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Alan M. Voorhees Transportation
Oral History Project and Archive

Interview with Thomas Deen, January 2013
Conducted by Nicholas K. Tulach
Edited by Robert B. Noland

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ALAN M. VOORHEES TRANSPORTATION CENTER
Rutgers, The State University of New Jersey
33 Livingston Avenue, New Brunswick, NJ 08901

Disclaimer Statement

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[Interview Part 1 begins]

Nick: Alright, so I'm Nicholas Tulach, I'm a researcher with the Voorhees Transportation Center. This project is an oral history project that is. . . that is focused on recording in their own words, some major transportation professionals who have taken time over their careers to make contributions to the transportation field. And this is yet another way them to give back to that field.

This is Tom Deen, who has held many roles, among them, the President of the Voorhees Associates and also the Executive Director of the Transportation Research Board over the years. And he's with us here today to talk about his career in transportation.

So Mr. Deen, thank you for taking your time out today. And I would just like to begin by having you talk a little bit about your professional career and where it began, why you chose to go into transportation and where you began your career and who were the important people that influenced you in the early parts of your career?

Tom: Well let me at the outset what we were talking about when you first came in.

Nick: Sure.

Tom: This room that we're in is the suite that is occupied by the Executive Director of the Transportation Research Board. During the annual meeting, there will be well over 11,000 people registered to attend this meeting, and this week.

And well I no longer occupy this suite, I'm good friends with the Director and he wasn't using it, so he permitted us to use this, use this room. A lot of transportation history has taken place in this room.

I first occupied it 1980 when I came to TRB, and occupied it for fourteen years at the annual meeting thereafter. It turned out this hotel, the Marriot in Morton Park, in those days was the Sheridan Park Hotel, was, has been the main hotel for the TRB annual meeting since 1950, in the early 1950's, '53/'54/'55/'56, somewhere in there. I came to the first meeting at TRB in 1956, and it may have been the first year that this hotel was the main hotel for TRB.

And it's historically interesting because next year or the year after, will be the last. . . I think next year will be the last year this hotel will be used, because the meeting has gotten so large that and it continues to grow, and can no longer be accommodated in not only this hotel, but we occupy this hotel and six others.

And the requirements for shuttle services and limits on the number of individual meeting rooms is getting so tight that we're moving down to the Convention Center, in the Center of Washington, which wasn't available at all until recent years when they built that in a cluster of hotels that surround it.

So the fact that we're meeting here may have been the last chance that we would get to do that, and that may be significant as well. It is for me, at least individually, but it may not mean much to the profession.

Nick: So take me. . . take me back, you said 1956 was your first TRB?

Tom: Yeah.

Nick: Take me back to that. What was it like when . . ?

Tom: I'll do that. And the reason I was at that meeting, I was a student. I was a grad student myself at Yale. They brought us in as the Yale Bureau of Traffic; it was one of the few schools that offered graduate programs for transportation in those days. It was centered more on traffic operations, but I got exposure to transportation planning. And without that, I'm sure I would have never pursued the course that my career, in fact ended up taking.

In that case, that Yale class which probably had twenty or twenty-five people in it, for the one-year program that they offered, brought the entire class to the TRB meeting, which was then the HRB; it was the Highway Research Board at that time. And they brought us down here in a bus and it was really an eye-opening experience for me, as it has been for students in the many years intervening.

I had never seen such a wide array of things that people were interested in, in the transportation field. If you call the fifty, in 1956 was the year that the so-called "'56 Highway Act" was passed.

Nick: Uh hum.

Tom: . . . Which provided the funding for the interstate highway system. So you can imagine that it was a big year. There were, I think that year maybe had somewhere around 2,500 people at the meeting.

Nick: Wow.

Tom: It was a big meeting, even then, though nothing compared to now. But a bewildering array of people who were talking about how to build pavements and how to design freeways in a way that they were safe, the length of merging and weaving sections and the length of acceleration lanes, size, traffic control, design problems, feeding them in cities. Just and bridges, all sorts of bridge sessions. Geotechnical sessions, right-of-way sections, legal problems, financing, administration, essentially all of the problems we have today, except they were focused mostly on highways at that time.

Nick: Uh hum.

Tom: So that's how I happened to have been here at that meeting. And it was an inspiration at the time and though I'd already decided to get into transportation, I had no idea what I was getting into, and that was a real eye-opener in that sense.

Nick, you asked about how I got into this business and let me start back. . . I had to start back before that because I wouldn't have been at Yale if I hadn't already gotten some interest in it.

And in reflecting on this, because you indicated to me that you wanted to talk about my early career and how I got into this thing in the first place. And I so I thought a little bit about it in waiting for you and my career was just good fortune, I guess, fortuitous in a lot of respects. I think that.

I was a civil engineering student back in the late '40's and early '50's and the Korean War was going on, and nearly everybody that got a degree immediately was sucked into that war, if they were physically fit. And I was in the ROTC program at the University of Kentucky, where I was born and raised.

My parents had both graduated from the University of Kentucky. My father was employed at the university. And I just, they weren't interested in engineering and somehow I found that I did well in math and science and that sort of thing by early in my first year in school, and decided to get into engineering. I didn't know what engineering was really, I mean I had heard of it, but I really didn't know what they did, and was interested in architecture and got into architectural engineering, and made very good grades all the way through, and found I was good at it.

So but I did not want to, you know I was going to graduate with a Second Lieutenant's Commission in the Reserves, but I knew immediately I would be sucked into going to Korea. I wasn't particularly anxious to do that. So it turned out that the Kentucky Highway Department was; their program was expanding.

It was after World War II and people were buying cars left, right and center. There were no roads to speak of. Many of the roads in Kentucky, in a state like Kentucky, had just been paved for the first time in the decade prior to this. And the cities were not equipped to handle this influx of traffic and everybody buying cars.

And so the Kentucky Highway Department had set up a bridge office in the engineering school, where they could use seniors in the engineering department to help them design some of their standard bridges. So they moved a top bridge engineer from the department over to the drawing room. And we could get a job, for the first time, even though it was the bottom rung of engineering salaries; it was the best money I'd ever seen.

Nick: (Laughs)

Tom: And so I delayed my graduation by a year by just taking a few courses and worked almost full-time there. And it was delaying me graduating, so I wasn't going to get, end up in Korea. So, so I took five years to get out, but made some good money in that last year and learned something about bridges and got further exposure to some of the faculty, who were beginning to talk about transportation and traffic as being one of the areas that you might be interested in.

There was a Professor Blake there that put me on to the Eno Foundation, which I'd never of, but which you probably are familiar with.

Nick: Uh hum.

Tom: And they, I got on to their publications. They gave me, I found out I could get a subscription to Traffic Engineering Magazine. I found out about the Institute of Traffic Engineering, which is now the Institute of Transportation Engineering. And so I'm beginning to think that might be something I'd be interested in when I get out.

But I couldn't delay it forever. I got my degree and sure enough, I got called up immediately. And they offered programs for all the engineers once you're in the service. I was in the Air Force and they would offer a year's graduate work at any one of six universities if you'd go into meteorology, because they needed weather people, if you had science and math background.

And that kept me out of Korea another year, so I signed up for that. And one of the schools they offered was at the University of Chicago and I had a girlfriend in Chicago, so that's why I went up there.

Nick: (Laughs)

Tom: I spent four quarters at, a full academic year there. And came out of that as a meteorologist and immediately put on duty there, and within six months was in Korea anyway.

(Laughter)

Tom: So all of my efforts. . . But it did, it was effective because the war was still going on and it was a dirty, difficult, hard war. People have forgotten about it now, but it was tough. One of our first efforts at alliances, because it really wasn't a war in which we were the main. . . Well we were the main ones, but it wasn't a war between us and South Korea, it was a war between the United Nations police action.

Nick: Uh hum.

Tom: But it was a full-fledged war with hundreds of thousands of troops. And while I was on the way over there, flying in the airplane, they did a cease-fire. And that's the cease-fire that still exists today.

Nick: (Laughs)

Tom: They were never able to go further than a cease-fire. But it was a very tender cease-fire and they'd had several prior to that that never had held. And so it wasn't clear that this one was going to hold. And in fact, we had a couple of bombing missions, the Koreans, the North Koreans flew over us, and we had to dive for foxholes and all of that.

But I was lucky; I "fundamentally" wasn't shot at, even though I was living in wartime conditions.

Nick: Uh hum.

Tom: I went through. . . But in order to take that year's program the Air Force offered, I had to agree to stay in for another three years after that. So I had to stay in for several years. And after four or four-and-a-half years of service, I was going to have to decide whether to stay in and make it a career, they were offering that to me, or to get out.

And so I put in for a fellowship at Yale, offered by the Automotive Safety Foundation, which was an organization, it's now called Highway Users Federation for Safety and Mobility, HUFSAM. But at that time, it was ASM, Automotive Safety Foundation. Yeah, there were a number of fellowships that were offered.

And so I decided, and by that time I had gotten married and my wife and I decided "Well if I get accepted to this fellowship to Yale, I'll put in for resignation. I'll get out of the service. If I don't get it, I'll stay in." Well there's, you know, I was just lucky and I got the fellowship.

Nick: Uh hum.

Tom: Because I might have ended up with a career in the Air Force. And I put in for my resignation of the Air Force and within a couple of weeks had it. And we put everything we owned in the back seat of the car. I was stationed in Denver, Colorado at the time, and we drove for the East Coast, where I'd never been.

