

Interview with David Luberoff, Adjunct Lecturer in Public Policy and Associate Director of the A. Alfred Taubman Center for State and Local Government at Harvard University, for Program Four: “The Big Dig”

Note: This transcript is from a videotaped interview for the “The Big Dig” segment of “Great Projects.” It has been edited lightly for readability.

David Luberoff (DL): The Big Dig is trying to solve about three problems. The first is to improve transportation access to downtown Boston. So you have an existing highway in Boston that is well over capacity, terrible geometrics. The Big Dig fixes that. It makes downtown Boston more accessible. The second is it doubles the capacity of the highway system going to Logan Airport, which is the region’s primary airport. And it’s critical for cities like Boston to have good access to the airport and then to have a well-functioning airport for the kind of economy that we have. People need to be able to get to the airport. The third thing the Big Dig does is it’s essentially an urban beautification project. So what you’re doing is you’re taking down this elevated, ugly highway that sort of rips through the city. And, if they do it right, you replace it with something that looks and feels a lot nicer for the city. So it makes downtown Boston a nicer place to work and then a nicer place to visit. The fourth thing it does is it opens up the old industrial waterfront in South Boston as a new locus for commercial development. So if downtown Boston is going to grow, it can’t really grow where it is. It basically is full of skyscrapers with the exception of several parcels. The idea is that downtown Boston jumps across Fort Point Channel into the old warehouse district. And that becomes an area of new development. And you’re already beginning to see that with the new federal courthouse and the new development that’s just been permitted for some of the waterfront land there. So that’s hopefully where growth will occur over the next twenty or thirty years in Boston. And then the last thing, like all big construction projects, it’s a major source of jobs which, right now, isn’t that important but as the economy moves in and out of recession can seem to be pretty important.

DL: When you go look at the project, it’s an awesome project. I mean, there’s that sense of any kid who ever played with a train set or a truck or in a sandbox. It’s amazing at an engineering level, just an amazing technical feat ... [that] they’ve been able to pull this off.

DL: Depressing the artery is using some relatively new technologies that I don’t think have been used to build underground highways, certainly not in the United States. They picked up some technologies that have been used in Europe. The idea of putting a major highway underground in the urban core is not a new idea. The idea of doing that while you left an existing highway operating on top of it while you did the work, is -- I think, nobody’s ever done it of this magnitude certainly in the U.S. The folks with the project have this great saying, it’s like doing open-heart surgery on somebody while they’re playing tennis. And the existing highway continues to function and you drive on it. You have no idea what’s going on a hundred yards below.

DL: This is a project that's gotten a lot of attention over the years. In part, because it's involved some great controversies and the press always likes a story that's got sort of a protagonist and an opponent and a big problem. It's clearly a major priority, for the public sector which is spending a lot of money on it; it's a major priority for significant players in the Boston economy who have focused a fair amount of attention on it. The biggest criticism right now is about the cost of the project. I mean, the project is costing substantially more than anybody had ever at least publicly stated that it would. There were previous criticisms at points about whether or not the project had as benign an environmental impact as its proponents claimed it would. So there were some great controversies in the late '80's and early '90's over both the general wisdom of the project from an environment standpoint and then some very specific elements of the project, most notably the way the project crosses over the Charles River. Whenever the cost rises, there's always a sort of press criticism about whether the project is being well managed or not, and whether or not they were completely up front about the magnitude of problems.

DL: This is a project, as you point out, that's gotten lots and lots of attention in the press. It's exciting; it's interesting. It has everything. I mean, it's got wonderful engineering so, you know, there's always an element that says, isn't this amazing. When it screws up, it screws up big time because [of] the magnitude of the project. So, you know, a design problem on the Central Artery is a five hundred million dollar or billion-dollar design problem -- and that's news. And, at points, it's made for great political drama. And again, the press has loved to write about that.

DL: In the '30's and '40's, there were two really significant ideas floating around about national highway policies. The first was this idea that you ought to connect all of the major urban areas of the United States with a national network of interstate highways. The second was a sense that one of the great problems that cities faced was traffic. That's where most of the people lived still. And it was where most of the traffic was. And the cities needed to have highways in order to modernize and compete in -- in the modern economy. This is a discussion that starts in the '30's. In the mid '40's, Congress says, yes, we think there should be interstate highways. We think that that system ought to include these urban highways but Congress doesn't provide any money for it. In the early '50's, coming out of World War II and the economic boom at the end of World War II, you see the auto companies and the petroleum companies and the rubber companies beginning to get concerned that they're selling automobiles but there's no roads to drive on. The congestion is this terrible problem and it's something that voters generally are concerned with, that government's not doing [enough], We expect government to do at least a few things very well, one of which is to provide transportation infrastructure. And so there's this growing both popular sentiment and an important segment of the private sector saying we need a more aggressive national highway program. And the Eisenhower administration, which in general was trying to cut back on federal, domestic spending -- Eisenhower himself embraces this idea that the federal government should build this national network of interstate highways. Now how does the federal government do that? It reverses historic policy in which the federal government might pay fifty percent of the cost of the new road and says, this is so important that the federal government will pay

