 1995, and updated again in early 1996, did not reflect the cost of the project when adjusted for inflation. In addition, the estimate excluded more than a billion dollars in project-

related items such as environmental mitigation and the displacement of commuter and Amtrak railway lines. According to the report, even if the state were to maintain what it described as “aggressive cost containment goals” the actual estimated cost of the project should be \$10.4 billion dollars (US General Accountability Office, 1996). That figure was adjusted again in 1997 to \$10.8 billion dollars (US General Accountability Office, 1997).

In 1998, Paul Cellucci became the governor of Massachusetts after serving as the Lt. Governor under Weld and acting governor following Weld’s resignation in 1997. In December of 1999, Cellucci met with several credit agencies and assured them that the project was on budget. During these years, Kerasiotes aggressively defended the \$10.8 billion dollar figure. However, in February of 2000 Kerasiotes announced “a top to bottom review” of the project by administration officials revealed that the CA/T was \$1.4 billion dollars over budget, bringing the total cost to \$12.2 billion (Palmer, 2000). While the admission itself was shocking, it also caused Governor Cellucci a bit of embarrassment. The sudden increase in the project’s budget raised questions concerning the state’s credit rating (Caffrey, 2000). The announcement also triggered an investigation by a task force from the Federal Highway Administration. In a report issued on March 31, 2001, the Task Force revised the project’s estimated cost to \$13.4 to \$13.6 billion dollars (Federal Highway Administration, 2000).

The report also concluded that information about the cost overrun had been intentionally withheld (Federal Highway Administration, 2000). Following a request from Governor Cellucci, Kerasiotes was forced to resign (Klein, 2000). Over the next few years, the CA/T project became the focus of several stinging investigations by the Massachusetts Office of the Inspector General (Haynes, 1999). A December 2000 report argued that the widespread role played by B/PB in the management of the project hampered the state’s ability to hold it accountable. The report also argued that the relationship between the state and B/PB on the project limited the state’s ability to recover cost for unsatisfactory work (Massachusetts Office of the Inspector General, 2000). A 2003 report that analyzed B/PB’s response to a *Boston Globe* investigative series, which raised additional concerns about B/PB’s role and apparent conflict of

interest regarding the project, also drew similar conclusions (Massachusetts Office of the Inspector General, 2003a; 2003b).

LEARNING CITIZEN PARTICIPATION

From the very beginning, Salvucci was committed to doing things differently. Drawing on a variety of experiences including the personal loss of his grandmother's house which was destroyed in the 1950s to make way for the original Central Artery, his time as an activist in the anti-highway movement, his professional training as an engineer, as well as, his years working for Mayor Kevin White, Salvucci crafted an approach to citizen participation that moved beyond his technical expertise. He was able to think not just as an engineer, but also as a resident of Boston. In interviews, Salvucci described what he saw as an abuse of power by engineers during the construction of the original artery. Reflecting on this period, Salvucci has been quoted as saying, "This is wrong, and if I'm ever in this field, I'm not going to treat people that way. It's just not the right way to do things" (Tobin 2001). During his years as a student and as an activist, Salvucci identified how members of his trained profession, engineering, contributed to the public's increased distrust and cynicism. Throughout various points in the Big Dig project, his actions revealed how he was able to alter his and the agency's behavior to ensure that they did not contribute to the problem. As mentioned earlier, when protestors disrupted public meetings, Salvucci moved to smaller meetings to maintain the dialogue with citizens, insisting that the agency had nothing to hide. The approach was evident in the environmental mitigation process as well. Salvucci went beyond the mere statutory requirements by directly engaging with a wide swath of groups that were likely to be "harmed" by the project. It was an ongoing and reflexive approach to reform that is both thoughtful and improvisational, and Salvucci built it into the practice and culture of the Big Dig mega-project. Sociologically, the emergent reforms of openness and engagement became institutionalized (DiMaggio & Powell, 1983) and formalized (Stinchcombe, 2001), resulting in a budgetary process that valued and encouraged citizen participation.

