INTERVIEW II

DATE: January 31, 1969

INTERVIEWEE: FRANK W. LEHAN

INTERVIEWER: David G. McComb

PLACE: His office, Department of Transportation, Washington, D.C.

Tape 1 of 2, Side 2*

M: This is the second session with Mr. Lehan. The date is January 31; the time is 9:05 in the morning. The interview is in his office in the Department of Transportation, and my name is David McComb.

Last time, Mr. Lehan, you spoke about a problem of communication between the scientific community and what you might call the outside world--

L: Yes.

M: --or those outside that community. Since you are in a part of the Department of Transportation, which is a highly scientific area, a technical area, you must have had some problems communicating with people even within the Department of Transportation and outside. Is this correct?

L: It certainly is.

M: What can be done to make communication easier between, say, your office and the secretary?

* Note: This recording begins on side 2 of interview I.

L: Well, I would--incidentally, there has been--at least my experience has been--very little communication problem with the secretary, personally.

M: You mean Alan Boyd--

L: Alan Boyd, yes.

M: --well understood your problems--

L: Yes, I think so, in an intuitive way.

M: --and your ideas?

L: And, yes. Point back, that Alan Boyd, obviously an unusual individual, was a flyer in World War II. So he has a, let's say, a flyer or pilot's appreciation for the--also, he's a very unusual guy, he's a very bright guy--and he has a pilot's appreciation with the technical world. I found that two people here, Alan Boyd and Don Ager, were the easiest to communicate, from an engineer's standpoint, with. Don Ager, probably because he worked with *Sault Aviation* in France for some time and was used to working with engineers; I would suspect that's the reason. Alan, I suspect is because he's the kind of guy he is, Alan Boyd.

Let me back up, though, and indicate--I'm sort of going to oversimplify, maybe, but let me put people into three categories. One is the engineer-technician-scientist category. Another category, let's say, is the practical politician, the working politician. And a third category I'll say is the socially concerned. Now these are not mutually exclusive categories, that is, they overlap with each other. But my observation is that there's a tendency of many individuals that fall into these categories not to overlap. And

it is a difference in thought process, in ability to communicate, the words they use, and in goals, in a sense. Am I coming through?

M: Yes. Well, now, the goal of the scientist or the technician might be to construct, say, as near-perfect a piece of transportation equipment as possible.

L: I would say that that, again, depends on the person, obviously. But I'd say, generally the goal of the engineer--and I can talk to that one more than I can a scientist--is to build a system or device that satisfies certain requirements. He is less interested in what the requirements actually are, if you follow what I'm saying. He may become interested in what they are, but in general I'd say his orientation, his training has been: someone gives me a set of requirements. And he gets his satisfaction of building a system as cheaply as possible that'll meet those requirements.

M: Now can a social requirement be included in that? Such as noise abatement.

L: Well, I don't think you can answer that one "yes" or "no." Noise abatement-- A social requirement such as noise abatement, yes; or such as a pollution-level, yes. It'd be much harder to say, "Design me a system that makes people happy." Do you follow what I'm saying?

M: (Laughter) Yes.

L: [Inaudible] such a social requirement. Obviously where it can be-- Let's pick one that's a real issue, which is, let's say, highways, and where should they go. I think that--particularly as it ties into cities--that if you tell--the highway engineer, as you know, has been viewed by many, and myself included, as putting a road from A to B at the lowest

possible cost. Damn the torpedoes full speed ahead. And I think that's probably a fairly justified criticism. Although he tries to take into account other things that--when it comes right down to it he's been told to build that road and he's under pressure to reduce cost. You follow what I'm saying.

M: Yes.

L: And we had a--I don't think we ever put it in--a scheme for, let's say, using my knowledge of the kind of thinking an engineer goes through, and trying to allow him to do what he wanted to do, with his psychology, but bringing in some other considerations. And the scheme was strictly a ploy, and it was literally to get someone else to arbitrarily put--by judgement, dollar-values on--and he's penalized so many points, or so many bucks for running through a park and he--arbitrarily put--just using judgement and not get too fancy about it, not argue about it or philosophize about it too much, put dollar-values on these things. And now tell the engineer to run the road at minimum cost, but to include these others in. And now to make it a little stiffer, or a little--to include these in at the nominal dollar-value and then to multiply that nominal dollar-value by a factor of five, ten, fifty, a hundred, and then to reduce it by a factor of a half, a fifth, and so on. And to tell him, "All right. Locate your road under these constraints," and now come out with a set of locations that you--your computer's been plugging away, and if this were true, these are the locations that you would use to choose to put your road. And then expose those locations to the political process. And tell the people what you've done.

M: Now, did this work?

L: No, we didn't--we--

M: You didn't try it?

L: Well, no. Put it another way: with everything else going on, we weren't able to try it. Whether it would have worked or not, I don't know. In some ways this multi-, oh this one they have going on [in] Baltimore, that the Secretary had going on, this--the design team, design concept teams, were doing sort of this kind of thing. But, what I've tried to do here is create an interface, which is normal and easy for the engineer to work into, if you follow what I'm trying to say. See, you've given him a problem which he can deal with, and he can come out with answers; and getting the answers will satisfy him, by the way. This--okay?

M: Yes.

L: But you've at the same time not locked yourself in. And the reason for choosing this wide range of parameters is so people can see what the influence is of these factors, and then let the political leaders, the socially-conscious, and the citizens decide how they want to proceed.

M: Now, at what point is there a breakdown in communication? On what--is it on technical matters?

L: (Chuckles and sighs) okay.

M: Maybe you can give me a specific example from your own experience.

L: Well, let's…. It's in a large number of areas.

All right, I'll give you a specific example, but it's going to be a broad example.

M: Okay.

L: The, I think, tendency of any discipline is to regard other disciplines or other areas as peripheral. And so I would say that the tendency--let's take your aircraft noise that you mentioned earlier--is to ask, very simply, "How much noise reduction can you give us?" Of course, the answer to that is, "Well, that depends." Okay. "All right, well, then, how much can you give us for a certain amount of bucks--a certain amount of dollars?" And the answer there is even "It depends." What I'm--so I think that neither group, or groups, appreciate the real complexity of the problem of another group.