And we, we enrolled in Yale and spent, I finished their program a year later. It turned out I got out in the class of '56, which was the very year that the Interstate Highway System funding was available. And my wife was from Nashville, Tennessee, and so I took a job in Nashville. Of course all of her family was there and it wasn't too far from Kentucky.

There were job offers in every direction by the way. When we came out of school. . .

Tom: When we came out of school, if you were a warm body, they would grab you. And so I had offers in a lot of places. And many of these places were cities that had never had a traffic engineer, never, you know the police department and their public works engineer had erected some signals and stuff, and that's all they knew about it. So to have a professional traffic engineer with some training was a rare thing for us in those days.

But I decided to go to Nashville. It turned out, another lucky break. The mayor of Nashville Tennessee was a man by the name of Ben West. He happened to be President of the American Municipal Association that year, which is equivalent to the Conference of Mayors today.

And they, the American Municipal Association, was aware of the fact, the cities were keenly aware of the fact that this interstate program, if it passed, was going to have dramatic impact on them. And they knew that the state highway departments were going to build these roads through there; cut the cities up. And they didn't know how to respond to that, but they knew it was going to have a huge impact.

And so they had been doing a program with, in conjunction with the American Society of Planning Officials or the American Planning Association, one of those organizations, to do this. So the procedure manuals, "Do-It-Yourself Transportation Planning" manuals, they are still available in the libraries.

It was called protocol, A National Committee on Urban Transportation. And they had planned to produce about twenty procedure manuals to do your own transportation studies. And about half of them were done, and they were urging cities to begin to implement these things.

So I had only been there about a year or two and had met the mayor a time or two, when, and I was Assistant City Traffic Engineer there. They had a professional traffic engineer in Nashville. And I was working for him, doing things like putting in the first coordinated signal systems and all of that sort of thing.

And the mayor wanted his city, since he was President of the society, to be one of the first cities to undertake to use these manuals. And he looks around and there was nobody around. . .

(Laughter)

And he says, he called me up and he said. . . He told me about this program, which I had never heard of. And he said "This interstate system is coming in and the state highway department is planning all of these roads, and they're going to tear up the city. And we need to integrate this with our system and have something to say about it, and that's what this is all about. And we don't have anybody else, and so will you take this program over?"

And I had no idea, you know because planning had not been a major part of that curriculum up there. But I, I was a one-eyed man in the land of the blind. And I had to organize. I had to set up a coordinating committee for the whole county, including two or three of the suburban cities, plus the city and the state highway department and public works department, Citizens Coordinating Committee and advisory committees and all kinds of stuff. Plus hire a staff and begin to survey the streets and do travel-time studies and produce reports and all of that.

And it was a. . . And in so doing, the mayor took me with him to Washington to meet the people that were preparing these manuals. And it was then, it was 1958, and I met Al Voorhees on that trip and Carlton Robinson and I met Grant Nichol who later became, I think he was a Deputy Federal Highway Administrator and he later became, for one year, Executive Director of TRB. And I met a number of people who later became major, major proponents of the urban portion of the highway system.

And they also, the mayor was very progressive and he urged me to fly out to San Diego where they were doing a study. And I met a number of people out there, including Ed Hall and they were well along in their study. I met several people that I later hired, when I came to Voorhees. (Laughs)

But it was a real. . . I mean what an opportunity. I mean I didn't. . . I mean I kind of knew it was a great opportunity, I knew things were happening but they were; you know, it was pretty much more than I could absorb.

Nick: Uh hum.

Tom: And I was hanging on by my fingernails running our own program, so. . .

Nick: Right, really putting your feet in the fire at the beginning of your career.

Tom: And I spent, so I did that for about a year-and-a-half and got that program going. And in the, in 1959, we'd gotten an Arts & Destination Study going for the city.

Nick: Uh hum.

Tom: But the state was running it, but they were part of our committee, so it was part of our program. And the use of computers was just coming in to transportation. We used them; Al Voorhees was pushing the gravity model and Wilbur Smith & Associates. . .

Wilbur Smith was one of my professors at Yale, and he had about the only transportation consulting firm going in those days. And so we hired him to do our Arts & Destination Study and got familiar a little bit with the use of data processing equipment and computers and all of this huge data collection effort.

And IBM, I met people at IBM, because we were using mainframe computers. And they offered me a job; they hired me away from the city as a computer expert. Well I didn't know anything about computers. . .

Nick: (Laughs)

Tom: So they immediately put me in their training program. I spent a year working for them and was not happy. They're a great company, but it was taking me away from transportation.

Nick: Uh hum.

Tom: . . . Which I was really; had really gotten hooked on by that time. And about that time and here another lucky break, some of the people I had met in Washington were doing the Washington Study. And they had come up with a need for a metro, a rail transit system from Washington.

So when President Eisenhower was President in the late '50's, he got a program through or somebody got a program. Congress passed a law setting up something called a little special agency to develop the plans for a rapid transit system, a rail transit system for Washington, and to recommend what the highways program should be in the Washington area.

The District Highway Department in Virginia and Maryland had proposed an enormous interstate program in this area. And there were a lot of, beginning of the first freeway revolts were beginning to occur. And people were saying "Well wait a minute, do we really want this eight-lane freeway coming down right through here?" one example, Connecticut Avenue.

Nick: Uh hum.

Tom: And of course it was destroying a lot of people homes that were very important and weren't used to getting shoved around. And they saw that a rail transit system made sense so they set up this little special agency called the National Capitol Transportation Agency,

NCTA. And it was set up, it was going. It was a little, special temporary agency, reporting to the President, to do this study, and to make definitive plans to Congress and to the President for both the highway program and the transit program.

Well the transit program itself was controversial enough, but the idea that some little, special agency was going to tell the Bureau of Public Roads and the District Highway Department of Virginia and Maryland Highway Departments what roads they were to build in this area did not set well.

Nick: (Laughs)

Tom: It was enormously controversial. And but I had met enough people up here, and I guess I must have impressed them enough because when they set that agency up, some of them that had been appointed to it, they had been two professionals employed by that agency in the couple of weeks it had been in operation. And one of them said "We need to get Tom Deen up here." Again, it's a one-eyed-man in the land of the blind.

(Laughter)

Because there were, the few people that were available were being pulled into all of these other places. And they called me up, and I was not happy at IBM, so I decided I'd to move as well. It was one of the hardest decisions I ever made, because we had to leave my wife's family that we were very happy with. I had just built our first house, I designed and built it. We'd been, just moved into it a few months on one acre of ground.

Nick: Uh hum.

Tom: And to move up here in this high cost area in which we were prices were out of sight, by my feeling, in those days. It was a very hard decision to make. But it was the best decision I ever made, because we got up here and we started working on it. And I got the opportunity to, for the first time, not only. . .

Well let me say this, that the District Highway Department and the Bureau of Public Roads were in, realized they were into some trouble over the metropolitan area and the highway program. Not so much in Washington yet, though they knew objections to some of their proposals is one of the reasons this NCTA had been proposed and in fact passed, and funded.

Nick: So they had. . ? So they had already had road proposals in the DC metro area from the Bureau of Public Roads at that time?

Tom: Well yes. See there was a yellow book, a so-called "yellow book" that laid out the basic routes. They weren't definitive right-of-ways, but they were large metropolitan area maps with lines through it, because they had to connect all of these interstates in the major cities. And so how they did that in some of the loops and beltways and stuff, they laid those out in the yellow book.

And so Washington had one of those, but they actually hadn't gotten around to doing the construction drawings and stuff required to begin to actually build. And therefore people didn't

know exactly which houses were going to be taken. But a few cities were ahead of us, and Baltimore was one of them.

And Interstate 70, 70 or 75, yeah 70, I guess coming in from the west into our bowl was one of the earliest, real dogfights. And they embargoed their own freeway in San Francisco. And so they were beginning to see they were having trouble, that there were troubles ahead. And so, and so they wanted to do a re-study, a detailed study of the Washington area, exactly where these roads would be and what the sizes should be and how to link them together.

So they had a study going and here this NCTA had a study going. And they were going to use the same number, they were going to call it different numbers, the fight would be over whose numbers were right?

Nick: Uh hum.

Tom: So I happened to run into the fellow that was running the highway side of the study, a fellow named Lee Mertz, who I think was a Bureau of Public Roads employee but they had lent him to the District to do this joint Virginia and Maryland DC study of the Washington metropolitan area. And so we decided, and we hit it off well.

And neither one of us felt we really knew what we were doing, but then no one did. And we decided let's do a joint, lets develop our models, our traffic models with the same data. And we'll try to, if we possibly can, agree on what the numbers are. And then the fight will be over interpretation and what it all means.

And we did that, we decided, we worked together. They were doing a new Arts & Destination Study for the district and for the metropolitan area. I agreed we'd use those numbers and then we'd develop joint models. We went to our boys, we'd figure out what they were doing.

And the bureau was, for the first time, developing the software to operationalize a gravity model in a large, metropolitan area. And so the software was going to be available, it had to use the only computer that would handle it, was the IBM 7090, which was at the US Bureau of Standards. And the only time we could get to use it was the middle of the night.

(Laughter)

But that was a major achievement in being able to use that. But it also involved, for the first time, the development of a modal split model, to separate transit usage from highway usage. Most of the models had been developed, up to that time, in fact all of them had just assumed that the vast majority of the travel would be in highways and they would just forecast highway usage and kind of ignore the transit.