But there was more to Salvucci's approach than his personal commitment. He was also engaged in implementing an approach to project management strongly influenced by the concept of organizational learning advocated at MIT by philosopher Donald

Schön and his Harvard colleague, Chris Argyris (Argyris & Schön, 1974; 1978). Schön's work initially focused on the need for architectural design professionals to engage in reflective practice that exposed their theories and ideas to challenge and change. His views quickly spread to other fields, including urban planning. Working with Argyris, he brought the concept of double-loop learning into the MIT curricula, and would eventually serve as chair of the Urban Studies and Planning Department from 1990-1992. The underlying logic of reflective practice among planning professionals was pervasive throughout MIT's School of Architecture and Planning. It is likely that the organization learning perspective, and its lesson for managing large-scale projects, influenced Salvucci during his hiatus at MIT between the Dukakis administrations.

The concept of single- and double-loop learning remains an attractive heuristic for understanding organizational learning, especially in the public sector. Recently it has been used to describe the organizational learning process in response to a variety of managerial reforms including managing for results (Moynihan, 2005a; 2005b), performance measurement (Yang & Holzer, 2006) and public participation (Chess & Johnson, 2006). When an individual or organization is engaged in single-loop learning, the focus is on problem solving (Argyris, 1991) or the mastery of a very specific set of tasks. The assignment of tasks can come from a variety of sources including the organization's mission statement or charter, administrative rules, legislative mandates or policy directives from elected officials.

According to Argyris (1976, p.367), "participants in organizations are encouraged to learn to perform as long the learning does not question the fundamental design, goals, and activities of their organizations." Often such questioning results in an increase in "command and control" activities, defensiveness and greater secrecy surrounding the decision-making process by the organization's higher level authorities.

With double-loop learning, the emphasis is on understanding the underlying complexity of the problem. Instead of focusing on a specific task, the double loop learner seeks to explore the challenges and assumptions associated with performing the task, including asking if the task should be performed at all. By placing the task in a broader context, double-loop learners are able to respond to

developments in the external environment that might be helpful in achieving the organizational mission, as opposed to simply viewing those changes as barriers or impediments. Put another way, “[e]very significant action in the double-loop learning model is evaluated in terms of the degree it helps the participants generate valid and useful information, including relevant feelings, and solve the problem so that it remains solved without reducing the level of problem-solving effectiveness” (Argyris, 1976, p. 369).

As mentioned earlier in the paper, doctrinal reforms reflect explicit efforts to provide clear and specific guidelines to solving complex problems. Examples of this type of reform range from the (POSDCORB) (Gullick & Urwick, 1937) mantra of so-called “classic” public administration to the systematic adoption of (PPBS) in the 1960s (Schick, 1969; Wildavsky, 1969) to today’s attempt to institutionalize balanced scorecards in government agencies (Moynihan, 2005a; 2005b). The implementation of such doctrinal reforms can be characterized as a form of single loop learning where emphasis is placed on “identifying and correcting errors in the external environment” (Argyris, 1991, p. 4). Within the context of doctrinal reforms, once a problem has been identified managers are asked to respond with the tools and approaches deemed appropriate and sufficient to resolve the issue.

Alternatively, emergent reform pressures provide a context for the manager to engage in the double loop learning process. Double loop learning facilitates movement beyond prescriptions and, in Argyris’ words (1991, p. 4), to “reflect critically on their own behavior, identify the ways they often inadvertently contribute to the organization’s problems, and then change how they act.” Organizationally, the move from single to double loop learning is perceived as a progressive response fostered by management awareness of failures (real or perceived) or deteriorating conditions

The case of the Big Dig hints at a different dynamic that occurs at the scale of mega-projects where so much care goes into strategic planning and the design of organizational infrastructures. Put simply, the double-loop learning logic intentionally built into the emergent reform process under Salvucci –ultimately and perhaps inevitably – gave way to single-loop learning under Kerasiotes as the reform process became more institutionalized and doctrinal.