ninety percent of the cost of the roads that are on this national interstate system. Eisenhower, himself, only saw this as something that would connect from urban area to urban area but did not believe that these ought to go into cities. Unfortunately, the votes were still in the cities and so to get the congressmen who represented urban areas to back this and – and their constituencies and mayors--the system was expanded to include these urban interstates which is what most mayors really wanted, most downtown business constituencies really wanted as part of their effort to modernize the cities which were already beginning to suffer a long economic decline. And so the urban highway has become part of this interstate system.

The deal with the interstate system--there's two critical factors. The federal government says we will pay ninety percent of the cost of these roads. And we are committed to paying ninety percent of whatever the total cost turns out to be. So it's an entitlement program as opposed to a grant program where the federal government says, you know, here's five hundred million dollars, State of Massachusetts, you figure out the best way to spend this. This reverses that. It says these roads are now on the interstate highway system. We think they're going to cost this much but we might be wrong. And if we're wrong, we don't [think] we'll be wrong by much because we've got good engineers who are doing sort of careful estimates. Over time, this becomes greatly appealing to states and localities. Right, you can get the federal government to pay for a highway and you might even be able to get them to design it to a slightly more expensive standard that you think will be better for your community. For a governor or a local politician, this is very, very appealing money, as long as the highway is generally something that constituents want because you don't have to raise local taxes. You provide a road in an era when people think roads are generally a really nice thing to have. So the public is happy. And you provide lots of jobs and contracts which is important if your economy's ailing and it's also important because it means that there's a smaller constituency that is very, very happy and might support your reelection or support your efforts to go to higher office. Remember you can only use the money to build an interstate highway. It's not like the government came and said here's a billion dollars. Figure out what your biggest problem is. The government comes along and says here's a billion dollars and you have to use it to build highways and, in fact, you have to use it to build this subset of highways.

DL: When Michael Dukakis takes office, he appoints Fred Salvucci as Secretary of Transportation and Salvucci has two great passions. One is transit and one is this idea that you ought to depress the Central Artery. Dukakis' great passion, at least on the transportation front, is transit. So Dukakis' first concern is that he doesn't want anything to get in the way of implementing this transit agenda. They've just gotten federal authorization to use some of the highway money to build transit instead, a major, major victory. And he wants that agenda to go forward. He doesn't want Fred Salvucci to be distracted by this artery idea which he's not even sure is feasible. He's not convinced it's a great idea. He's not convinced it sends the right message at that moment in time. And here's a governor who's elected as a pro-transit governor. He can't have the first thing that he does be building an extremely expensive highway project. Moreover, it's not clear that this highway project is even eligible for federal funding. Massachusetts is in the midst of a terrible recession and the last thing Dukakis wants to do is be putting

money into this highway project. So what he does is he says to Fred Salvucci, move the transit agenda forward. These are projects that are ready to go into serious planning. And if you want to do this artery depression thing a little bit on the side, I'm not going to shut it down. I'm going to give you enough room to test it out and see if it works and I'm going to reserve the right to make a go or no-go decision farther down the road when we see if it's technically feasible, politically feasible and fundable.

DL: Well, when Mike Dukakis takes office in 1975, there have only been very basic engineering studies done on whether or not this artery depression idea is really feasible. So the first thing you want to do is you actually want to do a little bit more serious engineering to see if it's going to work the way you think it's going to work. The second thing you want to do is go out to the key constituencies in downtown – both the downtown Boston business community and the residential neighborhoods around downtown Boston to see if this is an idea that they'll accept politically. So Fred is testing it politically. He's testing it technically and, at this point in time, it's not clear whether or not the project is eligible for funding from the interstate highway program. So Fred has to go down to Washington D.C. and see if he can convince the federal highway administration to make the project eligible for interstate highway funding.