M: Yes.

L: I'll use another analogy as we're just sitting here talking. It's a bit as though--see that picture up there?--and we both appreciate the beautiful picture. It's a bit as though, now turning away, you turn to me and you say, "Frank, tell me what that picture looks like." Okay. And the only answer I can really give you, "Well, you'll have to look yourself." I might give you some impressions, but I think that….

The tendency, of course, is to want a quick answer, or quick appreciation from the other group. Like, I might turn to an attorney and want a quick answer, or I turn to someone else and want a quick answer, without realizing the, really, complexity of that other field, and the fact that a simple answer cannot be given. Now, a lot of it's just semantics; a lot of it's viewpoint. A lot of it, I think, a lot of the problems deal with simply that--let's again take the engineer--that this view of the engineer is held, and with a

certain amount of validity, then almost a determination that the engineer should live up to that view.

Let's take the highway again; I've been guilty of it myself. Let's say the Highway Research Board of the National Academy would like to become the Transportation Research Board. The general attitude has been "Well, gosh, you guys are a bunch of highway guys, and the problem is we got too many highways and the last thing we want you to do is to take over the entire transportation system." Well, we say that at the same time we castigate them for being nothing but a bunch of highway guys, so we've got them kind of in a box. And I'm not sure looking back--this is a very minor point--that I wouldn't have been much wiser to encourage them to become the Transportation Research Board.

I've done a lot of rambling here as far as--

M: Well, your job, then, is really one of a liaison between the scientific community and the political community.

L: In part. In considerable part. I might mention here, just again--have just done it, have just met the gentlemen here a month ago or so--we got in a chap as a consultant who has been very helpful recently in this area--although, you look back, you wish you'd done it a year ago--a Governor Campbell, ex-Governor Campbell of New Mexico. He is an attorney by training, but he's a very perceptive individual, and he's been trying to do the same thing from the political standpoint. And we had him--another thing that I've done while I'm here, I organized a citizens' advisory committee on transportation quality--well,

that's a nice fancy phrase. That committee met, let's see, two days ago for a couple days; it's had about four meetings now.

M: What is the purpose of this committee?

L: Well, I hadn't--because I thought it was a good thing to do. (Laughter)

M: Is that public relations?

L: No, it's a little bit of everything. Let me tell you the thoughts that went through my mind in doing it, and again, I can't identify, perhaps, a single purpose. One, a desire to make the department, the technical parts of the department form a link to the citizen. "What is it about transportation--how do you feel about transportation? What is it you like, you don't like? What would you like to have?" Get that interaction going. Secondly, let a few intelligent people begin to appreciate how difficult the problem really was. Get the feedback the other way. We tried to pick people who were--we tried to pick what I call grand-jury-type people in various areas around the country, and also tried to get various groups represented. [We] deliberately tried to avoid picking experts in a normal sense, but also didn't simply look at the tax rolls and just pick a name. So it isn't a statistical sampling--literally, a conscious effort to pick grand-jury-type people.

M: How many people are involved?

L: Oh, I think there are fourteen-ish, fifteen, something like that.

M: From around the country.

L: From around the country. We had a meeting the last couple of days. I asked Governor Campbell to attend the meeting to, again, help this interchange go back and forth.

M: What sort of thing did you talk about?

L: Well, there was a chap, very nice, and very bright, and very outstanding transportation fellow, name of Foster Weldon, of Ford Motor Company; he's head of their transportation research and planning for corporate offices at Ford. And he is looking [at] non-automobile aspects of transportation. Before he was with Ford he was with Matson [Matson Navigation Company?], and he's the fellow that put in the--container ships are his big--he put them into Matson and that started the thing going. So he came and just talked with the group for two or three hours. And he's extremely interested in what are called dual-mode systems. He's extremely interested in the interaction with transportation and the community, or interaction with transportation and the region, transportation planning procedures, and so on. And he talked with the group. It was interesting for me to watch the group's reaction to him. They all liked him. He was articulate; he talked well, and so on. But he left them feeling a bit uneasy. You could sense this, and Governor Campbell sensed it, and there was a lot of discussion back and forth. It was interesting to see Governor Campbell say the same kinds of things, and almost--but not leaving the group feeling uneasy.

M: What was the cause of the uneasiness?

L: I would say, probably--get very deep here--ambivalence in feeling of wanting an uncrowded, unpolluted, more or less orderly world, but not wanting to be--to feel you are merely a slot, a peg in a machine. It came about--in the dual-mode systems the intent is to enable you to drive about freely, like an automobile, but for many situations to get on a

guide-way and run down the guide-way under control, under tight control. Maybe just, literally, on a belt of some kind. That may not be the right technical--but that carries a constant high-speed belt, close spacing, close together. So you have the freedom to use your car, but you--if properly done, it's conceptually much safer. You can argue *et cetera, et cetera*.

Well, the interesting reactions that came out of some of the people [were], "Gee. We're somewhat kidding, but you mean we can't dig out at signals anymore?" (Laughter) And, "You mean if I want to bump the guy ahead of me I can't?" Okay, I'm exaggerating, but that reaction was there. And I think that--and Weldon was trying to explain to them that they shouldn't want to do these things. And I'm exaggerating a bit, but…. So I think that maybe indicates a--

M: Well now, [do] you think this citizens' committee will accomplish what you want it to?

L: It already has in part. But committees like this take a long time. I mean, any committee report usually has a soft effect over a period of five years or so. I think one question--I don't know whether Governor Volpe will choose to continue the committee, and he may well not, and the committee's aware of this, but he may well do so. I think if he does choose to continue it, yes, it'll probably have an effect over a two- to five-year time span. But it's awfully hard to measure these effects on something like this. From my standpoint it's already been very valuable. But, now I'm leaving, so--but I'd say for me it's been very educational; I think for the staff it's been quite educational. I think from the committee's standpoint it's been educational.

I think the--let's just toss out--the committee has just had a few meetings, but one recommendation that came out is that "You know, people don't understand transportation, and the government should be telling them more about it." That television programs--*Transportation U.S.A.,* or something like this--that begin to get across some of the problems and the size of transportation, some of the problems and so on, that's educational. "We as citizens"--this is the committee talking now--"we're glad to have this experience now, but we wish we'd--somehow the government should educate us." Well, whether that's a valid conclusion or not you can argue, but I'd say that general feeling, as they get into it, of watching them [was]: "We didn't realize it was, one, this interesting, second, this intricate, and third, that there was anything you could do about it anyway."