Prior to assuming control over the Big Dig, Kerasiotes spent several years in the private sector, and drew on that experience as he attempted to reform government by applying private sector lessons and principles. The effort to transfer the logic and assumptions of the private corporate sector to a public sector mega-project is obviously not new or unique, but doing so necessarily requires the articulation of a model or ideal that is to be transferred – and thus the development and imposition of doctrine. Nurtured within the ideological milieu of the Reagan years and explicitly articulated in the proselytizing work of E.S. Savas (1987) and others (see Hodge 1999), the privatization agenda of Kerasiotes was pursued as doctrinal reform that contrasted with the more emergent reform culture fostered by Salvucci. To the extent that it was part of a less obsessive, more pragmatic approach to administrative reform, privatization was perceived by emergent reformers of the period (now associated with the New Public Administration; see Hood [1991]; [1995]) as one of several tools that could be put to use as a means toward the end of improving public sector operations through enhanced competition. In that sense, Salvucci was not averse to applying privatization means and mechanisms where appropriate. In fact, the tradition of public works in the United States is clearly rooted in the use of private contractors and outsourcing.

However, under the doctrinal reform perspective of Kerasiotes, privatization became a driving force (an “excessive view” in Salvucci terms) that converted the double-looping openness of Salvucci into a heavily prescribed single-loop process. Kerasiotes viewed reforms through the lens of the “ruthless businessman.” In an address given before the Manhattan Institute, Kerasiotes (1996, p. 3) explained how many in the public sector were concerned with being liked and making “nice-nice” instead of making tough decisions. Kerasiotes wanted the public sector unions and others to know that he was willing to “pull the trigger” by privatizing services. He also described how he was able to improve management at the Massachusetts Bay Transportation Authority by implementing an arbitrary budget cut of five percent, portraying this act in positive terms as the kind of tough choice that enhanced the efficiency of public sector operations.

Managing the budget by controlling costs was central to the reform effort under Kerasiotes, and in the process, he transformed the process of openness and consultation with the public that was so

central to Salvucci's agenda. Management of the Big Dig went from consultative and adaptive to one that rhetorically stressed the market and "customer satisfaction," but in fact came close to the very centrally controlled mega-project management model associated with Caro's (1974) image of Robert Moses. Thus, Kerasiotes could describe this as way of applying the private sector principle of delivering "value to the customer" who in this case was the taxpayer.

This principle was reflected in the billboard that dotted the Boston landscape during the 1990s announcing that the project was "on budget, on time." Billboards and public meeting were a part of the one way communication strategy used to report numbers and facts to the public. Interacting with the public as part of the mega-project management process – a process that took the results of that interaction seriously and thus reflected a commitment to double-loop learning – was replaced by a doctrinal privatization approach to reform consistent with the description of single-loop learning.

Argyris argues that in single loop learning, managers often become defensive when the tools they have used to understand the world no longer work, or when they are confronted with evidence that contradicts their world view. When Tad Weigel, the Bechtel/Parsons Brinkerhoff manager, publicly offered an assessment of the Big Dig figures different from those presented by Kerasiotes, the latter's response was to assume control and then challenge dissent, eventually costing Weigel his position. It was clear that the message presented to the public was to be unified and consistent. The requirements for public input and consultation became pro forma and converted into ritual and symbolic actions (Edelman, 1964), valued only for the public quiescence it purchased rather than the learning that it was designed to foster under Salvucci. Participation was done because it was required, not as a means for soliciting opinion or dissent. Only when Kerasiotes was ultimately forced to reveal the actual budget figures was he willing to engage in a two-way dialogue.

ANALYSIS AND CONCLUSION

During an interview for PBS's *Great Projects: The Building of America* (a four part series on innovative engineering projects, including the Big Dig), David Luberoff (2002, p. 13), co-author of *Mega-Projects*, remarked:

I'm not sure how the Big Dig is going to be remembered. I think, in the best-case scenario, people really won't notice it at all. If it works the way it's supposed to work, it will become part of the fabric of the city in a way that is somewhat invisible. Most of it is underground and you'll just drive on it. It'll just be something you take as a given as we take most infrastructure for a given.

While the 2006 death of a local resident inside one of the project's tunnels significantly decreased the chance that the Big Dig will become invisible any time in the near future, we would argue that there are other, less tragic, reasons to stave off the project's inevitable slide towards invisibility.