DL: The original proposal that Fred Salvucci first put before Alan Altschuler and then pushed when he became Mike Dukakis' Transportation Secretary was to depress the artery and, in the median, build a railroad link between North Station and South Station, which were the major two railroad stations in Boston. These are stations that date to the late nineteenth century and have never been connected and, for years, people have been saying, geez, it ought to make some sense to connect these two railroad stations or finish the network. This is a very appealing idea. It was one that Dukakis was particularly attracted to as somebody who was very pro-transit. It, unfortunately, had innumerable technical problems. It was not clear how you would pay for that project. And it wasn't at all clear that it provided any serious transportation benefits. It's one of those projects that sounds really good but when you actually begin to look at how many riders you get for how much money you're going to spend, the numbers don't look that great. That was not a major concern for Salvucci at the time but the technical problems turn out to be somewhat daunting.

DL: The prospect of the rail link was very appealing. It helps bring Dukakis on board. It helps bring some of the environmental groups who are pushing a transit agenda on board and there's a small subset of people who believe passionately in rail and in the rail link. And so they're excited by this prospect. So, at least, at that point in time, it helps build a bigger political coalition for the project.

DL: When Fred Salvucci and Mike Dukakis come back into office in 1983 and assemble this grand project of the artery and the tunnel, the rail link dies several deaths. The first is that they make a decision that the new artery has to have more lanes than the old artery because the Federal Highway Administration had always argued, if you're just replacing the same number of lanes below ground, this is not really a highway project. It's a beautification project and we don't want to pay for it. Well, as soon as you add lanes,

you basically squeeze out the rail link because the space that you can build the underground artery in is constrained by the buildings on either side of the artery. So the right-of-way isn't big enough for four lanes in either direction plus a rail link. The second problem is that they make a design decision that the artery will be a fully covered tunnel.

DL: One of the things that's really striking about the death of the rail link in 1983 is it basically dies without anybody really caring. So something that looked important in the 1970's as part of the coalition in support of this project turns out in 1983 to not be all that important. There were a few environmentalist groups that complained but in general, everybody says, okay, that's fine. It's not that big a deal. Interestingly, about ten years after that, a group of people kind of rise up and say, no, there really ought to be a rail link and there's a whole new round of planning in support of that. And to make a long story very short, the artery figures out a way to advance the rail link a little bit without committing a lot of money or having to change the schedule or the design substantially. So the idea of the rail link survives and, as soon as somebody can find four, five or six billion dollars to build it, it might be built someday.

DL: I think on balance, people felt very positively about the Big Dig proposal that Salvucci puts forward in 1983. It doesn't appear to have any serious negative impacts. It doesn't look like it's going to cost Boston a lot of money because the argument is that it's federally funded. So here's a proposal that's going to make the city look better, supposed to fix these terrible traffic problems and it's not going to cost a lot. It's a no-brainer.

DL: Fred Salvucci had several localized problems. There are three biggies. The first is he has to go out to East Boston and sell them on this new tunnel. And this is very hard because Fred Salvucci and Mike Dukakis had made a great deal of their political reputation fighting the tunnel plans to East Boston. So they have to go out to East Boston and they basically say, look someday there's going to be a tunnel to East Boston and this is the best tunnel you're ever going to get. And, in fact, we think it's going to help you because, if it works, we'll pull some of the traffic off local streets. And the key here is that the tunnel comes up on airport land. It doesn't come up in East Boston, which was what the previous tunnel plans pushed by Ed King, the former Director of the Port Authority and then the governor, had done. So they say to the neighborhood, you don't have a tunnel coming up in the middle a neighborhood. You have a tunnel coming up over there in Logan Airport. They don't win over the hardcore opponents of the tunnel but they generally win over East Boston. There are lots of other problems in East Boston at the time and that is a relatively solvable problem. The second problem they have is in the North End of Boston -- a neighborhood that was greatly harmed by construction of the original Central Artery. And they have a very hard time convincing people that they're going to be able to build this new artery without closing off the North End forever. And there's some fight about what happens to the land the artery -- where the old artery was -- who's going to control the development of the new parcels that are created. Some of this is purely a political problem. There are North End politicians who are fighting this proposal perhaps on its merits, perhaps on the sense that they wanted to get their fingers into the pie.

And here Fred Salvucci has a brilliant strategy, which is he end-runs those people. They're disrupting all his public meetings, so he basically says, I'll do small private meetings, coffee klatches, I know lots of people in the North End and I can isolate this very flamboyant, very telegenic opponents of the project and sort of marginalize them off to the side by saying that they're in this for narrow, self-interested reasons. And a great selling point in the North End, of course, is I'm not going to take a single building in the North End, not one. And there's going to be this land created and we will develop a process in which you will get some control over that land.