M: Yes. Well now, let me ask you about some specific things and see if you've gotten into it. Have you had anything to do with the high-speed surface transportation between here and New York?

L: Yes sir.

M: Is this rail that you're involved in?

L: It's rail.

M: Well, were you in on the planning for this, or what?

L: No. No. This project came over from Commerce; it started in Commerce. Stated very simply, we didn't become involved--normally it would be a project handled by the mode until Secretary Boyd would say that--you, I'm sure, know the project was a considerable embarrassment to the secretary because there'd been a lot of publicity, there was a

television program on it, people had gained the impression that they were going to get a Tokaido [Tokaido Shinkansen Line in Japan] line pretty fast--this general publicity had left this impression--and actually, it was falling way behind schedule. So the secretary asked me to put together a group to evaluate what was wrong with the project, when would it probably be completed, under what conditions, and separate evaluation independent of Federal Rail [Federal Railroad Administration]. And what might be done to speed it up and get it going.

M: Well now, is it correct to say that this high-speed rail service to New York was an attempt to improve an existing service, using the same hardware, same equipment, with better scheduling perhaps?

L: Well, I think this is a question of viewpoint.

M: Well, this is--

L: See, you say, "Is it fair to say that?" I suppose it is. Was that why it was done? I can't answer that because I don't know. The reason I'm hedging you here a little bit: I'd say that if you look at the program you might find that it was an attempt to see what people's reaction would be to higher-speed service. You follow what I'm saying?

M: Yes.

L: Designed as an experiment, rather than to provide higher-speed service. And this--I'm hitting this one because this has been one of the difficulties with the program. With an idea that it's [an] experiment in mind, you aren't as concerned about providing service as being sure your experiment is well-designed and your data's meaningful and so on. And

so, in trying to unscramble the thing, the people I had unscrambling it had considerable problem with--as you would start to make compromises to get the thing, the service in being, then objections would come up: "Well, that's going to invalidate our experiment."

M: What were the difficulties in getting this experiment going properly?

L: Well, I would say that the major difficulty, the root of all the difficulties--[in the] first place, the government monies in that program are pretty small, really, measured in terms of what they're trying to do. I don't have the exact numbers in mind, but I would say that government exposure is in the neighborhood of ten million or thereabouts, maybe fifteen, maybe twenty, but not much more than that. The company, Penn Central, was putting in something on the order of forty or fifty million. So immediately, you've got "the guy who puts up most of the money feels he ought to have most of the say" kind of problem. That was one of the difficulties, I think.

Secondly, Penn Central had gone through a merger. And I would say that when a company goes through a merger the people inside the company are uneasy; they're jockeying a little bit for position. And I rather suspect, but don't know, that there were two sides in--particularly in a merger--there were two sides about this program, and passenger service in general. So that makes it even more complex.

Thirdly, I think that the kinds of things they were trying to do--they were stretching out a bit for the people involved; they weren't used to that--actually, from a, let's say, aerospace standpoint, it is not high technology; it's pretty straightforward what they're trying to do. But they were reaching a bit further than they were normally used to

reaching. They were trying to use solid-state, and they were making a more complex system than they were normally used to dealing with. So, I think that created problems. The organizations and the people involved, most of them weren't used to dealing with this complex a problem.

M: Well now, was it mainly a management difficulty?

L: Yes.

M: Rather than a technical--

L: Yes, but the difficulties show up--management difficulties frequently show up in the technical area, but the basic difficulty isn't that the technology isn't available--Incidentally, this is just--I'll hit this one parenthetically. I've drawn back--I almost refuse to say any more that the technology is no problem. Because you find that the non-technically trained individual takes that to mean that you don't have to worry about it--the technical management is no problem. Well, as a matter of fact, all you're saying is simply, well, it's within the known state of the art--that no inventions are required. The technical management still may be a terrific problem.

And I really think this is, in a sense, what happened here. Inside the government the program is characterized by almost no engineering attention. See, Bob Nelson, who headed the program, is an economist; and his interest was in this economic experiment. All right. And he had been told "technology's no problem." So he didn't worry much about it. Okay.

M: Well, now the initial train has run.

L: Initial train has run.

M: From the television reports it seems to be popular.

L: Yes.

M: Although you don't know whether its popularity will last.

L: I don't know whether it'll last, no. And I don't--

M: So, is it unfair to say whether the experiment was a success at this point or not?

L: I think it's--you don't know yet. Well, let's put it this way: Bob would say--Nelson--that, "No matter what results come out, the experiment's a success because you find out what happens when you jazz up the service a little bit." I think they will get all the trains running within time. Incidentally, also my opinion is--from the committee, the citizen's committee and just similar sampling around--is that there are a large group of people who want this train. Now, whether they really want it or not--I mean, will use it--I don't know. But emotionally, and--inside, they want it. I guess my conclusion is: yes, except for the institutional and political considerations, such a train could be a success. Whether it will be or not, probably--

M: Is this a satisfactory answer for the transportation problem for commuters between New York and Washington? (Pause) Or should it lead to, say, a higher-speed train?

L: I would be very sorry to see a higher-speed train than this go in with grade crossing still existing.

M: Yes. You'd want an elevated--

L: I'd want a dedicated right-of-way system present before you shove the speed up much more than this. I'll point out in the Tokaido Line they do have a dedicated right-of-way.

M: This is for safety--

L: For safety considerations, yes. Incidentally, one of the things that we did was to pull the speed of the train down. The train is capable of going at much higher speeds than it's being run at.

M: I see.

L: It was pulled down from a safety standpoint; it was pulled down also because the trolley-wire--the catenary, so called--but really, the trolley-wire and the panagraph on this existing track system, the way it's laid in, don't work too well at higher speeds. Now, there's no reason why you can't--the Tokaido one works very well. But the Tokaido people completely put in a new system. And Penn Central didn't want to put in a new system. The track bed is not maintained well enough to--it's safe, but it's a pretty rough ride at higher speeds. Again, that's perfectly fixable, but it costs money. And again, Penn Central chose--and I'm not being critical of them--just chose not to invest that money. Point out that this will cost fifty million or so when it's done, and the Tokaido cost one-and-a-half billion. To do the Tokaido-type job in this area would cost comparable monies, perhaps more now.