Nick: Uh hum.

Tom: But with the problem we had here, we couldn't ignore that. We had to deal with it exclusively.

Nick: And this was 1960/1961?

Tom: See this was. . . This time, I moved up here in the. . . Moved up here a John Kennedy was being inaugurated, and they had this giant snowstorm. It was in January of 1960.

Nick: Uh hum.

Tom: Or was it '61? '60, I believe. I think '60. And then. . . What did you ask me?

Nick: Um I was just; I was trying to get a sense of the time.

Tom: Yeah and so I'm being employed in 1960. So by the time we got around to. . . It took me a year to work out these relationships with Lee Mertz and all of that. So it's probably 1961 that we were really forging ahead. And we, I, we found a company. I have forgotten the name of the company now, in Toronto, Canada that had done a modal split model for the Toronto metro. They had the same problem up there a little earlier.

Nick: Uh hum.

Tom: And they believed they could to it here. And so I hired them as a consultant. And they developed the concept of the model and then I used it and applied it. And I remember, and produce a report on our recommendations in 1962, I have forgotten which month. But a 1962 report, that report is still available, that recommended that should be used and we eliminated a number of highways and was that ever controversial.

Still it's amazing because the ones that we did recommend, they weren't able to build all of those, either. So but we were just the forerunner of . . . But we said that we could substitute rail transit and that we would build a good system here and it would be able to reduce the need. And some of this Connecticut Avenue Freeway that comes right by this hotel was one of the ones that we eliminated.

We eliminated the need for the Three Sisters Bridge, which was another very controversial project, and a number of others. There were a lot of roads that had been proposed that never were built. And even some of the ones we recommended were never built. In fact, they cut it back too much, in my opinion.

But part of the reason that the District that the was able to get away with that is that the District population at that time, as I recall, was about 800,000 and their forecasts were to go up to 1 million. But the fact is, they continued to decline. They went down about as low as 600,000 or 550,000 or 600,000 for the district itself.

Nick: Uh hum.

Tom: The metropolitan area was still growing like mad. But it turned around and now it's growing again. But that, that permitted them to get by without a lot of roads, and putting in the rail system helped. And the rail system was a big factor, I think, in the rejuvenation that we're experiencing now as well. But we were able to produce that our numbers and I remember

doing my first big paper for the transportation research. I can even take you to the very room in this hotel. There must have been 500 people in attendance that day.

Nick: Wow.

Tom: And that, the use of those models, and particularly the explicit forecasts of transit demands as well as highway demand out of the same set of figures was a real new experience. And it was obviously a real boost to my career because people all over the country were watching that.

Nick: Uh hum.

Tom: And the fellow that did the software development to operationalize the gravity model, a fellow named Walt Hansen, who was a Bureau employee. And that's important because he ended up being one of my partners at Voorhees, and of course interacting with Al Voorhees, because I'd used him to develop some of our land use work that we did.

And we also did some recommendations about converting some of the roads, we didn't just eliminate pieces of the interstate, but in some cases, we said "This can't be, shouldn't be a freeway, a total. . . it should be a major arterial street of a special quality and we proposed and laid out exactly what those streets should be and how that design should take place. Well Al Voorhees helped us do that.

So after producing the '62 report, and by the way, I wasn't employed as a Chief Planner for the Metro at that time. I was just a junior guy. I was just a couple of years out of school and had this experience in Nashville. But I was in charge of all of the forecasting and all of. . . Which was a very controversial part of the whole project.

And shortly after the '62 report, there was kind of a hiatus while Congress was trying to decide what to do, and a lot of the senior people left. And I just kept getting promoted and the first thing you know; I'm Director of Planning for the operation. And we had to do some additional iteration of our proposals for the metro, as we got feedback and so on, and so I ended up as Director of Planning and producing some of those subsequent reports.

And about 1964 or thereabout, Al Voorhees decided to form his company. And he hired Walt Hansen, who was the guy at the Bureau of Public Roads. And he and Walt started a business together in the basement of his home. And Al had made a lot of contacts around the country and he was famous for his gravity model. And he had graduated from the Yale program a couple of years earlier than me. In fact, his thesis was the gravity model, which was still a published thesis there.

Nick: Uh hum.

Tom: And so, so he, Al came to me and by this time he'd hired another couple of guys who were experts in highway design. And he came to me and he said "I need a transit guy as part of the team. And you know more about transit than anybody, which was about this much (gestures), but it was more than most people. And I had certainly the way to integrate it into the planning of highways. I was kind of a unique character by that time.

And so I decided to come over with him and bought some of his stock and took what meager savings I had and joined up with him. We were five partners and by that time, I think there were ten employees. And we moved up here on New York Avenue and immediately. . . And so, so that was good fortune, meeting all of the right people.

These programs are coming through the . . . It had been at work for at least twenty or thirty years. I mean the proposal for an interstate national program of highways had been around for a long time.

Nick: Uh hum, yeah.

Tom: I mean it takes a project of that size, it takes a long time for it to simmer and then the war had taken and interrupted. And then after the war, this huge influx of automobiles and all of that, so it was a propitious time for a guy to be coming through school. And if you had any talent at all, you were going to succeed in those days.

So I had come with Al and immediately began to get contracts with the metro. They were still struggling. And I directed, through the Voorhees Company, a lot of the work that was where they integrated the bus system. There were three or four independent private bus and street car companies in this area and they were all traumatized about this idea of a rail system and it clearly was not going to work.

So we had to buy them out and then you had to integrate them into the system. We did all of the studies that were associated with that. I hired a number of very good people that were very interested in that sort of thing. And that experience propelled us into doing work in Boston and all.

You know, and another good fortune is that by 1962, ’64, you had the ’64 Highway Act which, the ’62 Highway which required planning in all of the cities before you could qualify for the construction money. Well you know, well you can see by this time I wasn’t unique, I mean there were a lot of people. But compared to the need, there was such a scarcity.

Nick: Uh hum.

Tom: And so by this time, I was excelling in the business and we, and so these cities all wanted to know what should the study design be for their program? Well Al and I would go in and Walt and with the experience we’d had, we’d lay them out a program and then they’d want to use us to help them oversee it for a while.

Nick: Uh hum.

Tom: And so we, we were stretched then. You know, we were running everywhere. Hiring people as best we could and having to train them to do the work. But there was money available, I mean there was money in the system and people were desperate to try and solve it.

At this time, construction was starting. In many places, they started doing the interstate in rural areas and places that weren’t controversial. But the cities wanted their share and they

wanted to begin to move into that and some of them where they had the plans were already meeting tremendous resistance. And so it was clear that the cities were really wanting help and we were in a position to give it to them, so that was another very fortunate, lucky break for us.

And up, you know, the transit side of it, we got a reputation for knowing how to do that. A lot of companies knew how to do highways, well not enough, but there were a growing number. The number that could say that they knew something about transit also was really scarce. And so our transit side of our business built up to where it was half the total company's business at one time, and I was just overwhelmed with it, really.

Nick: Were there. . ? So during your Voorhees time, especially in the early years of Voorhees, were there particular projects that stand out in your mind as being particularly important, particularly difficult?

Tom: And I wasn't involved in all of them, obviously. The transit ones were mine. We got into international work, with the Caracas, Venezuela wanted to do a rail transit program. They came to Parson Brinkerhoff, but Parson Brinkerhoff at that time knew the engineering side but didn't know the planning side. So we formed a joint venture with them, and I became the partner in charge for the Voorhees side of going down to Venezuela and getting that program started.

But we were doing other things, we did the new. . . Australia wanted to set up their new capitol in. . . Where did they set it up? The capitol of Australia. . .

Nick: Canberra or something like that?

Tom: Canberra.

Nick: Yeah.

Tom: And Canberra was just a pretty much a gleam in their eye at the time and we set up Al, Al was the main principal in charge of that, but Walt Hansen also worked on it. And I went down and worked on it. And so you know, working out the street plan and the transportation system for a new capitol was a heady experience for a young. . .

The same thing, there were new towns being formed, being proposed by huge land developers, Reston and the one over here in Maryland. . . Gosh, I'm blanking on it. Columbia; Columbia, Maryland and there were probably proposals for a dozen new towns scattered around and we were involved in a lot of them.

Al worked out the whole transportation system for Columbia and we worked on Reston as well. The New York City and Manhattan, all of the old Marine piers around the tip of Manhattan out, all up the Hudson River, all of those were being moved over to New Jersey and to the outlying container ports and so you had these rotting piers and the opportunity to form new land in a very valuable area.

So the city of New York and the Port Authority and several groups hired a consortium of Skidmore Owings & Merrill and some economics firm that I can't remember right now, and ourselves to do the whole land use and transportation plan for what's now the World Trade Center.

We did all the street systems and the connections to the subway; connections that are still being used to the Brooklyn Bridge. All of that Lower Manhattan stuff was worked out by our company, so that was a heady experience.

The Sea of Abuja in Nigeria, they were setting up a new capitol. That was a real experience where we had to; the only way you could get out to that area was to fly in helicopters. There was no infrastructure out there. And you'd fly over these native villages and they were looking up and they hadn't even seen a helicopter before.

And you'd land down there and try to figure out where you were going to get a water supply and all of that. Well we were the transportation people in that. I have forgotten who the other, it was a consortium of other firms, engineering and planning. So that was a great experience.