The case of the Big Dig illuminates our understanding of both citizen participation and managerial reform. The change in leadership from Fred Salvucci to James Kerasiotes represented more than a shift in personnel; it represented a move from one view of mega-project management to another. In this case, the change from the emergent approach to citizen participation used by Salvucci during the project's early phases, to the more doctrinal approach that was later adopted by Kerasiotes, altered the organization's learning process. While the emergent approach encouraged double-loop learning, the doctrinal approach discouraged the type of reflection found in double-loop learning and instead resulted in a single-loop learning process. As a result, the approach used by each manager influenced the way they included citizen participation in the planning and budgetary process.

As a multifunctional instrument of public policy, budgeting is often the vehicle through which various reform objectives and values can be achieved or enhanced. At the risk of oversimplifying, the budgetary process offers at least four major points of access for reformers:

- the *authorization stage* involving decisions about what functions or services governments will be permitted to appropriate funds for;
- the *appropriation stage* involving that allocation of funds to carry out authorized functions;
- the *implementation stage* at which decisions are made regarding how the allocated resources will be put to use; and

- the *assessment stage* through which some form of evaluation is applied to budget decisions undertaken during the other strategies.

Logically, each of these stages provides a possible access point for enhancing one or more of the three major objectives underpinning policy reforms: efficiency, equity, and democracy. Framed in this way, the use of citizen participation in budgeting can involve more than seeking citizen input for establishing public priorities or preferences during the authorization and appropriations stages (see Ebdon & Franklin, 2006) or engaging the public in meaningful performance assessments (Holzer & Yang, 2004). It can also serve as a means of improving project efficiency through mechanisms that embed *regular and meaningful* consultation with impacted citizens during the implementation process (Stitch & Eagle, 2005).

Such mechanisms would prove "meaningful" (i.e., empowering) if they involved more than mere pro forma community outreach or opportunities for fielding public complaints and concerns (Faramelli, 1976). By providing these consultation forums with a degree of decision-making authority related to choices made during the implementation process, reformers seek a democratized approach to enhancing efficiency and dealing with inequities that might arise at that level of governance.

Perhaps the most famous (and infamous; see Moynihan, 1970) articulation of this approach was the ambiguous idea of "maximum feasible participation" that emerged as part of the 1964 Economic Opportunity Act. "Max feas" was rhetorically central to the Great Society programs of the Johnson Administration, but there was little in the way of foundational thinking or planning to back it up (see Rubin, [1969]; also Miller & Rein [1969]). Efforts to implement the participation clause mandate were rarely successful, and it seemed to come to an ignominious end during the Nixon years as community action programs disappeared as a mainstay of American social and community development policies.

Yet, within certain public service professions there remained strong legacy of this approach, especially among urban, land-use and other professional planners. Starting in the late 1960s and early 1970s, some planning professionals began to abandon their historical commitments to rationality and technocratic solutions to

urban and land-use issues (see Altschuler [1965]). What slowly emerged in opposition was an alternative view, advocacy planning, championed by Paul Davidoff (1965) and others. It was a perspective drawn from the “maximum feasible participation” experience that stressed the need for planners to foster and promote citizen input and involvement, and over the next forty years it would play a role in shaping the views of many planning professionals (see Peterman [2004]).

As we saw in the preceding case study, professional norms emphasizing the role of citizens and communities was particularly influential in Salvucci’s design of the Big Dig’s initial implementation management strategies. Several of the key transportation planners and civil engineers who emerged as major role players in the design and implementation of the Big Dig project came to their jobs with a strong professional commitment to citizen involvement nurtured in the classroom⁷ and in previous field experience.⁸

As the case illustrated, the effort to empower citizens and others affected by the Big Dig – that is, to give them a meaningful opportunity to engage in decisions regarding expenditures and other detailed choices during the implementation process – would never quite play out as intended. Instead, a different administrative reform agenda – a local variation of neomanagerialism – effectively preempted the designs for greater citizen involvement. It is also slightly ironic that despite federal legislation that emerged in the early 1990s that required public involvement in transportation projects, few recent engineering and planning graduates believed they were trained, or equipped with the skills to produce meaningful citizen involvement (Khisty, 1996).