The third key constituency is the downtown business community in Boston. This is a constituency that has been arguing since the mid '60's that they need a new tunnel to the airport. They think the artery idea is expensive. They're not convinced it's feasible. They're worried that the city's going to shut down during construction. And he says two things to that constituency. First is, you're going to get your tunnel but you're only going to get your tunnel if you support my artery depression. ... We have to make this decision within nine months. So there's a ticking time bomb and if you don't do what I say, you're never going to get what you want. The second thing he says to them is, look, construction technology is such that we can do this without being greatly disruptive to downtown Boston. We think we can get federal money for this, so it's not going to cost a lot of money. So if you think about this for ten minutes, you're going to say you can improve highway access to downtown Boston. You're going to get rid of this elevated highway and replace it with--we don't know whether it's going to be a park or small-scale development--but whatever it is, it's going to look nicer than what's there now. It's going to make your property more valuable and, by the way, the design opens up this area of South Boston waterfront where several of you would like to develop in the future. It ought to be a no-brainer for you. And the business community figures this out pretty quickly. They hired a consultant who came back and he said look, this is really easy. We're exporting an idea to Washington and we're importing money for a highway project. It's a no-brainer.

DL: Salvucci argues in 1983 that due to some interesting machinations that the state had done quietly with Federal Highway Administration in the '70's and '80's, the project is eligible for funding from the interstate highway program. The Reagan Administration, which is trying to cut domestic spending, says we don't think that that's right. We don't think this project is eligible and given that gray zone, the Reagan Administration, I think, is sitting there saying, why should we send lots and lots of federal money to Massachusetts which is governed by a Democrat and is represented in congress by people that, at least ideologically, we have some difference with; Ted Kennedy and Tip O'Neill who, at the time, is the national leader of the Democratic Party.

DL: It's absolutely critical to have – particularly to have – O'Neill on board. The good news for Massachusetts is you have the speaker and O'Neill makes it very clear that he wants this project made eligible for federal funding. And the bad news is that because it's O'Neill's project, it becomes a very convenient target for the Reagan Administration and for its allies in congress to point out as an example of the kind of pork barrel

spending that Ronald Reagan was supposedly trying to stop. The Reagan Administration is saying this project is not part of the interstate highway system. It is not on the original maps. We've never approved the plans for it and it's basically a phenomenally expensive urban beautification project. And therefore, we think on its merits, both legally and from a transportation point-of-view the project shouldn't be funded with federal money. If Massachusetts wants to do this with its own nickel, that's fine with us but we don't think this is a project that's part of the interstate highway system.

The Massachusetts response is, with the help of Speaker O'Neill in the mid '70's, we got this included in a relatively technical document called the Interstate Cost Estimate, although they argued at the time that that was a mere technicality but the law's very clear, if you're in the Interstate Cost Estimate, you're part of the Interstate Highway Program and we think this project has tremendous transportation benefits. O'Neill, on several occasions, holds up some national highway legislation arguing that I'm not going to let this legislation go through until we resolve this problem. The Reagan Administration can block him, and they have to keep making a series of sort of six-month and one-year compromises to revisit this problem. And ultimately, O'Neill can't get everything he wants unilaterally. The Reagan Administration can't get everything it wants--excuse me, the Reagan Highway Administration can't get everything it wants unilaterally. They agree to a quiet compromise. Reagan in vetoing the law that has this compromise in it, overrules his own Highway Administration and says no. I think this is a terrible project because he's trying to make a larger political statement in 1987.

DL: There's this interesting quirk. The Federal Highway Administration makes a compromise with the state. They find a way to compromise. It's because you can't have national highway legislation without solving this particular problem. But the Federal Highway Administrator had never cleared that compromise with either the Secretary of Transportation or the Reagan White House. Reagan, at this particular point in time, is knee deep in the Iran Contra mess and there was this whole question about whether or not the president was senile, whether he was capable of being president, and so he uses this highway bill which passes in the beginning of 1987, the Democrats have just retaken the Senate. So they're making this statement that we're going to make domestic policy. Reagan is trying to make a counter-statement that says no, I'm President. I'm engaged. I'm here and this is why it's important because if I can't get my vetoes sustained then those Democrats are going to run wild and what we've done for the last seven years will be for naught.

DL: The Federal Highway Administrator makes a compromise with the State of Massachusetts because that's the only way they're going to get a national highway bill passed. But he doesn't clear that compromise with either the Secretary of Transportation or with the senior officials in the Reagan Administration.