The Boston Transportation Planning Review, where they had run into this tremendous controversy up there about building all of these roads that were proposed. And of course the big, what turned into the Big Dig and the elevated road through the center of the city was so controversial.

We, we were the main consultants in the review that ended up saying "Okay, you should build this freeway and forget this one. The Big Dig, put that elevated freeway underground" and all of those things. It was an internal job, but we were the main consultant overseers for it.

We did the, we were called in to do transit studies, rail transit studies in Newcastle, in England and in Perth, in Australia. And we began to form other firms, subsidiary firms. We had a joint venture firm we owned half of in Australia, one in Canada that did work in Toronto and all over Canada.

We formed a company in Great Britain after we got the Newcastle, England project going. And it did work all over, all over Great Britain, and in Hong Kong. And that company is still in existence, it spun itself off from us when we sold ourselves to Planning Research Corporation.

Nick: Uh hum.

Tom: It's a major firm over there now. But we did the Hong Kong light rail transit system there. And Sao Paolo in Brazil, we were the main planners for that project. But we did others, Costa Rica, San Jose, Costa Rica and the World Bank Project. So I could go on and on. But we were just very fortunate to come along at the right time and been smart enough to keep our heads above water.

Nick: Uh hum.

Tom: And we knew nothing about finance and management. We were engineers and we prided ourselves on being engineers and planners, and the idea of management was kind

of a “dirty word”. And of course we immediately were growing as fast as we were, we had cash problems.

Nick: (Laughs)

Tom: I remember Al calling us in one day and saying “Gee, there’s no money to meet the payroll.” By this time, we had a hundred people working. And we said “How could this be, Al? We’ve got all of these projects. We’ve got new projects. We’ve got working coming over the transom. We’re profitable on all of these projects.”

And he says “I’m not sure why.” But of course now I know why, it’s the classic problem of a young firm. Because you take on a project, you start working on it. You work on it for several months and you send a bill. And then it’s a couple of months before they pay it.

Nick: Right.

Tom: All of those receivables are not cash and you can’t pay your employees in receivables. Well we didn’t know that. So Al said “I’m going to go off the American Municipal Association that’s got a program for young companies. I’m going to spend a week there.” And so he did.

And he came back a week later and he says “You guys have all got to go to that.” So and we said “We don’t have time, Al, we’re just overwhelmed.” “Well you’re going to do it.”

Nick: Yeah.

Tom: “You’ve got to do it.” And you know, it cost a lot of money, but. . . So each of us went when we could find the time, individually, each of the partners, and it was an eye-opening experience. I mean it was just, we were classic and we were. . . We didn’t pay ourselves. The four, five partners drew no pay for one whole summer.

Nick: Hum.

Tom: Because we had to make the payroll for everybody else and if we couldn’t make it, that’s too bad. And I remember we went through a salary at that time and I had gotten my pay raised to $20,000. I came home and told my wife “Gee, I got raised to $20,000.” And her remark was “Well why didn’t they raise you to $100,000, it wouldn’t have cost anything. They’re not paying it anyways.”

(Laughter)

She was unimpressed, because we didn’t have any money to spend. And but of course we eventually figured out about accounts receivable and how to manage those. And we realized we had to become managers as well as engineers, and things began to work out and we got things under control. But that’s, we were just classic. I mean every company that starts off that’s successful has those problems.

So again, it was just a fortunate set of circumstances. And Al decided after a few years to leave and go into academia. Well before that we sold ourselves to Planning Research Corporation, which was a company that had gone public. And we'd never seen a professional services company that had gone public before.

But they had stock that was traded on the Stock Exchange and they were able to offer what appeared to be a lot of their stock for stock in our company, which was a paper exercise, as far as we were concerned. You couldn't buy and sell it.

Nick: Hum.

Tom: But we assumed it was worth something, the company was growing and was pretty big at this time. And Planning Research said, gave us a very unusual deal. It was clever the way they did it. They said "We're going to give you x-amount of stock for your company. We're going to trade you our stock, our PRC stock for your stock" at a certain ratio that looked pretty good.

Nick: Uh hum.

Tom: However you will not be able to trade that stock that you get from us, even though it's tradable on the stock exchange, for several years, unless. . . And if you do, it's going to become a tax advance, which is going to trigger you're going to have to pay taxes on all of this stock. But if you hold it for several years, and our lawyers told us, "If you hold that stock for several years, it will not be a taxable event until you do so, and you'll have some cash to pay your taxes."

So we all agreed we wouldn't see our stock, so it still didn't mean anything. It was just one paper for another. But they were very clever, because they said "We'll give you four times that amount of stock if you meet these goals." And these goals required us to grow like mad.

"And we will not interfere with you during that time; you still operate just like you did. You'll have to pay PRC a little overhead, a small amount of overhead on all of your sales, but other than that, we won't interfere with you. But if you reach these goals of sales and profits, we'll give you four times additional amount." Well that was before. . .

Nick: Some incentive, right?

Tom: And away we went, and we did meet those goals. But it was a real; it was real tough on our families and ourselves. But Al, after we had met the goals, he decided to leave the company and go into academic. And it ended up I was President of the company.

Nick: And that was in what year, by the way?

Tom: Well that would have been about '76 or so.

Nick: Uh hum.

Tom: And actually he, Al, I think Walt. . . PRC decided to make us Co-Presidents or Co-Executives. And I decided to take our international, be the Executive Vice President and Chairman of the Board and run all of our international practice and Walt would run our domestic practice.

Well after a couple of years, we reversed. Walt took the international and I took domestic. And I took the title of President and I think he took Chairman of the Board, and so that, we went along like that for a couple, another couple of years.

And by 1980, RPC wanted to do some consolidation and they wanted to consolidate about three or four of their companies into one. And one was an airports company, one, we were ground transportation, and another one was economics, and they wanted to consolidate those and it seemed to me another couple of companies, and wanted me to become President of those, that whole group. And Walt was going to be pulled into Headquarters to be on the corporate staff.

And about that time, the guy that had been Executive Director of the Transportation Research Board left, Bill Kerry.

Nick: Uh hum.

Tom: And I mean we got calls not to take his job, but for recommendations, because they had a search committee at the National Academy and I was working on it. And so I made some recommendations and nothing happened. Bill Kerry stayed on; he was going to remain until they found another Director. And this went on month-after-month-after-month.

This had been in the fall of 1979 when this started. And by early 1980, it became, they had a meeting occur in January of 1980 meeting and they still didn't have a new Executive Director. Bill was still Director, but he'd announced his intention to retire. And it was apparent that the Executive Committee of the TRB was in a big fight with the Academy about who is going to be the new Executive Director.

And so I got a call again, and they asked for some recommendations of people and I gave them the same ones I'd given before, plus a few others. And the guy said "Well what about you?" And I said "Well I don't think I'd be interested." And they said "Well why not?" And I hadn't really thought about it that way. And TRB you know is kind of an iconic organization, and it has been for decades.

Nick: Uh hum.

Tom: And all of us had served on their committees and chaired this and that, and knew it to be a prestigious operation. But it just never occurred to me that, to do that. And I couldn't really think about it much in the open, because I was running a company where you're people are all involved in these committees. So if that rumor got out that you had considered leaving. . .

Nick: Right.

Tom: That would be. . . That would be devastating.

Nick: Uh hum.

Tom: So I said “Well I don’t think so, but I’ll think about it. But I can’t formally; I’m not going to send you any applications.”

Nick: Right.

Tom: You can forget that. And they said “We understand.” So that was, so they were able to keep it under wraps. So I talked to my wife about it and we got to thinking about it. And the idea of not having to be on an airplane all the time was kind of appealing.

Nick: (Laughs)

Tom: And I’d have to take a cut in pay, but. . . And PRC was only going to up my pay, because they were wanting to consolidate this thing and make it bigger. But I was not happy with the way PRC was operating the companies. I felt like they were. . . You know we can get into that, but that’s outside the scope of your interests.

Nick: Uh hum.

Tom: But I was not, I felt like I was rowing a leaky boat, the way they were running the thing. And I told them that. And they said “Well yeah, but we’ll do this and that.” This went on for at least two or three months. And I was asking all of my friends that I had confidence in, what I should do.

By this time, they had said “Well come over for an interview anyways.” And so I came over and I talked to the committee. And again, I hadn’t submitted any applications. I’d given them nothing. And I told them, I said “You cannot, if this gets out, we’re through. And in fact, you’re going to have to offer me the job before I say I’ll take it. I mean that’s just the way it is. Because I want to be able to say “I have not applied or asked for any job.”

Nick: (Laughs)

Tom: And they did. They said “Okay.” After the interview, they said “You’ve got the job, we’re offering it to you. Here’s the deal, now will you take it?” Well that was. . . That was. . . By this time, the appeal, even though I was going take a cut in pay of being able to stay at home for a while was appealing.

Nick: Uh hum.

Tom: So I did it, and it was one of the best things I’ve ever done.

Let me tell you a couple of other things that I had forgotten along the way, but then I’ll take this story back up. And I hope this is what you were interested in.

Nick: No, this is great. Perfect.

Tom: During the, my time at the NCTA here planning the metro, the '62 Highway Act, as I say, was passed that requiring the planning. And there were a number of meetings where the Bureau of Public Roads was trying to encourage cities and explain to them what this means and all of that.

And they set up these meetings, and they are kind o vague in my mind now, but there were a number of meetings they set up around the country, I guess regional meetings or district meetings. I don't know if the Public Roads, where they called on me to go with them to explain what planning means, you know, if this guy can do it, anybody can do it, I suppose, is what they were trying to say.