If there is good news on this front it is the fact that there appears to be a growing interest in the field of transportation with citizen participation issues. We believe that the proliferation of billion dollar transportation mega-projects scheduled to emerge during the next decade will present scholars of citizen participation a unique alternative to the study of state and local government organizations. Given the size and scope of these projects, along with legal requirements mandating citizen involvement, the study of mega-projects should produce tremendous insight into the development and practice of citizen participation programs in the future.

ACKNOWLEDGEMENTS

The authors would like to thank the three anonymous reviewers for their invaluable comments and suggestions. They would also like to thank Emily Gunn for her tireless research support.

NOTES

1. For an overview of the Big Dig project, see the background provided at <http://www.masspike.com/bigdig/background/index.html>.
2. President Reagan had personally lobbied against the Project, making a historic visit in 1987 to Congress seeking votes that would uphold his veto of the project's authorization.
3. In that regard, the Big Dig was just one among many problematic mega-projects (Flyvbjerg et al., 2003).
4. Capka was later appointed to serve as administrator of the same agency.
5. Altshuler would also serve as Sargent's Secretary of Transportation from 1971 to 1975.
6. It has been said that Speaker of the U.S. House of Representatives Thomas "Tip" O'Neil's support of the project depended on the whether or not Salvucci had obtained support from the residents of East Boston (Hughes, 1998).
7. MIT's urban planning curriculum's role in fostering a more democratized perspective among planners cannot be understated, especially among planners in the Boston area. For an overview of the intellectual history of the MIT Department of Urban Studies and Planning, see <http://libraries.mit.edu/archives/mithistory/histories-offices/urbstud.html>.
8. The Big Dig was preceded by a similar (albeit much smaller) infrastructure project (the Boston Southwest Corridor project) in which efforts to integrate citizen input and involvement at the implementation phases had proven workable (Crewe, 2001).

REFERENCES

- Adams, B. (2004). "Public Meetings and the Democratic Process." *Public Administration Review*, 64 (1): 43-54.
- Allen, C., & Barnes, P. (2004). "Sharing Experiences and Lessons Learned." *Public Roads*, 68 (1): 54-64.
- Altshuler, A. (1965). *The City Planning Process: A Political Analysis*. Ithaca, NY: Cornell University Press.
- Altshuler, A. & Luberoff, D. (2003). *Mega-projects: The Changing Politics of Urban Public Investment*. Washington, DC/Cambridge, MA: Brookings Institution Press/Lincoln Institute of Land Policy.
- Argyris, C. (1976). "Single-Loop and Double-Loop Models in Research on Decision Making." *Administrative Science Quarterly*, 21 (3): 363-375.
- Argyris, C. (1991). "Teaching Smart People How To Learn." *Harvard Business Review*, 69 (3): 99-109.
- Argyris, C. & Schön, D. (1974). *Theory in Practice*. San Francisco, CA: Jossey-Bass.
- Argyris, C. & Schön, D. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading, MA: Addison-Wesley.
- Bearfield, D. (2007). "The Demonization of Patronage: Folk Devils and the Boston Globe's Coverage of the 9/11 Terrorist." In J. Bowman and J. West (Eds.), *American Public Service: Radical Reform and the Merit System* (pp. 101-120). Boca Raton, FL: CRC Press.
- Beckett, J., & King, C. (2002). "The Challenge to Improve Citizen Participation in Public Budgeting: A Discussion." *Journal of Public Budgeting, Accounting & Financial Management*, 14 (3): 463-485.
- Benford, R. & Snow, D. (2000). "Framing Processes and Social Movements: An Overview and Assessment." *Annual Review of Sociology*, 26: 611-639.
- Blomquist, G., Newsome, M., Stone, B. (2004). "Public Preferences for Program Tradeoffs: Community Values for Budget Priorities" *Public Budgeting & Finance*, 24 (1): 50-71.