M: Have you been involved with any of the short-takeoff-type of aircraft? Or even vertical-takeoff?

L: Yes.

M: What has been your role here?

L: Well, primarily, frankly, we've been trying to, let's say, catalyze the two things: one, that the consciousness and awareness of the noise problem, primarily, related to such aircraft, so that when and if they come in, they come in more quietly than otherwise. And that's technically perfectly doable. But you see, the military in most cases doesn't worry much about that; they're after performance. And so the stuff that falls out from the military is then likely to be noisy. So we've been trying to get NASA and ourselves sponsoring research, establishing criteria, ultimately heading toward establishing regulations dealing with the allowable noise-levels of these aircraft. That's been one activity.

The other has been almost at the other side of the spectrum: the general feeling that these aircraft were desirable. Now this gets to be a judgment--these [inaudible] as an alternative, and that as an alternate mode of transportation that they could potentially have a very desirable impact on the nation, and therefore that we should encourage there being more research going on in this area and there being--

M: All right, what have you done to encourage research?

L: Well, we put some money for it in fiscal 1970 budget. (Laughter) That's a very direct answer. When I first arrived we encouraged--requested NASA informally up at Boston to do some work concerning the flight dynamics, flight control system, traffic control system related to these aircraft. They've spent, oh, two or three million dollars up there now on a project which is going along very well concerning these aircraft. We've encouraged the FAA [Federal Aviation Agency] to open up their thinking regarding them

in the air traffic control system, because they have different flight characteristics, and the FAA has lots of problems, that the tendency [is] to say, "Heaven forbid!" So I'd say that--generally stirring up interest in the aircraft.

M: Well now, isn't it possible that short-takeoff/landing-type aircraft might well relieve airport congestion?

L: Yes. Well, I'm sure they'll have to--they'll both relieve it and they might increase it in some cases. But let me say this. Let me go to the vertical takeoff and landing, not because it's necessarily better, [but] because it makes the point more clearly. In the ultimate, the vertical takeoff and landing makes an airport very inexpensive. Meaning, if you carry it to the science-fiction elements, you know, a VTOL [Vertical Takeoff/Landing] aircraft in every garage kind of thing--obviously you need a traffic control system, or a traffic system, if you had a VTOL in every garage.

M: Yes.

L: So I think that one of the effects is to reduce the--is to enable increased usage of existing airports, to enable smaller communities that otherwise wouldn't be able to afford an airport to have one. I think this is very important. And that's why I say beneficial effect in the country. I think the ability of smaller communities to have better communications may--I'm getting carried away here--tend to take some of the pressure off the cities, if you move downstream.

M: Well then, with that consideration, has your office stressed experimentation, research in vertical takeoff?

L: Well, let's see, again, realize that we don't do any research here.

M: Right. You would sponsor it--

L: --sponsor it. So the answer is yes. We've encouraged NASA to do research in experimentation, we've been--Tom Payne, by the way, who's over at NASA--he's the deputy, he's the acting administrator now--is a good friend of mine. He came from Santa Barbara, as I did. And we think, on most subjects, reasonably close to alike. And I think, just very frankly, NASA was--I felt that NASA was not very interested in VTOL and STOL [Short Takeoff/Landing] aircraft. When I came back from some previous experience in association with--and I would say that, whether it was our doing here or Tom's doing or a combination of both, but I think that the interest in this type of aircraft has gone up greatly at NASA in this last year. So experimental work is--I think there's much more money--there's much more funds in fiscal 1970 budget for this kind of activity inside NASA than there would have been, I'd say, if Payne and I had not been here.

M: I see. What about the SST [Supersonic Transport]?

L: Well SST, as you know, is a program that was started sometime back.

M: Have you been involved in this?

L: Yes. Again, this is a program run by the FAA, and our involvement is to keep generally informed and to give the Secretary an independent source of advice. The program is very well run; General [Jewell C.] Maxwell is a tremendous guy. But like any program guy, you're pushing your program. And so we felt--or the Secretary felt he needed an

independent source of advice. One of the first things I did when I came into the department, at the Secretary's request, was to go out to Boeing with some of my people and make an evaluation of the status of the SST and talk to Maxwell and his people and so on. And, fortunately, I'd say everyone concurred in what ought to be done. They knew the program ought to be slipped a year in schedule because they weren't ready to build. This was Boeing's recommendation; this was--I think it would have occurred anyway, by the way. This was General Maxwell's feeling. But I'd say the Secretary felt much more comfortable about it, having what he felt was an independent evaluation.

The SST is--I've just returned from Boeing now, getting an independent reading on the present status of the SST. As you know, Boeing has presented their proposal, January 15th, and the decision is due March 15, somewhere in there. Obviously, it can be delayed, but the complications in delaying it is, "What should be done now with the SST program?"

M: And what about new shipping vessels?

L: Well, the--

M: Now, the Maritime, say, is not in here.

L: Oh, Maritime. Not in here. I think MARAD [Maritime Administration] belongs over in the department. And I'm sure--whether it'll ever come over here, I don't know. I would suspect--I feel, that we did not, I did not, adequately move out to start vessel-sponsored research in the department somewhere. In other words, I think MARAD--again the communication problem. MARAD not being here, I think everyone sort of took it,

"Well, until we get it over here we can't do anything." Actually, if you look at the appropriations--or at the enabling acts--and so on in the department, the department could do much in the maritime area even without MARAD over here. Although it's desirable having--

M: Wasn't there a bill that Alan Boyd pushed this year?

L: Yes.

M: Or in 1968, rather.

L: Yes. Administration. Alan pushed a bill designed to bring--

M: Which failed.

L: Which failed; right.

M: Well, was the problem there that he was fighting against the Maritime Administration?