DL: It's the project's great moment. It sets up this extraordinarily dramatic fight in the Senate as to whether or not Reagan's veto will be sustained. And Reagan cites the project explicitly as one of the reasons why he is vetoing the bill. But the veto was about what should be the right level of federal spending, who's going to run domestic policy,

Congress or the Reagan Administration, how much pork is acceptable pork in the course of government. And you have this phenomenally dramatic showdown in the Senate where Reagan can't convince enough Republicans to support him because their states are benefiting from other pieces of this large highway bill and he ultimately goes down by one vote. Having actually won one day and then the Democrats convinced the one Democrat who had abandoned them to come back into the fold and they override the veto on reconsideration.

DL: The Senate is getting ready to vote on whether or not to sustain Reagan's veto. There are thirteen Republican senators who have said they will not support Reagan on this veto. Most of them come from states that do very well in this transportation bill. It's a highway and transit bill and several of them have significant amounts of transit money. A couple of them come from states, rural western states, where people have been very upset about the fifty-five mile an hour speed limit and the compromise bill allows states to raise the speed limit from fifty-five to sixty-five on rural highways. So you get two western senators who really want that sixty-five mile an hour provision and advocates of the larger bill made it very clear to those people that if they didn't support the larger bill, when whatever emerged out of the post-veto, would not include the sixty-five mile an hour provision, a sort of, you can have it now but if you don't back me up, I'm taking this back tomorrow. The last wonderful piece of this story, one Democratic senator, Terry Sanford, the new senator from North Carolina, votes to sustain Reagan's veto and he does so because North Carolina doesn't do that well in this transportation bill. That is to say that North Carolina gets back less in highway funds than it pays to the federal government in gasoline taxes. And Sanford says this is terrible. I promised people in North Carolina I wouldn't support this. So the question is, how do you get Sanford to turn around his vote? Tremendous lobbying pressure is brought to bear on Sanford and probably the most critical chain of events is some of the urban Democrats in the House of Representatives go to their colleagues from North Carolina and they say look, for years we have supported tobacco subsidies. This is not particularly popular or important for our constituencies. So if you don't find a way to convince your new senator from North Carolina to reverse his veto, the next time tobacco subsidies come up, we're going to vote against you and, you know, the American Cancer Society's going to cheer us on and it's going to be a great victory for us. And these representatives from North Carolina began to call Sanford and the people around Sanford and say, you've got to change your vote on this. It's too important on the whole for the state. Yes, we lose on the highway side but we do so well on the tobacco subsidy side that it's not worth making. And Sanford is put in this very embarrassing position of having to go change his vote. It doesn't happen very often in a place like the Senate where you see somebody reverse a position so quickly and so publicly and so blatantly in the face of great political pressure. Sanford switches. On reconsideration, Reagan's veto is overridden by one vote, that's Sanford's vote. And Massachusetts wins its fight with the Reagan Administration, gets the money it needs for the Central Artery and the country gets this massive highway and transit bill.

DL: There are two critical elements that go on in the design of the Big Dig. The first is it says we can build a major new piece of urban infrastructure without directly hurting a lot of people. Robert Moses in New York building highways in the '40's and '50's says, you

can't make an omelet without breaking eggs. Right. You can't build a highway through a city without having to go through neighborhoods and tear down buildings and make people unhappy but you have to do that for the greater good. The paradigm of the artery is we're going to leave nobody worse off and we're going to leave the region as a whole, better off. It's a very expensive strategy but the artery takes absolutely nobody's house. It's an incredibly important selling point. It does take some commercial properties but that's not as significant a problem.

That sets up a dynamic for what we now call mitigation. The first thing I say is look, I'm not going to hurt you. And so I'm not going to take your property. Now maybe even after all the design things, that something bad is going to happen to you during construction and so I want to mitigate that. I want to make it better. It might be as simple as saying look, it's going to be really noisy outside your apartment so I'm going to sound proof your apartment. It might be as simple as saying there's going to be a lot of dirt and it's summer time and you don't want a lot of dust so every night we're going to have a truck go down the street and we're going to wet down the dirt so it doesn't blow around. But this sets up a dynamic where anybody who can make a credible case that they're going to get hurt, can make a credible case that they're hurt ought to be addressed. So now it becomes not only are we not going to take a building in the North End but when we're done, we're going to leave you this really nice park to the North End for a sort of payment to make you better for all you suffered in these years.