- Bruzelius, N., Flyvbjerg, B., & Rothengatter, W. (2002). "Big Decisions, Big Risks: Improving Accountability in Mega Projects." *Transport Policy*, 9 (2): 143-154.
- Bushouse, B. (2002). "Changes in Mitigation: Comparing Boston's Big Dig and 1950s Urban Renewal." *Public Works Management & Policy*, 7 (1): 52-62.
- Caffrey, A. (2000, Feb. 23). "How Big Dig Ran Out of Options." *The Wall Street Journal*: NE1.
- Callahan, K. (2002). "The Utilization and Effectiveness of Citizen Advisory Committees in the Budget Process of Local Governments." *Journal of Public Budgeting, Accounting & Financial Management*, 14 (2): 295-319.
- Capka, R. (2004). "Megaprojects: Managing a Public Journey." *Public Roads*, 68 (1): 1.
- Caro, R. (1974). *The Power Broker: Robert Moses and the Fall of New York*. New York: Vintage.
- Chandler, A.D. Jr. (1977). *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Belknap Press/Harvard University Press.
- Chess, C. & Johnson, B. (2006). "Organizational Learning about Public Participation: 'Tiggers' and 'Eeyores'." *Human Ecology Review*, 13: 182-192.
- Crewe, Katherine. 2001. "The Quality of Participatory Design: The Effects of Citizen Input on the Design of the Boston Southwest Corridor." *Journal of the American Planning Association*, 67 (4): 437-455.
- Davidoff, P. (1965) "Advocacy and Pluralism in Planning." *Journal of the American Institute of Planners*, 31: 331-338.
- Dilger, R. J. (1998). "TEA-21: Transportation Policy, Pork Barrel Politics, and American Federalism." *Publius*, 28 (1): 49-69.
- DiMaggio, P.J. & Powell, W.W. (1983). "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review*, 48 (2): 147-160.

- Ebdon, C. (2000). "The Relationship between Citizen Involvement in the Budget Process and City Structure and Culture." *Public Productivity and Management Review*, 23 (3): 383-393.
- Ebdon, C. & Franklin, A. (2006). "Citizen Participation in Budgeting Theory." *Public Administration Review*, 66 (3): 437-447.
- Edelman, M. (1964). *The Symbolic Uses of Politics*. Urbana, IL: University of Illinois Press.
- Faramelli, N. (1976). "From Protest to Planning: Some Reflections on Citizen's Participation." *Nonprofit and Voluntary Quarterly*, 5 (2): 106-114.
- Federal Highway Administration United States Department of Transportation (2000). Federal Task Force on the Boston Central Artery Tunnel Project Review of Project Oversight and Costs. Washington, DC: Author.
- Flyvbjerg, B., Bruzelius, N., and Rothengatter, W. (2003). *Megaprojects and Risk: An Anatomy of Ambition*. New York and Melbourne, Australia: Cambridge University Press.
- Gage, R., & McDowell, B. (1995). "ISTEA and the Role of MPOs in the New Transportation Environment: A Midterm Assessment." *Publius*, 25 (3): 133-154.
- Gulick, L. H. (1937). Notes on the Theory of Organization, With Special Reference To Government In The United States. In L. H. Gulick & L. F. Urwick (Eds.), *Papers on the Science of Administration* (pp. 1-45). New York: Institute of Public Administration.
- Haynes, W. (1999). "Megaproject Oversight: The Massachusetts Experiment." *Public Works Management & Policy*, 3 (3): 224-240.
- Holzer, M. & Yang, K. (2004). "Performance Measurement and Improvement: an Assessment of the State of the Art." *International Review of Administrative Sciences*, 70 (1): 15-31.
- Hodge, G. (1999). "Competitive Tendering and Contracting Out: Rhetoric or Reality?" *Public Productivity and Management Review*, 22 (4): 455-469.
- Hood, C. (1991). "A Public Management for All Seasons?" *Public Administration Review*, 69 (1): 3-19.