L: No, I think the--I wasn't--I'm out of my area; I just saw it going by. My impression is that it failed primarily because there was a difference of opinion between the administration and the industry and the unions involved concerning the subsidy program. Let me just say this: Alan Boyd has--my observation of him in this area as well as others is he has very strong feelings that price subsidies *per se* over a long period of time are not a good thing; they don't accomplish what you want to accomplish with them.

M: Well, then, has your role been in regard to shipping, or water-service vessels, merely one of keeping informed and advising the Secretary?

L: Yes. And really, we have not been very involved.

M: Not as much as with the SST.

L: Oh, no, nowhere near as much as with the SST. And I look back, if I were going to do it over again, I think that I would not have so easily accepted the fact that MARAD was--not being over here meant we shouldn't be concerned with that area. The tendency has been that; that "MARAD's not here; we ought to get it here; until we get it here, we shouldn't concern ourselves with it."

M: Do you agree that the federal government should sponsor experimentation in transportation systems such as the SST, and the nuclear ship *Savannah* and things of that nature?

L: Well, let's see. Technical transportation systems: let me go at it in various ways. Yes, I think--the quick answer would be "yes" without endorsing or condemning either of those two programs. I think that--past history, we've done it at all times. At some times some kind of federal subsidy to the economy is called for in various ways to accomplish a desirable goal. I think that one of the best forms of subsidy is to sponsor research and technical development. And then get out.

M: Are you saying the government should serve as a catalyst?

L: As a catalyst, yes, and then get out. Because, you see, you can turn that off. [Inaudible] contrast with price subsidy is once you get it going it just keeps going. Going another way, I'm suggesting that research and technical subsidy, if the monies that have gone into price subsidy in the, let's say in the maritime area, had gone into research and technical subsidy, I think the U.S. would be much further ahead as a maritime nation than it is now. On the other hand, I do recognize the union--I mean you can't do this baldly and coldly.

I think that the union would find its income is better, its employment's better over a period of time, if you-- So you can't do it ignoring the union.

M: You're saying that labor would benefit from--

L: --ultimately benefit. I think, incidentally, going back to Foster Weldon and the container shipping, out there was introduced; they worked it out with Harry Bridges and worked out an agreement and arrangement that, I think, very likely was a benefit to all concerned.

M: Is it correct to assume that private industry could not undertake the finances involved in developing an SST or something of that nature? Is it necessary, in other words, for the government to do this, to spur technological advance?

L: I think you have to take each case in its point, each one on its merits. I'd say, let's take a look and see. Let's look at transportation systems. We're obviously very conscious that-- where are we outstanding? We're outstanding in air travel, air transport, big transport aircraft; and we're outstanding in automobiles and roads, compared to the rest of the world. We don't look so good compared to the rest of the world as far as passenger trains, or even all trains, and as far as shipping is concerned. I don't think there's any question that the old NACA [National Advisory Committee for Aeronautics] activities, which were federally-sponsored research, and the military activities, along with many other things, have led to our leadership in the aviation area; and it is an important leadership.

And my personal opinion is that supersonic transports are coming. It was being-- there was no military need for aircraft like this. I guess it went back to President

Kennedy and so on. Obviously, Concorde was going to be built; and the TU-144, the Russian version, was going to be built. I'm not familiar with all the details, but I think that I would have concluded, whether the timing is right or not, I would conclude "yes," probably some type of sponsorship in the SST area is called for; that it's too big a bite for industry to take over, take on. In some ways industry, in trying to take it on, is competing directly with France, England, and with Russia--not with Russian industry, obviously, and France, English industry, but with the governments themselves. It becomes a--let's say, put it this way: It becomes properly a national and presidential decision. It's much more than a transportation decision, and much more than an industry decision; it's basically, "Does this country want to remain, in the overseas transport, in the lead role?"

Now in the automobile area I think the activities have dealt with trying to push down pollution. It isn't that the automobiles aren't successful; they're very successful. So you concern yourself with pushing down pollution, and trying to push down congestion, and "congestion" [can be] interpreted very broadly: whether it's congestion on the highways, or congestion of the highways themselves--in the cities, you know, government taking over all the land and so on.

In the shipping area, yes I think I'd say federal sponsorship is called for. And this is not a new phenomenon; it's obvious that--and there are many abuses of it. As you go back in history, I'm sure the railroads, in one way or another, [received] a massive federal

sponsorship and subsidy of various kinds. And these are going to get abused at times. But I don't have any other solution.

M: Now, in the operation of your office, seemingly in a new department like this, you would spend a lot of time just getting things going.

L: Yes.

M: Does this sum up your activities since you've been here?

L: I think it's reasonable that a major part of the activity has been just getting things going.

M: Getting the department running--

L: Running. I think most of the people who were here felt that it would take another year--I mean, just backing up [inaudible]--that another year to really begin to feel that you were beyond the "getting things going" stage and were really accomplishing things.

M: Well now, is your feeling that the Department of Transportation, as such, is a logical department to have in government?

L: Hmm. I don't--

M: Does it make sense to you?

L: That's a hard one to answer. Obviously it makes sense in a--let's say it's a category of things that are pulled together and I suppose it's, in terms of, "Is the category a useful category?" Sure it is. If you have the desirable, let's say, cross-fertilizations, and system considerations occurred that were, I'm sure, in people's minds that had led to the formation of a Department of Transportation, no, I don't think they've occurred as yet; that'd be my quick answer.

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"Would they occur?" or "Will they occur?" I think this depends on a whole lot of factors. And there's always the danger that in trying to bring in--let's say, trying to rationalize policy and bring in more interaction of the transportation grid and network, and consider more things, that the tendency is, "Well, we haven't solved that problem yet; let's don't do anything."

Let's pick the FAA as an example. I'd say the FAA wants to build more airports, wants to do various things. I'd say there is a danger--and I think it's occurred to a degree--the department might say, "Well, wait a second. You know, if we had our high-speed train, or if we had STOL, you wouldn't need to do these things." But meanwhile, time marches on. And of course, the planner's dilemma in a dynamic world is that if he takes very long in planning, it's too late. He may get a real fine plan, but by that time the situation has changed.