This begins to snowball and a variety of interest groups in Boston that have laudable goals that they've never been able to find money for see this huge project that appears to have an almost unlimited amount of money, and it still needs lots and lots of permits. And so you have a bunch of interest groups saying, if I can make a credible case that I have a problem, and if I can make a credible case that I might be able to stop the permitting through this project--because in permitting, you have to go a hundred for a hundred, it's not enough to get ninety-nine of the hundred permits you need--then they'll have to deal with me if I can make a credible threat. And so this begins to escalate as the project gets towards the end of its permitting project and people begin to say, well, there's this park that we want and gosh, shouldn't we also build some transit because more people are going to drive and so you have to mitigate the air quality problems and on and on and on. So arguably at least a third, perhaps half, perhaps even more of the project is going to mitigate the harms or the alleged harms that come from building a highway in an urban area.

DL: What you get by doing this is you get this enormous coalition in support of the project. There are lots of people who support the Central Artery Tunnel Project, not necessarily because they think or care that it's a great transportation project but because it's going to fund their park or their transit agenda or their jobs agenda. You know, job training program and you get this sense of everybody who's active politically in the Boston region has something in this project that they care greatly about and it makes for this enormous, extraordinarily powerful coalition.

DL: There's a real question as to whether or not this is a viable strategy that lots of people can repeat. The key in Boston was the fact that people believed for the longest period of time that the federal government was going to pay ninety percent of the cost of this project. So as long as you took cost off the table, all of the people in the region who might say, geez, that's a little expensive don't you think, aren't part of the conversation. As the project has faced more and more funding problems, it's been somewhat more cautious in making agreements and, in fact, has gone back and revisited some of its mitigation agreements to say, is there a cheaper way to solve this problem? Or is this really a problem? Now some people think that there's a double dealing in that they made agreements that they're now backing out of.

I think the logic of mitigation is one that all major projects have to follow now. The first point which is trying to minimize the harms to existing residents and the second saying that it's not fair that some people suffer so the greater good can be achieved--that we ought to find some way to leave the people who are hurt by this project, whole. And so some amount of mitigation is reasonable but it's also critical that the people who are making that decision are also confronted with some hard fiscal constraints so that at certain points they can say, we'd love to do that. We can't afford it. And then we have to make a choice about whether it's still worth going ahead or not.

DL: I think if you look at big construction projects going on today, we are no longer building major interstates through poor, urban neighborhoods. We no longer clear whole neighborhoods. We generally no longer clear whole neighborhoods for urban renewal projects. We're much, much more strategic in design and in citing strategies. So if you look, for example, where are all the conventions and stadium centers being built or all the convention centers and stadiums being built today? They're generally built in old industrial areas, not in old residential neighborhoods. If you look at where new transit lines are often cited, they're on existing rail rights-of-way. Now the question of what we're going to do with older, urban highways is really complicated because, as the artery has demonstrated, the strategy of rebuilding them underground is phenomenally expensive.

DL: The Big Dig is the last piece of the interstate highway system that Dwight Eisenhower and Congress put together in the 1950's. One of the things that happens to the Big Dig in the 1990's is as its cost is rising and there's no other pieces of interstate highway system, there's less and less appetite in Congress to keep providing more and more money for this project but lots of people in congress always thought it was a kind of boondoggle going away present for Tip O'Neill. And so as the ground rules of federal highway aid change, the funding structure of the project changes dramatically. There are two critical things that happened. First of all, Massachusetts, which throughout the sort of mid to late '80's and into the 1990's was getting much, much more money than we sent to Washington in gas taxes because we were paying for this last piece of the national interstate system. Congress, in 1997, says that's it. You know, we have no great incentive to help you. We think this project's a boondoggle. You're all Democrats anyway. We're a Republican Congress and so we're going to send you back about as

much money as you send in gas taxes. That's a several hundred million dollar a year cut in the federal aid to Massachusetts.

More generally, starting in 1991 and continuing in 1997, Congress says this interstate idea was an interesting idea but it turned into this entitlement program and it set us up for people like Massachusetts getting their project eligible and then coming back again and again and again with cost increases. So what we're going to do now is, for most of the money, we're going to send a chunk of money back to the states and say, you decide how you want to spend it. You can build new highways. You can renovate old highways. You can build some transit but we're not going to make any of those open-ended commitments anymore, at least of the magnitude of the Central Artery. And so now projects like the Central Artery have to compete with all of the other projects in the state for money. Part of the beauty of the original argument for the Artery in Massachusetts was not only was the federal government going to pay ninety percent of the cost, but this is money we would not get if we don't build the Artery. It's not like we could get this money and spend it on something else. So it's found money. If we don't get it in Massachusetts, it's going to go to Arizona or Texas or some other place. Now Congress hasn't completely weaned itself of this because local congressmen like to be able to come back and say to their constituents, I got you a project and so you see, in federal highway and transit legislation, lots of specific projects getting specific funding. But they don't tend to be as big as the Central Artery. They tend to be several hundred million dollar projects, not several tens of billion dollar projects.