- Hood, C. (1995). "The 'New Public Management' in the 1980s: Variations on a Theme." *Accounting, Organizations and Society*, 20: 93-109.
- Hood, C. & Jackson, M. (1991). *Administrative Argument*. London, UK: Dartmouth Publishers.
- Howard/Stein-Hudson Associates, Inc. & Parsons, Brinckerhoff, Quade & Douglas. (1996). *Public Involvement Techniques for Transportation Decision-Making*. (FHWA-PD-96-031) Washington, DC: U.S. Government Printing Office.
- Howe, P. (1995, August 8). "Bill on Artery-Tunnel Funding OK'd; Massport Is Required to Contribute \$100m." *Boston Globe* (Metro/Region): 17.
- Hughes, T. (1998). *Rescuing Prometheus*. New York: Vintage Books.
- Irvin, R., & Stansbury, J. (2004). "Citizen Participation in Decision Making: Is It Worth the Effort?" *Public Administration Review*, 64 (1): 55-65.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. London, UK: Penguin Books.
- Keever, D., G. Frankoski & J. Lynott. (1999). "In the Possibilities Are the Solutions: Assessment and Implications of the Public Involvement Process during the Environmental Impact Study of the Woodrow Wilson Bridge." *Transportation Research Record: Journal of the Transportation Research Board*, 1685(1): 135-143.
- Kerasiotes, J. (1996, January 1). "How Government Can Do More With Less: Massachusetts Leads the Way." *Speech, Manhattan Institute: Civic Bulletin*: 1-4.
- Khisty, C. (1996). *Education and Training of Transportation Engineers and Planners vis-à-vis Public Involvement* (Transportation Research Record 1552). Washington, DC: National Research Council.
- Klein, A. (2000, April 12). "Head of Boston's 'Big Dig' Project Quits after U.S. Report on Huge Cost Overruns." *The Wall Street Journal* (Eastern Edition): 1.

- Lee, M.D. (2006, Fall). "Educate and Engage the Public from the First Moment." *CommonWealth*, 11 (5): 65.
- Levenson, M. (2006, August 3). "The Real Builder of the Big Dig; Tunnel Collapse Focuses Attention on Kerasiotes's Tumultuous Tenure." *The Boston Globe* (Metro/Region): B1.
- Light, P. (1997). *The Tides of Reform: Making Government Work*. New Haven, CT: Yale University Press.
- Locy, T. (1992, June 12). "Weld promises to seek more privatization." *The Boston Globe* (Metro/Region): 22.
- Luberoff, D. (2002,). "Interview" [Electronic version]. Great Projects: The Building of America. Retrieved August 31, 2009, from http://www.pbs.org/greatprojects/interviews/luberoff_1.html.
- MacDonald, D. (2006, Fall). "Earn, Maintain, and Now Restore Public Confidence." *CommonWealth*, 11 (5): 58-59.
- Massachusetts Office of the Inspector General (2000). *A Review of the Central Artery/Tunnel Project Cost Recovery Program*. Boston, MA: Author.
- Massachusetts Office of the Inspector General. (2003a). *Analysis of Bechtel/Parsons Brinckerhoff's Reply to The Boston Globe's Investigative New Series Concerning the Big Dig*. Boston, MA: Author.
- Massachusetts Office of the Inspector General. (2003b). *The Boston Globe's Big Dig: A Disservice to the Truth*. Boston, MA: Author.
- Mead, K. (2006, Fall). "The FHA's Job Must Be More Than Checks." *CommonWealth*, 11(5): 59-61.
- Miller, G.J., & Evers, L. (2002). "Budgeting Structures and Citizen Participation." *Journal of Public Budgeting, Accounting & Financial Management*, 14 (2): 233-272.
- Miller, S. M., and Martin Rein. (1969). "Participation, Poverty, and Administration." *Public Administration Review*, 29 (1): 15-25.
- Mohl, R.A. (2004). "Stop the Road: Freeway Revolts in American Cities." *Journal of Urban History*, 30 (5): 674-706.
- Moynihan, D. P. (1970.) *Maximum Feasible Misunderstanding: Community Action in the War on Poverty*. New York: Free Press.