(Laughter)

Tom: But that was a great opportunity to meet people and to get exposure, and to meet Ted Halls who was the Director of Planning for the Bureau of Public Roads. And I even met Frank Turner. Frank, you know who Frank Turner is?

Nick: I do not.

Tom: Well Frank Turner was the Executive Director of the Federal Highway Administration or the Bureau of Public Roads at that time, and therefore he was the guy that was fundamentally in charge of building the interstate highway system.

Nick: Right.

Tom: If you read any of the books about the building of the interstate highway system, Frank Turner is one of the preeminent characters, he And Tom McDonald, are the two names that always come up. Frank was a consummate bureaucrat, but a very honest and solid engineer.

And we, this country owe him a great debt of gratitude for the work that he did in building this gigantic project with relatively little corruption. And of course in a project that size, there is going to be controversy and there were mistakes that were made. But he kept it fundamentally on target. And if you read this latest book on the interstate, called The Big Roads by Earl Swift, it's one of the best reads that you could get, if you want to understand the building of the system and the planning and how all of that was put together.

Nick: Uh hum.

Tom: And Frank is. . . Earl Swift is not an engineer or transportation man, he's a journalist. But he did a great job in writing a very real document that's fundamentally pretty accurate, as near as I can tell, about all of these people that were working for Frank Turner, and Frank himself, I bet.

And I remember once that Frank invited me to speak to the Road Gang. Have you ever heard of the Road Gang?

Nick: Uh hum.

Tom: Well the road gang, I'll tell you, at that time, I'll tell you. . . Whenever the Road Rat was mentioned in print, it was always the lauded, powerful Road Gang that is the Highway Lobby.

Nick: Uh hum.

Tom: And it is, I suppose. It was. It's not nearly as lauded today. But it was a very powerful, made up the paving people and the asphalt producers and the highway and cement and steel and the auto people, the vehicle people and the contractors and all, everybody, and academics, anybody with an interest in this.

And they still are around, they are around. They still are a very nice group. They will meet here on Thursday and have a meeting. Not as part of TRB but all of the transportation organizations come here for this meeting.

Nick: Come back here, yeah.

Tom: So they'll either have it before or after, they always meet after over in the Shaw Room. And but Frank Turner was President of the Road Gang that year, I guess, because he asked me to come up and speak. And this was about the time that we had been recommending not to build this road and not to build that one and to change this one, and to not use interstate standards on this, but reduce the standards here in the middle of the city because you can't, you don't have the room, you can't do it and all of that. And Frank was not happy.

(Laughter)

Tom: And here I was a little building guy, wet behind the ears, and Frank had billions at a time when billions were like trillions today.

Nick: (Laughs) Yeah.

Tom: And was flying through and there was money sloshing all over the place and work. And he had dirt flying in every state in the union. He was a very powerful guy. And he invited me to come over and speak to that group. And I was smart enough by then to know I was being fed into a lion's den. But he was very cordial and introduced me, and I explained what we were doing and why we believed this, that and the other. But it was my first real exposure to Frank, and I got to know him in later years in much more cordial terms.

But at that time, he couldn't understand why anybody, after we'd been crying for roads for years, and now he had a program and here he was about to do it and hand you the money and write you the check and you'd say "No." That was just beyond his conception. It just could not be possible.

Nick: Did you. . ? Did you stand your ground in that meeting?

Tom: Well yeah, I don't remember it as being anything but reasonably pleasant.

Nick: Uh hum.

Tom: I was a little frightened.

Nick: (Laughs)

Tom: But then I was frightened about everything in those days. But that was, so all of those things were great experiences, great opportunities to learn. And made several major planning conferences that are in the history books, the so-called history, the Hershey Conference and the Williamsburg Conference and all of these were major conferences where they brought in people from all over the country to interact with them and try to decide what…

You know, it was instructional to the people who were participating but also you're hearing back from them their problems. And they, they adjusted legislation and regulations and stuff. I got to participate in those as not just attendees, but as presenters and chairmen of committees and stuff like that. It was a real opportunity.

So now we'll jump, we'll fast-forward to the TRB. So here I came into TRB. . .

Tom: So we got. . . So I came over to TRB and one of the first things that I ran into was the Reagan administration had just come on board, yeah just was coming on board. And of course it was, it was "The Federal Government should get out of stuff" and he appointed a new Federal Highway Administrator called Ray Barnhart.

And Ray was a very cordial guy from Texas, very much a political conservative. And he started using our TRIS system, the Transportation Research Information Service, which was run by TRB. And now with all of the search engines, that doesn't mean anything, but that was an effort, long before we had formal search engines and where we would catalog stuff, all of the research that was going on.

Because the states were finding they were duplicating each other and if there was no way to keep up with what Alaska was doing or Hawaii or Florida, then Pennsylvania may start a project and duplicate it directly. So everybody was doing a project and then they would have it in the database and then they could, if they were about to start a new project, they'd see what everybody else was doing. And we ran that program for them.

And Ray Barnhart, this federal administrator, comes in and he starts using the system. And it turns out what he was using it for in his position was that anybody that was doing things that looked like it was duplicative, it was waste. So the fact that you had three states studying a pavement problem, an asphalt problem, well he said "Two of those should be cancelled."

And so he, I discovered he was using it to kill programs and he was trying to kill the program that they had out at the Langley Research Center that the Federal Highways has used for years. And if there ever was a role that the feds had played in this business, it's in technical advancement and research.

It went way back to even the late 1800's when they had the first federal program. It was a technical assistance program to the states to help them know how to pave a road, which they didn't know how. I mean nobody knew how.

Nick: Uh hum.

Tom: So they began to do experiments and approaches on a scientific basis. And here, Ray Barnhart, Federal Highway Administrator, was saying "We've got to kill all of this stuff. So it was, it was tough. But he was a very affable guy.

And I had learned in the consulting business, running a company about personal and inter-relationships and all of that. And Frank always came in to AASHTO at almost the same time that I came into TRB. And a fellow named Jack Gillstrap came into the America Public Transit, it was Bill Millar, he just recently retired from that. But Jack Gillstrap was the new, incoming director of that.

So I had the whole lot of them out to my house for dinner, it was a big dinner. And I invited some of my staff and the President of the Academy of Sciences and Federal Highway Administrator, Frank Franco, and all of these people. And it was a chance to really get to know people and it permitted, even though I didn't agree with what Ray Barnhart wanted to do and was trying to do, and it gave me access to him.

And I also began to hear from my own, the State Directors of Transportation that TRB had gone off the mark. And they were saying; they were hesitant about funding TRB. And there's no requirement that they fund TRB, that's a voluntary deal. Each of the states makes a contribution but they don't have to do it.

Nick: Uh hum.

Tom: And of course now, they are sponsored by a lot of groups. But the states are the fundamental, states and Federal Highway Administration were the. . . Back in 1920 when they decided they needed to have a coordination of all of this research, that was the base of TRB. And you know, there was no way we should lose that.

Well I was hearing from state, the Georgia Department of Transportation Director was telling me that we'd gone off the rails. Their problems were these bridges that they had built. The interstate, some of the bridges they built as part of the interstate now were getting to be twenty years old.

Nick: Uh hum.

Tom: And they were, they were beginning to crumble and bridge decks and stuff weren't working. And they were putting down asphalt and it was coming up. And they said "The asphalt is different than it used to be. It's not as sticky as it used to be", some people were saying.

And so it turned out it was physical infrastructure was the problem. And TRB was overloaded with these papers each year, with models and planning and computers. Well the planning had been done.

Nick: Uh hum.

Tom: I mean there is still planning to be done today, that's an overstatement to say that. But you know, TRB, the academics and everybody was gearing up and they were refining it and approving and data collection and all of this stuff. Well the state Directors of Transportation weren't interested in that.

Nick: Uh hum.

Tom: And they were saying "You guys, we're not going to. . . We're not going along with you if you don't." And I began to hear that and the idea that. . . I remember that the Tennessee Department and there's a state Commissioner called me and he said "I just put down twenty miles of asphalt overlay, and two months later some of it's coming up. And the press is all over me and what are you guys doing about it? You're supposed to be, your research. . ?"

Well the fact is we weren't putting any money in research. No money was going into pavement research, to speak of, just virtually none. So I began to do some research myself on who was spending money on research and what they were spending it for. It's hard to get those data.

Nick: Uh hum.

Tom: But it turned out, and then I began to see, being here in the academy, I began to talk to people who had run research at IBM and Motorola and Ford and Chrysler and whatever. And I realized the way they followed research was as a percent of their revenues.

What percent of your revenues you spend in research? And if you spend too much, you're going to hurt today's profits badly and you're not going to get by. Or if you don't spend enough, you're going to be ruined tomorrow.

Nick: Uh hum.

Tom: And the Japanese were beginning to "eat our lunch" in the automobile industry by that time and people were really getting worried about it. And so they were put, we were being; the motor company was being criticized for not spending enough in research.

Well I had some access to those people. A member the Director of Research for IBM took me up to his headquarters and showed me all around his laboratory and I was dazzled by what they were doing. But I was able to go back to my executive committee and say "Look, we're spending 0.1% of our revenues on research and we're complaining because you've got asphalt coming up."

And they'd say "Yeah but we've been studying asphalt for forty or fifty or sixty years. And I said "They've been studying the automobile engine for a hundred years, and they're working their asses of on it right now."