So I think there is that danger in a Department of Transportation, that of getting the right balance between having to let the modes and the various systems move ahead on their own, but then trying to come out with a more rational system. I rather suspect that lots of the controversy regarding the department, inside the department and out, really dealt with that area. Frequently it wouldn't surface that way. I found that a very useful question to ask, let's say, in the aviation area is, "Well, now, how do you project demand for airports?" You get lots of arguments and so on; lots of people, you know, get technical about it. But really, I tell you, if you don't like airplanes, or if you think that

we've got too many airports now, your projection of demand's going to be a lot lower than if you think airports and planes are great and we ought to have more of them. And it's a very subjective thing. I think the department potentially, if it doesn't recognize this, could be a stifling influence on situations rather than the reverse.

M: I see. Well, now let me ask you about the transition to the new president.

L: Yes.

M: Here you are in office; it's January 31st, some eleven days after the inauguration. And you're still here. Now, you're a Republican.

L: Yes.

M: And, of course, Nixon's a Republican, but you're still in office. Does this mean that the Nixon people are moving slowly in the transition? Or have they reached your area yet? Have you had contact with them?

L: Okay. Oh, yes. Okay, let me give you a very direct answer. I plan to leave. I plan to leave around the first of March. There has been some contact with the Nixon people in the Department of Transportation, [with] Secretary Volpe, but not very much.

M: This is at a very high level, then.

L: Yes. If I can put a--you offered last time to put a time--

M: Oh, yes. You restrict this--

L: I think this should probably be restricted for, what--

M: Whatever you wish.

L: What is normal?

M: Well, there is no normal.

L: --normal. Okay.

M: But you can say, "Restrict it for five years." "To the end of Nixon's--"

L: Okay. I think five years is--

M: But you'll have an opportunity for this when we send you the transcript.

L: Okay. Fine. I probably would not remain with the department in any event. I was--I guess "offered" is too strong a word--I was felt out for Assistant Secretary of Air Force for R & D, Al Fox's job. And if I were going to remain in Washington I would probably have taken that job. I think that very likely that at the administrator level--I suspect that, with the possible exception of Dave Thomas, they'll all change. And at the assistant secretary level I think they'll all change, too. I think there'll be pretty much of a--and my guess is going to be that, with the exception of Defense, and possibly NASA, that's going to be true of most of the departments of government. Now how deeply the change will go, I think no one really knows; it depends on when the new people get in and what they see and how they react to the--

M: What have you done to prepare your successor?

L: I don't know who my successor is going to be yet, so--

M: Well, that's a problem.

L: So we've prepared a transition document, [in] which we tried to, as simply as possible, lay out what we felt that the problems were, and the activities that were ongoing that they should become aware of quickly. For example, take the SST. It's obvious that's

something that's going down the pike pretty fast; a decision is going to have to be reached.

We have a post-1980 air traffic control task force going. I feel very strongly that that's a very important area, and that that task force should be continued. I think we're--that there is not only a potential, let's say, blocking of air transportation that is likely to occur, but there is a real, as yet unrealized, safety hazard that is going to be building up over the next few years. And some very definite and decisive steps have to be taken and this task force is starting to take them--or starting to move out in that direction. So in that sense--

M: But you prepared a transition paper--for this office?

L: For this office, which went into the transition book for the entire department.

M: I see. So Volpe would have a--

L: He has a transition book available to him, yes.

M: Well now, did you prepare this transition paper upon orders of Alan Boyd, or of--

L: Yes.

M: --your own volition, or--

L: No. Basically, it's apparently standard procedure. Alan Boyd directed that it be prepared and everyone pitched to and prepared it. So I think that if the--of course, you're torn between--when your successor comes in, he wants to do it his way and you want to tell him all the things you'd like him to do. (Laughter) I think, until you know who it's going to be and have a chance to chat with him, it's a little difficult to--

M: But you would expect briefings, then, with your successor.

L: Oh, yes. I would expect--before I leave--

M: Have you been in on any briefings, say, with Volpe?

L: Very few. My impression is that Secretary Volpe now is busy in his office; he's involved in his own transition. He's busily involved in his office reading everything he can read. My impression is he's the kind of fellow that wants to, when he comes to a new job--which is, by the way, pretty well what I did when I first arrived--sort of isolate yourself for three or four weeks, until you get the feeling for the job.

M: Have you detected any vindictiveness in the transition?

L: No, I haven't seen any at all.

M: --say, in your area or anyplace else in the department?

L: No, none whatsoever. It was described by someone as sort of being like school when the finals were over but you still had two weeks to go. (Laughter) No, I don't think that I've seen any vindictiveness. I'd say there's been really very little contact. I'd say it that way. My impression is that Volpe is going to bring his own people in, and wants sincerely to do a good job.

M: Well now, let me ask you this. We've covered your background, and some aspects, at least, of your job and some of the problems involved. Is there anything that I should have asked you about that I didn't, or anything you wish to add?

L: Oh. Let's see, why don't you turn the tape recorder off, and let's just sort of--

(Interruption)

M: Well now, you mentioned an air traffic control task force. How did this come about?

L: When I first arrived the Secretary had had some discussions with Don Hornig, of the Office of Science and Technology, about the desirability of setting up a task force to evaluate the air traffic control situation. There was a question of whether Don Hornig's office would set one up or whether the Secretary would set it up. It was decided that the Secretary would set it up, and I was asked to explore it. [There were] lots of conversations with FAA, with Don Hornig's office, with the Secretary, about what its specific job and mission should be, selection of people, locating people and so on. Got it established under the chairmanship of Ben Alexander.

M: Did this idea that this should be done occur at the time of air traffic congestion [inaudible]?

L: No, it occurred prior to that idea--prior to that aircraft traffic congestion.

M: Prior to that? This was foreseen.

L: This was foreseen. Air traffic congestion was foreseen. I think it was foreseen by knowledgeable people. Let me digress again to the nature of this kind of a problem, because I think it has implications in government.

Many problems such as air traffic control are what they call "queuing problems." And let me be a little bit corny and give you the marble example. If I give you a tube that's so designed for some reason you can put a marble a second through it and no more--up to a marble a second will go through that tube and no more. I start handing you marbles. If I hand you a marble every two seconds, you don't have any problems at all.