- Moynihan, D.P. (2005a). "Why and How Do State Governments Adopt and Implement 'Managing for Results' Reforms?" *Journal of Public Administration Research and Theory*, 15 (2): 219-243.
- Moynihan, D.P. (2005b). "Goal-Based Learning and the Future of Performance Management." *Public Administration Review*, 65 (2): 203-216.
- Natsios, A. (2006). "You Need a Balance between Efficiency and Oversight." *CommonWealth: Big Dig Revisited* (Fall): 62-64.
- Palmer, T.C. (1994, September 13). "Commitments to foes raise Artery price tag." *The Boston Globe* (Metro/Region): 1.
- Palmer, T. (2000, February 2). "Big Dig Costs Take A Jump of \$1.4B." *The Boston Globe* (Metro/Region): A1.
- Peterman, W. (2004). "Advocacy vs. Collaboration: Comparing Inclusionary Community Planning Models." *Community Development Journal*, 39 (3): 266-276.
- Pressier, V. (1997). "Citizen-Based Budgeting: The Redding, California, Experiment." *Public Management*, 79 (5): 18-21.
- Rose, M.H. (2003). "Reframing American Highway Politics, 1956-1995." *Journal of Planning History*, 2 (3): 212-236.
- Rubin, L. B. (1969). "Maximum Feasible Participation: The Origins, Implications, and Present Status." *Annals of the American Academy of Political and Social Science*, 385:14-29.
- Salvucci, F. (2002). "Interview" [Electronic version]. Great Projects: The Building of America. Retrieved August 31, 2009, from http://www.pbs.org/greatprojects/interviews/salvucci_1.html.
- Salvucci, F. (2004, March 30). "Reflections on the Big Dig." Speech, Wong Auditorium: Massachusetts Institute of Technology, School of Engineering Professional Education Program. www.mitworld.mit.edu/video/207.
- Savas, E.L. (1987). *Privatization: The Key to Better Government*. Chatham, NJ: Chatham House.
- Schick, A. (1969). "Systems Politics and Systems Budgeting (in A Symposium: Planning-Programming-Budgeting System Reexamined: Development, Analysis, and Criticism)." *Public Administration Review*, 29 (2): 137-151.

- Scott, J. (1998). *Seeing Like a State*. New Haven, CT: Yale University Press.
- Sennott, C. (1994, September 12). "Project poses a test for privatization" " *The Boston Globe* (Metro/Region): 1.
- Sinnette, J. (2004). "Building Public Trust." *Public Roads*, 68 (1): 16-21.
- Sorel, T. (2004). "Great Expectations." *Public Roads*, 68 (1): 10-15.
- Stergios, J. (2006). "Incentives for Performance, as well as Penalties." *CommonWealth: Big Dig Revisited*, (Fall): 62.
- Stitch, B. & K. Eagle (2005). "Planning to Include the Public: Transportation Policy Implementation with Effective Citizen Involvement." *Public Works Management & Policy*, 9 (4): 319-340.
- Stinchcombe, A.L. (2001). *When Formality Works: Authority and Abstraction in Law and Organizations*. Chicago, IL: University of Chicago Press.
- Sykes, A. (1998). "Megaprojects: Grand Schemes Need Oversight, Ample Funding." *Forum for Applied Research and Public Policy*, 13 (1): 6-47.
- United States Government Accountability Office. (1996). *Central Artery/Tunnel Project: Cost and Financing*. Washington, DC: Author.
- United States Government Accountability Office. (1997). *Transportation Infrastructure: Progress on Challenges to Central Artery/Tunnel Project's Costs and Financing*. Washington, DC: Author.
- Watson, D.J. Juster, R.J., & Johnson, G.W. (1991). "Institutionalized Use of Citizen Surveys in the Budgetary and Policy-Making Processes: A Small City Case Study." *Public Administration Review*, 51(3):232-239.
- Wildavsky, A. (1969). "Rescuing Policy Analysis from PPBS (in A Symposium: Planning-Programming-Budgeting System Reexamined: Development, Analysis, and Criticism)." *Public Administration Review*, 29 (2): 189-202.

- Wolf, J.F. & Farquhar, M.B. (2005). "Assessing Progress: The State of Metropolitan Planning Organizations under ISTEA and TEA-21." *International Journal of Public Administration*, 28 (13):1057-1079.
- Yang, K. & Holzer, M. (2006). "The Performance-Trust Link: Implications for Performance Measurement." *Public Administration Review*, 66 (1): 114-126