Nick: (Laughs)

Tom: "Things change, new technology is available. The component, where we're getting our oil from that we make asphalt is coming from Venezuela. Thirty years ago, it was

coming from West Texas. I mean that's different stuff. So the fact that you've been working on it for a hundred years doesn't mean you don't continue to work on it, particularly if it's still coming up on you. And we're spending nothing compared to. . ."

And then I began to get figures from where the computer companies were spending 10% of their revenues in research and auto companies were spending 5%. And even clay tile manufacturers and food processors were spending 1% or 2%. And we were spending a half-a-percent.

And I put out a couple of papers like that. But they weren't willing to throw additional money at these programs, because they saw them as non-responsive. So Tom Larson, who was the Secretary of Transportation for Pennsylvania at that time, was Chair of our Executive Committee. But he had been a researcher before; he was an academic before he was called in by his Governor, to the Secretary of Transportation.

And Tom and I were up in the Eno Foundation where both of us were on their board one year. This probably had been about 1982, '81 or '82. And I said "Tom, we're not going to get. . . Research is going to hell in a hand basket. The Reagan administration is in trying to kill it. They are using our TRIS system to try and eliminate things. He was trying to kill his own program."

"Even our state Directors are not going to be willing to throw additional money at research. But we know we need it because look, here's our figures. And we've got problems running out our butts and we're not spending any money on it." I said "I think it's going to be a lot easier to get $100 million for research than it is getting $1 million dollars."

Nick: Hum.

Tom: He says "What do you mean?" I said "Well for one thing, it will get their attention. But it's got to be aimed at what they see the problems are, not a bunch of other stuff. And right now they don't see a focus on that."

And he said "Well what do you propose to do?" And I said "I think we ought to do something called a Strategic Transportation Research Study, STRS for short, S-T-R-S, a STRS study and we should use managers to decide what the priorities are, not researchers. And we'll get, we'll set up a committee and we'll be overloaded with managers from the states and we'll put Ray Barnhart on it as well and we'll have a few academics.

And I think it will take $300,000 or $400,000 to do it. I haven't got the $300,000 or $400,000; we're going to get it. But would you support the idea. And he asked a few other questions and he said "You say I think you're right, I think I'll support you if you can figure out how to get the money."

So I put together a little proposal, I called up Les Lamb, who was the Direct, the Deputy Federal Highway Administrator, and he was a long-time career employee. And I had a meeting, a lunch with him, and I told him about my conversation with Tom Larsen. And I said "Can you; will you support me with your boss, Ray Barnhart, to try to get a few hundred thousand dollars?"

And the purpose for Ray will be "We're going to study whether we need to do any more research? And if so, what it should be focused on." Well that appealed to Ray. So he set up a meeting with him and called me over to the Federal Highway Administrator's office and went in. And Ray, and Les, of course, acted like he'd never heard of it. And he asked me a bunch of soft-ball questions that fit right into what we're trying to do.

Nick: (Laughs)

Tom: And the first thing you know, we had our money and we started it. We did the study and we got about half-way through it and identified exactly what I figured; which was going to be infrastructure.

They want to know how to keep bridge decks from spalling off and the reinforcing steel from corroding inside. They want to know how to specify asphalt in a better way than they had been able to do before. And they wanted to know a number of other things, but broadly those were the main focus. And not planning.

And so we kind of got a basic outline of that thing and they went over to the national meeting and got, went up with legislation. And before we had the report out, they already had legislation before Congress to take 0.5%, I believe, of the federal allocation for roads to put into something called The SHRP [Strategic Highway Research Program] program.

And in the end, that produced $150 million in research and it had to be done over five years. It wasn't a permanent program; it had a beginning and an ending. It was going to be for infrastructure research. And by this time, we got a report out and if this thing well through and then the question, we had to detail it. AASHTO and TRB and Federal Highway got into a program of detailing the thing out into specific projects. And by this time, of course, the word was out. And I got calls from my constituency to professors who were interested in planning. They were furious at me.

Nick: (Laughs)

Tom: "You're not giving us any money." Everybody wanted their piece of it.

Nick: Uh hum.

Tom: Well I said, "You know, we're not going to cut. . . You're not going to get cut from what you're getting, but you're not going to get a piece of this." "Well that's outrageous" and they were furious at me. And I, it turned out, of course, a rising tide lifts all boats, because there was a renewed interest in research, and they got additional money, too, but not from the SHRP program.

Nick: Uh hum.

Tom: So the SHRP program was done, it was seen as very successful. It totally changed the way asphalt was specified, being used worldwide now. Lots of new projects I can tell you what they were, but it would take too long, and concrete technology, nuclear testing of existing pavements.

And also some things that were never done before, including a long-term, a long-term pavement project in which they, over twenty years, had a bunch of test sections all around the country that they were evaluating. They knew exactly how they'd been built, what the traffic was, what the weather was and what the soils were. And they could see what was working and what wasn't; what lasted and how long did it last? And the effects of trucks and weights and weather, all of those things were part of it.

That was seen as so successful, that when it was completed, they spent another several years implementing and getting the states and the other agencies to begin to implement the results. And then they started up, after I retired, a SHRP-II and it's in motion right now.

Nick: Uh hum.

Tom: So all; I would say that that was probably the most significant thing that I ended up doing in my career, that I could really attribute to myself. I mean success has a thousand fathers and failure is an orphan.

And that's absolutely true, that Washington Metro is seen as success and I'm often hailed as the major, having a major role in it, and I guess I did. But there were lots of people involved in a project like that and I was fortunate to be one of them.

In the book, there was a fellow named Jeffrey Schrage who got his PhD in history from Columbia University a few years ago, and who was raised here in Washington when the Metro was just cranking up. And he did his dissertation on the history of the Washington Metro.

Nick: Uh hum.

Tom: And he's now a professor at George Mason and he wrote a popular book called the. . . I have forgotten exactly what he called the book, but anyways it is now published. Jeffrey interviewed me many times and he mentions me in his book a lot of time. But it was clear from that book; you'll see that success had a lot of fathers.

Nick: (Laughs) Uh hum.

Tom: And I was just fortunate to be one of them. But the STR study and the SHRP program was my idea. And but of course once it got started, I had to have a lot of people.

Nick: Right.

Tom: Most, and some of those played a more prominent role, certainly getting the financing and all of that, I can't take credit for that.

Nick: Right.

Tom: But I don't think there perhaps would have been one if I hadn't cranked that up, and responded in what I saw as a major problem. So I guess we could take a break now if that's. . .

Nick: Sure.

[Interview Part 1 ends]

[Interview Part 2 begins]

Tom: Well I wanted to tell you a little bit about Al Voorhees, since Al is such an important part of and been since a benefactor to the Rutgers program and New Jersey in general. He's, of course I guess born and raised in New Jersey. But Alan was an extraordinary individual and one that I. . . It took me; well I always knew he was a smart guy and it was my good fortune to have bumped into him early in my career, when he was beginning his as well.

But in later years now, it's all over and I'm looking back on it, that admiration for him has not diminished. If anything, it's been expanded. Al was; I always knew he was a genius, but like all of us human beings, he was bigger-than-life in some ways and smaller-than-life in others.

He had, he exposed me, for the first time, to a person who is, intuitively knows the right answer. And reading biographies of great generals of the battlefield, you always have to make decisions with incomplete information. And a great general will just intuitively know what the answer is, but he doesn't know why. And Al was that kind of a person.

And I'm quite a different; my mental make-up is quite different. I'm much more of an analytical person and I've got to think about the data, look at the problem from all sides and come to a reasonable conclusion. And when I get through, I can tell you why I think this is the answer and hopefully sometimes I'm right.

Nick: (Laughs)

Tom: Al was not that way. He just intuitive, without half-looking at it would say "Well this is the answer." And that was very frustrating to me when I first went with him and was part of his company. And we'd go out on projects and look at. . .

I remember once we went out to San Francisco and it was the beginnings of what's was an organization that was set up called the Bay Area Transportation Commission, that has been in operation now for over half-a-century. And we went out there, I guess Cal-Trans, the California Department of Transportation and maybe some other groups had asked us to come out and look at the San Francisco Bay Area and propose some sort of organization to plan and organize and develop urban transportation.

And I remember flying out there with him and we went to the rental company and rented a new Mustang. So a mustang first came out in 1967, so this must have been about 1968 or so. And we drove into the city from the airport and enjoyed that Mustang convertible.

Nick: (Laughs)

Tom: And we spent a couple of days with the people, talking to them and came back and turned the car in and got in the plane and flying back and I was beginning to. . .

And Al said “What do you think? What have you heard?” And I said “Well I think we’ve probably got to do this and that. But we need more data about this and more information about this.” And I went on and on.

And finally he stopped me and he says “No, here’s what we’re going to do.” And he took out a piece of paper and he sketched out the whole program.

Nick: (Laughs)

Tom: And I was astounded, but he was dead right. And we wrote it up and they liked it and off we went. You know, and that happened time and again. And I remember when he was, when he was the partner in charge of doing the Columbia, Maryland. New own, it was a new town of 100,000 people or something, from scratch.

And you could just start with a blank sheet of paper. And he worked out the transportation system in a figure-eight, with transit was going to be the core of it and so on. And he submitted them a little report, about ten pages.

And it was, you know, anyways, he came into a meeting one day and I hadn’t paid much attention to the project. He’d talked to me about a couple of things, but he’d fundamentally done it on his own. And he said, he said “They won’t accept my report.” And I, could you write it up for me?”