Every second-and-a-half, every second--no problems. I hand you a marble every .99 seconds, and pretty soon you have one whale of a lot of marbles in your hands. Now, the point is that you get very little warning--this is an exaggerated example--but you get very little. Unless you're sophisticated enough to know what's going to happen, in a technical sense, the average citizen, and the congressman, says, "It must be sabotage!" (Laughter)

M: It happens too fast.

L: It happens too fast. The same thing happened in World War II in the New York Harbor area. In fact, they suspected sabotage. They made a very minor decision to close down a harbor somewhere else, and it put another 3 or 4 per cent load on New York Harbor, and the waiting time went up enormously.

M: (Laughter) That's a good example.

L: Good example. And so I think that--

M: This is what happened, you think, in the air--

L: Yes, in the air traffic control. Now the people who were in the field knew what was going to happen, and they'd written reports.

M: But as you get that .99 marble there, you're going to have trouble.

L: You're going to have trouble, yes. And that's the situation, sort of, in air traffic control. And it's going to get worse. Just because it takes--you see, if you don't get much warning--if the democracy can't react, they'll get the error signal. But if you don't get much warning, then if you've got long lead times on procurement, building airports and so on. So I think these things need attention in the planning process.

M: So in other words, the problem was foreseen, and the task force was set up to deal with it.

L: Yes.

M: But then the problem became public.

L: The problem became--yes. The task force actually was set up not to deal--the FAA is dealing with the problem for the next ten years. They haven't got enough money; they have a whole lot of problems. But the task force was set up to deal--the task force is post-1980. Air traffic control planning, post-1980.

M: Oh, boy.

L: Now, that was done for several reasons. One is that that is the lead-time that it takes to change a system this large. That was number one. Secondly, if you even gave a whisper that you were reconsidering what you were going to do between now and 1980, the Bureau of Budget would be on like "wham-bo" and you would lose your--am I coming through?--you'd lose your budget money for handling the problem now. That's, in a sense, been one of the many reasons that's built up the problem to the extent that it's built up.

Now, there will be, I'm sure, some fallout of the task force prior to 1980. Now, really, we deliberately focused them down there, and then we said, "All right, now I want you to decide what it'll all look like then. Look at where we are now in making that decision, and how do you get from here to there?" Because you have enormous investments in people, in controllers, in facilities, in training, in airlines, equipment and

so on. So you can't design the complete new ideal system without recognizing that phenomenon.

M: Now, you're back here on a problem, however, of changing a complete system in a dynamic--

L: Yes. That's right.

M: --society.

L: That's right.

M: That situation. So it might be that what you plan now will be obsolete.

L: This is in a sense what's already--it hasn't happened to this task force, but it happened to the last one; there was a previous task force. If you don't implement what you plan quickly, there's a tendency for it to be obsolete.

M: Well now, in a situation like this, and you're planning for, say, ten years, a decade from now, could you assume a development of a economical vertical takeoff aircraft?

L: My judgment is that STOL will certainly come in in this decade. And there will be increased use of VTOL, but I think it'll be the next decade before it comes in, if you follow what I'm--

M: Yes. Twenty years.

L: Twenty years. Well, I'll say, not--okay, I'll probably be wrong. Someone has said that you always overestimate what you can do in short term and underestimate what you can do over the long term. My guess [is] in the 1980s that there'll be increased use of VTOL,

1970s, increased use of STOL. I don't think until the 1990s we could see massive use of VTOL. That's my own judgment, but we'll see if it turns out to be true.

However, the task force is taking the VTOL into account in its planning. I think there'll be--my own judgment is there'll be much more increased use of air transportation, even beyond the most fearsome or optimistic--depending on your point of view--projections.

M: All right. Well now, were you in on the setting up of this task force?

L: Yes.

M: And what was your capacity?

L: I set it up, basically.

M: All right. And you were in on the selection of the personnel.

L: --of the people, of the personnel; right.

M: And who did you pick?

L: Well, without going down all the names, there was--

M: How many are involved? Let's start with that.

L: The task force is about ten people. The executive secretary of the task force is Dr. Larry Goldmuntz, who is an old acquaintance of mine and is a consultant.

M: Is that G-O-L-D--

L: M-U-N-T-Z. He's executive secretary. Now, he was president of--his situation is very similar to mine, in actual fact. He was president of TRG, a small research-oriented company.

M: TRG.

L: Technical Research Group. It's up in New York area, Long Island. It was acquired by Control Data Corporation. Larry stayed for a while and then left. He became independent in the process, and--

M: So he has a similar background.

L: Similar background. He is down here as a consultant. He's moved down here; moved his family down here, in Washington. We talked with him considerably about joining the government as a civil servant heading up one of the groups here. He chose not to do that; he preferred to remain a consultant. So he's full-time consultant for the department as the deputy secretary of this task force.

M: Well now, the personnel, the people chosen for this--are they all technical people?

L: They are technical or operations. In other words, they are professionals in their fields. It is not a citizens' group, if that's what--no. They're technical or professionals, operations-oriented. Someone from ATA--Ben Alexander is the chairman. He is the chairman of the board of a small company out in Santa Barbara called General Research Corporation. He was back at ARPA [Advanced Research Project Agency?]. Just to give you Ben's background, he headed a--there was a fair amount of publicity a year or so ago on a Woods Hole study on transportation and the city that was done up there. Ben shared part of that. And the Dial-A-Bus and some other thing--these concepts came out of that. He's a very interesting and unusual guy. I believe he got his degree in English literature; and then graduated at a time when English literature--was hard to find a job doing that--and

decided to become a physicist. And did it, sort of, by reading books. And he's a very productive physicist. He's an unusual chap.

Clerk Perkins--aeronautical engineer, very well respected--on the task force. [Inaudible] Al Block on there; there's an ATA chap. But it's generally a professional force. Dick Huff of Bell Labs, or AT&T, is on the force.

M: You chose these people for their technical expertise and without consideration of politics, is that right?

L: Yes. That's right.

M: Okay, then. Are these people aware of the social problems involved, or is that a consideration?

L: Well, I'm sure they are. We can always ask, "To what degree are they aware?" Let's put it this way. They are certainly aware that--

M: Well, again, I'm driving at this problem of communication.

L: Communications. I understand. I would say that they are aware of the social problems as much as any professional is. I think that that's the--now, I think they are probably aware of the political problems; they're not naive in a political sense.