DL: Scheme Z is one of the great controversies of the project. It's a very simple problem. You have essentially a North-South highway, which is the Central Artery meeting a series of roads that together make up an East-West highway. If you built this in Kansas, you have a real simple solution. You build a cloverleaf interchange. You can't do that in Boston because you're in the middle of downtown Boston. And so they literally take all of the pieces of the cloverleaf interchange and they fold them on top of each other because there's one quadrant that's an old industrial area on the Cambridge Charlestown border, on the north side of the Charles River. And they create a ramp structure that's about a hundred and twenty feet high and they have this very, very wide bridge because you've got all of these traffic movements that are going on. And this turns out to be a fatal miscalculation for the project. There's the sense in Boston that the ramp structure is too big. You've just depressed this highway in Boston and you're sticking all these ramps over in Cambridge and Charlestown. You've got this bridge that's too big over the Charles River and the Charles River, yes, it's always been a transportation river but we also use it for recreation purposes. And it just becomes this enormous controversy.

DL: I don't completely buy the blaming the cost increase on the delay. This is one of the great controversies that Bill Weld inherits when he becomes Governor of Massachusetts in 1991. He has a permitted project but it has several very active controversies, the Charles River crossing being perhaps the most significant. And Weld says to his Transportation Secretary, go see if you can fix this problem because, on balance, I'd like to go ahead with this project. There's a very interesting point in the project because you

have a Republican governor replacing a Democrat but saying yes, we're all on board for this project. They spend about three years trying to figure out if there is a design solution that is buildable, fundable, and will satisfy the Cambridge interests, the Charlestown interests, the Charles River advocates themselves, and some important Boston interests. The design they come up with is about a billion dollars more expensive than Scheme Z. So that's the big chunk of the cost increase in the project in the early '90's. There is some more cost that is just the cost of the way this slowed down the project. But we don't really know what that number is. Construction inflation generally in the early '90's was very low when the region was in a recession, there wasn't a lot of construction business going on. So arguably the cost of delay for a year in 1992 is not that great.

DL: One of the interesting ways they solve this problem is they recognize that they have to have a signature bridge but this is so big that you've got to make it something that's really appealing. And they come up with this design that, I think, as it's being built, people have come to appreciate as really a new icon in Boston. This is single tower cable-stay bridge that is really quite striking. And it's really a very good example of how sensitive engineering can take something that looks like a problem and perhaps not only solve the problem but actually turn it into a positive feature.

DL: It's actually very interesting because, in the early '90's, the critics of Scheme Z and some of its successors were saying, this is going to be the widest bridge, you know, ever built in the world. And ... therefore it [is] a completely inappropriate solution for this problem of how to cross the Charles River. And it's ironic that now, as the bridge goes up and as people generally think positively about it, that its advocates are saying, it's the widest bridge in the world. Context, I guess, is everything.

DL: I think the question at the Charles River was, could you put some or all of the crossing and tunnels underneath the river, especially given that you put the artery in a tunnel and that turns out to have a bunch of technical and financial and perhaps environmental permitting problems. So although they looked at it, they could never really come up with a solution that they thought worked, particularly given the pressure that the rest of the project was ready to go. And so in the end, they basically instead built a better bridge.

DL: There are at least two good reasons to build the Ted Williams tunnel first. The first is you want to create a sense of momentum about the project. It had been in planning for years and needed to build something and it needed to be something that people could use and identify with. So politically it's a great success. The second is in the early '90's when the decision was made to go ahead with the tunnel, there were at least some people who were still not convinced that the artery depression was really going to happen, that it still looked like it had some political and financial problems. And the Weld Administration made a decision to decouple the artery from the tunnel and go ahead with the tunnel portion of the project figuring, worse comes to worse, even if the artery depression piece dies because of the Scheme Z controversy, we'll at least get the tunnel, which is what the business community, our core constituency, always wanted in the first place.