I said “Well I don’t know anything about the project. What do you mean they won’t accept it?” And he said “Well here’s what I gave them.” I looked at it and it was awful. I mean you couldn’t make heads or tails of it. And that was my first realization that Al can’t write. He never could write.

Nick: Uh hum.

Tom: To this day, his submission is a thesis at Yale, it was so innovative he got through, but it was only five pages.

Nick: Hum.

Tom: And I’m told it’s only five pages, I’ve really never seen it. But it was short and it was. . . But that was, I began to realize it, and he couldn’t talk. He would come in to explain, like right then he was explaining what was wrong with the report, he couldn’t tell me what was wrong with the report. He couldn’t even tell me how he’d got in this position.

And time and again, when he would come in to us as a group, and he would propose something, it would be on the back of an envelope and we wouldn’t know what he was talking about. He was famous for playing for his tie as he would talk. And we got to joking with him, one of the jokes behind his back was when we’d talk to one another, we’d play with our tie and talk and mumble.

And he started; when he would start a conversation, any normal person would give you. If I started with you on a subject that we'd never talked about, I'd give you a little background for you to know what the problem is.

Nick: Uh hum.

Tom: And he's start in the fifth paragraph, assuming you already knew the rest. And then even the fifth paragraph was sketch. He'd give you monosyllables and leave out the verbs and all of that stuff.

Nick: Hum.

Tom: And I remember once we'd done this big project in Detroit, its similar to San Francisco, laid out a big project for their whole metropolitan area study and then they, they accepted it and they were doing it. And then they asked for somebody to oversee, help them oversee it.

So I was the partner put in charge of that. And I came up there and the Director who was a Ford Motor Company Vice President they brought over to direct this multi-million dollar study and he'd gone for two or three years and I, every time I'd go up there I realized he hadn't made enough progress, he's falling behind. And he'd ask, then he would ask me to re-design the study so that you could cut some things off it and still get by with the money they had.

Nick: Uh hum.

Tom: And after a year or two of this, I finally came to him and said "This, you've had it. I can't propose anything now. You can't finish the project with the money you have left." And he was a very facile guy and he said "Well okay, I'll go back and ask them for some more money."

Well when he did, all Hell broke loose. And they, he called me up one day, the guy from Detroit, and he said "They are having a big meeting today with the Secretary of Transportation from Michigan and the mayor and Deputy Governor and a bunch of people and they are furious and it's going to be Hell to pay. And they want you up here, too. And they want Al to come, because he originally proposed this project."

And so Al and I flew up there. And we got in late to the meeting and the room was packed with forty or fifty people and a big table in the center and a bunch of people sitting around the edge. And they were going, grilling this poor guy. And finally somebody said, and Al and I slipped in just to watch for a while, and hoping they wouldn't notice us.

Nick: (Laughs)

Tom: And finally there was a, somebody said "Well didn't we have a consultant that proposed this thing and was supposed to be overseeing? Are they around here?" And people peering, their necks peering around and they looked back. And yeah they said "It was Al Voorhees & Associates and Al is here, so let him speak to these problems." And Al, he told me, he says "Tom, you take care of this."

(Laughter)

And in fairness, I had been the one that was keeping up with it as we went along. But Al would not have done that well. That would have been a bad scene. And in the years later, after he made huge amounts of money and stuff, and left the company, and I still maintained contact with him, because we had some business relationships together.

We, back in the early, when we first got a little bit of cash, we bought a couple of small office buildings out here in Virginia suburbs, and we jointly owned them all of these years. And then when he died, I ended owning them with his children. And we have since sold them now. He, he started a number of companies at that point and was a very successful entrepreneur because he just "knew" what the right answer was.

Nick: Uh hum.

Tom: And but his main administrative lady, Mary Gannett, who helped him with these later projects, would tell me that she'd go to these meetings. Of course we'd start these companies and they'd want him to be on the board and he wanted to be on the board. But then after they got going, they'd come to her and say "What was he talking about?" They had no idea what he was talking about.

(Laughter)

They dared not confront him, because he was a wealthy guy and he'd been helping them out and he'd meant a lot to them. But anyways, it was an interesting to know somebody that was so gifted in that way. And he literally couldn't explain why he'd come to those conclusions. And he couldn't. . . And that's why he couldn't write it, because he didn't know why.

Nick: Hum.

Tom: And he wasn't always right. Sometimes he was a human being; after all, he was wrong. But when he was wrong it was awful, because he, since he didn't, he didn't get into the answer he had in the first place from reason, so you couldn't reason him out of it. He'd just keep going.

Nick: Right.

Tom: And then, and then. . . So reason didn't play. . . I'm sure it played a role in some mysterious way in his head, but he couldn't articulate it and he couldn't write it, and so it was very frustrating. But being on his coat-tails was a fortunate thing, because most of the time he was right. And you learned that after a while and you wanted to be pretty sure that you knew what you were talking about if you tried to confront him.

Nick: Uh hum.

Tom: And so the intuitive; it was an exposure to a different way of thinking about things than I'd ever seen. And Walt Hansen was another one, in a different way yet. He was dif-

ferent than Al and me. And the three of us had some interesting dialog and intercourse over the years over various problems because each of us approached problems totally different.

And I'd like to think he came to. . . Well I think he did, he came to respect me and that's why he got me into some of these financial ventures with him. He never would say that, but because I approached it and took a different point of view than he did.

Nick: Uh hum.

(Interruption from a third party)

[Interview Part 2 ends]

[Interview Part 3 begins]

Tom: Yeah I wanted to describe a couple of more things about my TRB tenure that I thought were significant. One of them, and a lot of people don't know this, but TRB changed its name from the Highway Research Board before I came. I think about five years before I came, somewhere in the '70's.

But it was mostly a cosmetic change; you know you don't instantly. . . We had been a highway agency for so long that you don't instantly, suddenly become relevant to all of the other people that are involved in transport, the marine people, the transit people, the railroad people, and the vehicle people.

Nick: Uh hum.

Tom: And so this wasn't an instant transformation, either. The states were beginning to get more and more pressure to do more about their transit systems and not be highway-only agencies and they were beginning to change their names to Departments of Transportation. Not all of them, but some of them and gradually they have over the years. And so that constituency, which has always been the TRB's main constituency, was beginning to say, you know, you need to think about broader things than just highways.

And so it was a, it was an easy thing and my interest in transit and my background in transit made it kind of easy for me to do that. And I began to pull in more and more people that were in other modes, and try to encourage them. You know, I went out and deliberately called on them.

And Transportation Research Board is not an easy concept to understand. It's a unique kind of an organization. My mother, who was a college graduate, used to tell her friends, I'd over hear her telling her friends that what Tom did in Washington was "direct traffic in Washington", you know.

(Laughter)

You know, I guess she thought I was a policeman or something. But so, you know if you work for a hospital or university or a factory, people can understand what that is. But it's not an association even, it's not a professional society, what is it?

Nick: Uh hum.

Tom: Well it's, you know it takes some explaining. And so when you went to these other modes and you told them what TRB had been for the highways and then we can do this for you guys, well there are always people already in that business and they see you as a threat.

Nick: Uh hum.

Tom: And they don't see it as we can enhance their operations. But gradually, it began to work. And one of the things I was able to do that the National Cooperative Highway

Research Program is a, is a research program that has been in TRB for a long time. It started back in the '60's I guess.

And it's a program where the states send money here to actually do new research, as opposed to coordination and publication and manual meetings and all of that stuff. And that had been very successful because the states prescribe what they want studied and so the program remained somewhat close to their interest by the nature of the way its set up. It's a little cumbersome and takes a while to get projects approved, but it has an advantage that's hard to get away from.

So the public transit, there was a federal transit program and the states began to be interested in it. And there were a lot of public authorities that were interested in public transit. I began to encourage some of them to come in, and we actually got a National Transit Cooperative Research Program going, that was funded by the feds. And that immediately took off, and Lou Gambaccini was a prime mover in helping me get that going, as was Bill Millar, who later became Director of American Public Transit.

And both of these guys were far-sighted people who could see what the Cooperative Research had been for highways and thought it would be useful in trying. . . And in fact it has been, and it's a program that's been thriving ever since. Then I began to talk to the aviation people and they had an even harder time to understand why it might be useful.

And but the SHRP program came along, and it was parallel to this Cooperative Research program. And out of it came something called the IDEA program, I-D-E-A, is an acronym that stands for Ideas Deserving Exploratory Analysis, IDEA. And what it was was we discovered in the course of doing the SHRP program that there were ideas out there, a lot of individual inventors, some private sector or organizations who had ideas but they, it was hard to get them to be deployed.

It was hard even to build a prototype, so there was just no money for that. You had to have either something up and ready to sell or you had to get it through a research program, Cooperative Research program, where they already had existing problems. And they weren't necessarily finding new approaches to these problems and totally new devices and new ways of doing business.

So this program, we got it funded as part of the SHRP program. And lo and behold, it took off also in some of the other modes. And as I was leaving, these things were bubbling. And since Bob (Skinner) took over in later years now, they've gotten the Aviation Cooperative Research program and the IDEA program has come, there's one for transit, there's one for highways.

And I believe there's one for railroads, and got the Railroad Cooperative Research program. And then the marine board has come in as well. And so we've got virtually all of the modes now are participating in it, in increasingly high levels. And that's part of the reason you've had such a growth in the annual meeting.