They are aware, for example, of the noise problem, and realize that the air traffic control system and the airplane airport has to be designed with that problem strongly in mind. I would suspect they wouldn't ask themselves a question--[I'll] illustrate the point: They, professionals and engineers, want to know "Well, what is the demand going to be?" This is like the demand for highways or whatever. In other words, what should

they plan to design their system to? Of course, this is very difficult; you're looking into the future. And we told them one day--and I think it sort of shocked them a bit--"Well, perhaps the demand will be whatever you people decide it will be." That "You may be in the process"--there'll be other forces on it, obviously, and so that's an exaggeration, but that "Your decision as to what kind of a system you're going to design may have a real impact on what the demand is. If you decide it's going to have lots of airplanes, that might enable, at least, lots of airplanes to exist, where if you decide it wasn't going to have so many airplanes, then that would be a constraint on the growth." And so here is where your social interaction starts coming in.

M: Well now, is the purpose of this task force to design, or to make suggestions for what--

L: Well, I'd say do conceptual design and make suggestions. It isn't only air traffic control; it's the whole--

M: Is their purpose to get an overview of the air traffic problem?

L: Yes, let me give you the kind of questions that they ask themselves. For example: What would happen if we kept on going the way we are? What are the problems with the current system? Now, one of the things they've observed, which is well-known, but I mean, they found out themselves, is that the voice communication, pilot to controller, back and forth, is a real problem. It takes a lot of time; it leads to misunderstandings and so on. All right, I think one of the conclusions they're going to jump to, without wanting to prejudge the results, is there should be a datalink. You may want voice override, some voice communication, but a good majority of the data should go back and forth via

automatic datalink, no voice. Exactly the details of how you design that link--just the knowledge you can do it and so on--but the details of how you design it; of course they wouldn't do it. But that concept, I would say, they would recommend.

Take another one: To what degree should you balance out the freedom of choice the pilot has in what he does, and the degree to which he's instructed by the ground what to do. And it won't be the same everywhere. But in what situations, how much freedom of choice is there? Assuming you decide how much freedom of choice there should be, how do you decide the transition? And who decides?

Can you bring in airplanes closer together--closer lateral spacing of runways, during instrument flying conditions? See, during VFR, visibility flying rules, you come in quite close together; instrument flying rules, you come in far apart. That reduces your capacity under instrument flying weather. Can you safely bring them in closer together, and if so, how? Are there constraints in the system that prevent you from doing this that have nothing to do with safety, but just the way it happened to be built?

M: This then is a basic questioning--

L: Yes.

M: --of the entire traffic control system.

L: Yes. And asking which way it should go. I mean, we're looking into the future now.

M: All right. How soon will this task force make a report?

L: It should be out about the middle of this year.

M: And then the task force will disband?

L: That's the way it's set up now. I think that that would be a decision you'd reach at that time. Most of them are very busy people and I--

M: How often do they meet?

L: Oh, the full--they meet at least once a month, and they form subpanels and so on and it's going on almost continuously. The people on the task force are putting in, I would say, something like half their time on it. It's quite a time-consuming activity. When they're not here or doing something for the force somewhere else, there are subpanels and groups; and we've given them staff that is working up studies for them and so on. So it's a--

M: Incidentally, how did you go about choosing these men? Where did you get their names?

L: Lots of places.

M: You knew some of them.

L: Some of them you knew. Some of them other people knew. Secretary Boyd suggested some. FAA suggested some. You call up people that you know and ask for suggestions.

M: "Who would you recommend?"

L: Don Hornig and the Office of Science and Technology suggested some. ATA suggested some. And now you--

M: Then you contact them.

L: --contact them and go through the--

M: I see.

L: --[inaudible] process.

M: Now, you mentioned work with Caltech and JPL [Jet Propulsion Lab].

L: Right. I've been active in trying to tighten the contact between the Department of Transportation and universities and laboratories. And without thinking it through, the general feeling that I've been developing, is [that] it's desirable over a period of time that there be in various regions of the country kind of a transportation research center, or transportation technical center, which would have the following characteristics: It would be tied to the universities to encourage students in the universities, and professors, to think about transportation problems. And to get the very specialized brilliance you can get out of some university people. It also would be tied into a non-profit laboratory of some kind, such as JPL, or Lincoln up at MIT, so that you can get the responsiveness and ability to focus on problems quickly that you can get from a laboratory organization. And I think it also should be sensitive to the region. I think it should be broadly interested in transportation. It probably should have its own specialty, such as air transport, or water transport, or traffic control, or something like this, but it should be also broadly interested in transportation.

M: How about a regional--

L: And a regional orientation as well, so that the region--

M: These schools would be interested in the West Coast.

L: --in the West Coast, for example. So it has an ability to answer problems for the region. And, frankly, I think that this northeast-corridor program that's over in February, of which the high-speed trains are a part of and so on, really, I hope in time, it'll get into the

northeast-corridor region and not be located as a sort of a part of the federal government. I think it belongs as a regional transportation institute.

M: Yes. And this was your interest at MIT.

L: MIT. And we've just been starting this. We didn't have funds; we weren't sure how well it'd be received--and you get all kinds, you get various receptions. And we really haven't done it yet; what we have done is get-- We've gotten cooperation from NASA, excellent cooperation, to allow JPL--and they've done a little funding of their own, and we've done some funding of JPL through NASA--to start a small group working out there. We've also given Caltech a contract, and have a group back here that has been working with us directly here. And then we've gotten some of the Caltech professors now interested in some very special problems. For example, pick one: sonic boom--over the long haul. It's a very researchy thing; can anything be done about it? In other words, can you ameliorate the sonic boom in any way--not with the present SSTs, but looking to the future. That's a pretty basic research problem. And Caltech, with its aerodynamics background, is naturally interested in that kind of thing.

M: Do you hope to do the same thing with MIT?

L: Yes. The contacts have been set up now. I can't tell you right where it stands, other than it's a working-relationship development.

M: I see. Okay. Is there anything else we should talk about?

L: No. I think that covers it.

M: Well, then I wish to thank you for the interview.

L: Thank you.

End of Tape 2 of 2 and Interview II

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