Apparently Tom Larson was very adamant about this. ... Salvucci would never decouple these two pieces because he was always afraid the tunnel would get out too far in front of the artery which is what he really carried about. And once the Weld Administration comes in with strong support from the Federal Highway Administration, they began to break the project up into chunks that you can build now, which has good political reasons and also is a good long-term strategy for them.

DL: 1990, 1991 is a critical point in time for the project. Mike Dukakis leaves office with incredibly high unfavorability ratings. Massachusetts is in recession. He is replaced by a conservative Republican governor, William Weld. Now every time since 1970 that Massachusetts had a new governor, that governor had taken the previous governor's plans for highways in downtown Boston, put them on the shelf and taken down what they wanted. So Sargent really wanted to build a modified version of the tunnel. When Sargent leaves, Salvucci and Dukakis come in, they put the tunnel on the shelf and they take down the artery. They get defeated by Ed King. Ed King puts the artery on the shelf, takes down a different tunnel plan. Every governor since 1970 had seriously changed the transportation plans for downtown Boston from his predecessor.

DL: 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. I think that the Charles River Bridge might become a symbol of Boston in the way that things like the Statehouse Dome or the Custom House Tower are symbols of Boston. It's very striking. It's visible from great distances when you're on the hills of the communities around Boston. It's one of the three or four things that really sticks out that you can see and point to. So it'll become something people in Boston use as a sort of visual reference to know where they are. My guess is, at least in the short-run, it'll be remembered as a phenomenally expensive project that may or may not have been a mistake. And that view will probably fade with time. I think students of engineering and urban planning will continue to study it to learn both from its successes and from its mistakes.

DL: There are parts of the Big Dig that'll be a model for other cities and there are parts of the Big Dig that'll be a cautionary tale for other cities. I think it's a model in the sense that its planning process was very open. It's a model in the sense that extraordinary efforts were made to see if you could provide new infrastructure in a way that didn't seriously harm other people. It's a cautionary tale about how that kind of approach can get out of control if you're not also paying attention to funding mechanisms and making some set of judgments about whether or not whatever you're spending money on is something you would spend your own money on as opposed to this idea of federal money which is sort of politically seen as money from heaven. And so it has both some very positive lessons and also a great kind of cautionary warning. The other great cautionary warning is how hard it is to estimate costs correctly when you're going into something that faces serious, both technical uncertainty and political uncertainty, particularly in the

very complicated environmental permitting process that projects like this have to go through.

DL: Well the official cost estimate of the project goes from the original idea of depressing one mile of the Central Artery in the mid 1970's [which] was costed at about three hundred and sixty million dollars. And the original estimates for building a two-lane tunnel to the airport, which was the proposal that the Sargent Administration put forward was a couple hundred million. So the original cost estimates for this were probably about a half a billion dollars. By the mid '80's, the price tag is up to about 2.4 billion when Congress finally says, yes, we'll make this project eligible for the interstate system which is really the critical go/no-go decision. The cost was estimated at about 3.1 billion. The price tag today is estimated to be at about fourteen billion and that doesn't include the cost of a whole bunch of mitigation agreements that are part of the project but not included as official price tag. There's about a two to three billion dollar transit agenda that became part of the project in the early '90's. So the total cost of the project is arguably somewhere between fifteen and twenty billion dollars.

DL: The cost increases are due to several factors. Some of it is due to inflation. That 3.1 billion dollars in 1987 is going to grow by the year 2000. And probably somewhere between twenty-five and fifty percent of the cost increase is just inflation over the life of the project. A good chunk of the rest is due to design changes. So as the project went forward, more and more elements got added to it. So, at some point in the mid-'80's, they added a new interchange at the southern end of the project and that adds several hundred million dollars to the project. And the other large chunk of the cost increase is all the mitigation agreements they made with all of these varying groups and neighborhoods and constituencies to allow the project to go forward. So one of the things that happens is once the project clearly got its funding and before it's permitted, lots of people were trying to make sure that all of their different kinds of issues got addressed. And that's substantially what drove the price of the project up.

DL: Projects like this have two great challenges. One is assembling the political coalition that allows you to actually go ahead with something of this magnitude. And the other is, then having assembled that coalition, actually going ahead and doing the actual technical work. Now the technical work of this project is phenomenal and extraordinarily complicated and amazing. But, in many respects, the political work that preceded it is even more amazing because it was so hard and the testament to that fact is that there are very few projects that look like this around the country. The projects that haven't been built are not built because people look at the engineering and said, well you can't do that. They were not built because people looked at the politics and they said, you can't do that. And so the great story here was assembling and holding together a political coalition in support of the project.