Nick: Uh hum.

Tom: Another reason is the international efforts that I was and I worked hard at trying to encourage international participation in TRB. One year it was really problematic when the apartheid was under such attach in South Africa. And the protestors were protesting around the South African Embassy here and it became known that we had some papers from the South African Research Institute that were going to be presented here at TRB. Well of course our papers are peer-reviewed by a committee.

Nick: Uh hum.

Tom: I mean I have nothing to do with the decision about who to invite. We don't exclude anybody. But that was a very ticklish political situation. President of the Academy of Sciences heard we were going to; we had invited some South African researchers to speak at a time when they were protesting.

And he was scared to death we were going to get protests and he'd be hauled in before. . . And he called me down to the office "What do you mean inviting. . ? You should have told me about it." I mean we had thousands of people coming, who do I tell him about?

That was a dashing time. But that was an indication that more and more international participants were beginning to come. And of course now with the Asian growth, a lot of growth in international participation at TRB, so that's, that's something that I was proud of. And one last thing that I want to mention and that is the policy work.

Most people don't realize that for decades when the HR, the Highway Research Board was founded, it deliberately stayed out of policy questions. Because when you do a policy study, or a study of something that might be sensitive to one of your participants and one of your sponsors, you're going to make them mad.

Nick: Uh hum.

Tom: And we had all of this cooperative stuff and we always said our job was to publish other people's research, to coordinate research, to make sure everybody knew what everybody was doing, so you could build on each other's shoulders and not duplicate each other's work. And we also did some research sponsored in the cooperative research programs. But we, we didn't. . . But those were technical studies.

We didn't get into policy questions about whether you should build railroads instead of highways or whether you should build high speed rail or expand the airports or do pricing, do variable pricing on roads. Those were controversial matters and we stayed out of all of that. And but the rest of the National Academy was more and more getting into that. That was the place that the nation came to when you had very technical, very controversial issues at the intersection of science and public policy.

So when I came to TRB, Frank Press, who had been President Carter's Science Advisor in the White House, and was a geo-technician or geophysicist, had, he was elected President of the Academy of Sciences. And he came about the same time as I did, and he had determined that he wanted the TRB to start doing policy studies, like everybody else in the Academy.

And so I went to the executive committee, TRB Executive Committee about it. I said "This is what they think we ought to do. And what's more, they want to elevate us to report directly to the governing board." We'd been buried down, even though we were the biggest unit in the place; we'd been buried down under one of the other commissions, two levels down. And they want to elevate us right up there, but they want us to start acting like other units. They don't mind, we can do all of this other stuff, that's fine, but they want us to take on these controversial projects in our field.

And the Executive Committee said "Well you know we may lose sponsors and gosh, can we really change the whole nature of the place? And people are going to be mad at us." But they said "Well but it's probably time; okay let's do it."

So as soon as we said we were open for that, within six months there were a half-a-dozen studies that Congress attached to their bills they were passing, wanting us to look at the question of seat belts in school busses, which they were being bombarded with. And there were people on both sides of the issue and they didn't know the answer.

Ronald Reagan came in on; one of his platforms was to abolish the 55-mile-per-hour speed limit, which had been put in earlier when the gas, you know the gasoline shortages. And he said "That's an interference of the federal level on the states and they shouldn't do it. Let the states decide that and abolish the national 55-mile-an-hour speed limit."

And then there was a whole bunch of others; that question of trucks, are they paying their fair share? What's the right answer to that thorny problem? And on and on; there were just a string of these. People are getting older, should we be designing our roads and doing something better for the fact that the population's getting older? Better lighting, better signs or whatever?

Nick: Uh hum.

Tom: So we immediately had a dossier full of portfolio studies that we were to undertake and I had to hire staff and get going with that. And that turned out to be, you know we didn't necessarily, at the Academy, we had to follow their rules and they're good rules. For instance, on the 55-mile-an-hour speed limit, what Congress asked us to do was to do a study showing the benefits of the 55-mile-an-hour speed limit. Because the Congressman that had gotten that through the House committee didn't like the federal things, so he wanted to show the benefits.

So we said "We won't do that. We'll look at the benefits and the. . . benefits and the costs of it." And they said "Oh okay, well if that's the way, okay that's fine." So we took that on, and it was very controversial but it was. . . It was hard to ignore because the way we had set these committees up was a balance of people on both sides and we. . . IT takes a while to do them and they are costly. But they are hard to argue with when you get through.

Nick: Uh hum.

Tom: So it turned out that was a real, in contrast to it being a thing that would hurt sponsors, we began to get additional sponsors because the auto companies and trucking com-

panies and others, railroads that saw that their ox may be gored by one of these studies, they wanted to be. . . They know they can't influence how they come out.

Nick: Right.

Tom: But they could at least know when they're coming and they can see how they come about it and know what the background is. And in order to do that, they had to be on the Executive Committee. And in order to get on that, they had to become sponsors. So immediately, we began to pick up additional sponsors. And they didn't always like us, but they respected us. And we, we were somebody that had to be reckoned with for the first time.

So that turned out to be a real positive thing and one of my proudest accomplishments, I think, was the institution and the organizing and the production of those initial studies that came out to be well-respected, well thought out and it built our reputation for being able to do that sort of thing.

Nick: Yeah. It sounds like it really brought the policy discussion into the, into the organization.

Tom: Well it did, the Executive Committee itself then started complaining to me. . . (Laughs) It was hard initially; I didn't know what they were talking about. They started complaining that here they were, the leaders of the railroads and the trucking companies and the states and the infrastructure and the airlines and we're sitting around and all you're asking us to do is to approve this study or approve that study or approve this project and you're funding for next year. We want to get engaged in some of this stuff.

And the way the Academy works, you can't just let any committee, even the Executive Committee, haul off and come out with a finding. You've got have a basis for it and it's got to have some backing and studies. The written report has to be reviewed by the Academy. And so it was very hard for me to figure out how to make that work. But I figured out how to do it and they are now known as "red meat sessions" where you throw a piece of red meat and let them have at it.

And they are well thought out and they are still done to this day, twenty-five years or thirty years later. And it's, and we extended the length of the Executive Committee meetings to a day-and-a-half instead of just a day. And half, a portion of that time is set aside and we research out a thorny problem as they see as coming out in their future, where all of the modes are involved. And then we get some presenters that give them the background, so they'll start off with some factual data, and then let them have at it.

And they don't produce a report, but they sometimes influence those discussions influence the things that we get into and what new committees we set up and maybe they'll commission a study and it will be formally, the scope of the study will be prepared by the Executive Committee and then they'll turn it over to us and we'll get the funding for it, and then it will go through the regular Academy process.

Nick: Uh hum.

Tom: So that's been a. . . And I've heard even other organizations have begun to do "red meat sessions" with their Executive Committees or their boards. Because its, these board members like to feel they're doing more than just approving and rubber-stamping projects.

Nick: Right.

Tom: So, so I would say that would be; those are the major things that I was involved in. And I had to do other problems like cutting back the funding some years when things were, when money was scarce and things like that. But those are normal managerial duties but the things that were lasting, I think, were the SHRP program, the multi-modal, truly transportation-oriented international work and the policy studies.

Nick: Uh hum. So looking back on your time at both the, at both Voorhees and at TRB, let's start with Voorhees and. . . Are, are there things now that you've learned throughout your career that you look back on Voorhees and say "Man I wish I could have done that differently?" Or "Man I wish we would have known that then, knowing then what I know now?"

Tom: Well I wouldn't have been nearly so worried about a lot of things that I worried about.

Nick: (Laughs)

Tom: In fact, one of the things that I've discovered in life is that the things that I have worried the most about tend not to turn out to be very things that I should have worried about. And the things I didn't worry about and got blind-sided were the things I should have worried about.

Also just generalizing, no great news in this and I'm not the first one by any means that's come up with it. But life, I think, for anybody is to succeed in your professional life, you've got to be. . . Two things have to be at work, one of them, is you've got to be lucky and you've got to be good.

Nick: Uh hum.

Tom: And one, well good comprises a lot of things, including hustle and perspiration and a little bit of inspiration and those things, and certainly a minimal level of intellect and mental acuity. But you read biographies of people that have had success in life and you see that luck played a role or good fortune and being able to capitalize on those good fortunes when they come. One without the other won't get you. . .

I mean there were a lot of other people, after all. And I mean without being. . . Without being over-zealous about myself or over-modest, well there's no doubt that I was very fortunate to have come through the pipeline at that time. And without it, things would have gone quite different. You have to acknowledge that there were a lot of other people that came through at that time, and it didn't work out so well for them. (Laughs)

Nick: Right. Right.

Tom: And Lou Gambaccini is right and Mort and Marty and all of them, it was a wonderful time to be coming through. But there are other opportunities now. I don't know what they are. I wasn't aware of even then, but we knew things were happening.

Nick: Uh hum.

Tom: But I certainly didn't have the perspective on it that I do now, looking back on it.

Nick: Uh hum.

Tom: And if I had of had that perspective, yeah I'm sure I could have made even more of it; but maybe not. Who knows?

Nick: Uh hum. Uh hum.

Tom: Certainly I made mistakes. I got into fights with Al Voorhees. I look back on some of those and some of those. . . First of all, he won all of them.

Nick: (Laughs)

Tom: But some of them he was right and some of them he was wrong. And some of them I was wrong.

[End of interview, 112 minutes]