



Interview of Mike Slomin

Interviewed by:
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James Pelkey: If you don't mind, we were just chatting a little bit about this concept that, in the '30s, RCA and Bell Labs were the two centers of communications technology. It was radio technology and electronics.

Mike Slomin: Electronics and radio, yes. Well, let me start this out by giving you some of my background. It will help you understand where I'm coming from --

Pelkey: Please --

Slomin: -- to the extent I have biases. I think I know them, but I may not, you should know them, or perhaps be able to identify them. I have a degree in electrical engineering, and used to work for a living as an electrical engineer and project manager. I also went to law school part time. I have a JD degree. I have an LLM in international and trade law. I worked for the Federal Communications Commission off and on for almost a dozen years.

Pelkey: What years were those, Mike?

Slomin: 1973 till the end of 1979 and 1981 till 1986. There's always been a streak of masochism to my makeup, but I think the reality is, when the Reagan administration came in, a lot of my closer friends assumed the power structures of the FCC. I believed in what they wanted to do, I wanted to help. They asked me to help and I went back and took a pay cut to do it, which is why I identified the masochism streak. I also, for over two years, worked as a lawyer for the Communications Satellite Corp., represented their interests. So I have a broad background, both technologically and legally in this. In my years at the FCC I wrote all of the registration decisions of the 1970s, those on brief to the Court of Appeals and to the Supreme Court, and those decisions were affirmed. I had one of the moderate roles in interpretations of the first Computer Inquiry, in preparing the Notice of Proposed Rule Making of the second Computer Inquiry, but quit before it went to conclusion, so I won't take that rap, and I wrote the Notice in the third Computer Inquiry, and then quit before that one went. It doesn't mean I don't reach decisions, but as things come along I've been known to take them. I also had major roles in policy decisions having to do with the entry of IBM into communications and under what terms they might be permitted to enter and have been a general gadfly in this field for years. So, that's my work experience. I said to you I have a number of hobbies. One of them is history. Another of them is, I have been doing, as a hobby, computer programming for nigh on 28 years, so I have some understanding, at least, of the buzzwords. Ok, having said that --

Pelkey: Good. I'd like to have you maybe ramble for a little bit but, the areas I'm particularly interested in are: I start off with the premise, and people hold different views of about how important Carterfone was. Carterfone, certainly from the standpoint of telling the user community: "You can buy alternatives now. There is no longer a monopoly," was critical, in terms of the marketplace, and it did, in fact, unleash independent companies to come into the marketplace and the modem business evolved differently after Carterfone.

Slomin: Yes and no.

Pelkey: Good. But let me begin with the DAA, and all the fiascos that went with the DAA. Then there was IDCMA that appeared during this period of time, by independent modem companies to be able to protect themselves. And then, of course, there was Part 68 registration in '76, which culminated that process. During this same period of time, there were the issues of the breaking up of ATT and of the anti-trust suit against IBM; all these having been precipitated by timesharing and computers being used in different and new ways and so on. I'm really focusing on the data communications industry in contrast to PBXs and keysets. I'm interested in what's happened in computers and telecommunications in so far as they created the framework, or the background, or the environment in which the data communications industry came into being and became what it is today, a big industry. So those are the areas of primary concern, although, based upon our conversation earlier of how intellectual property moves and how we build industries and so on, you obviously have some views which I would love to --

Slomin: Well, we were talking earlier and I was saying what occurred in the '30s and into the '40s, in terms of dispersion of technology held in one or two large organizations, and in this case, I was speaking of the telephone establishment, Bell Telephone Laboratories, and its technology, because of an external event, being propagated out broadly, giving rise to dramatic growth of industry, has occurred in other settings as well, and that's why it is difficult to focus on some technological development and say: "That development seeded the growth of this industry." What I said in the '30s was the case that AT&T and RCA were sort of locked in the technological struggle being played through the courts in patent disputes back and forth and in market disputes, broad ones, some of which were solved by the Communications Act of '34, which sort of limited them to their respective fields. To some extent, the '34 Act largely barred AT&T from broadcasting, for example, but because of this technological competition between these two rather large and very competent development outfits, well funded, with good scientists, AT&T held back its technology. It did not disseminate it. It did not disseminate fundamental technological developments that were occurring in the 1930s and the early '40s in microwaves, in amplification technology, in negative feedback, which basically forms the basis of all good control theory, which can be used for diverse purposes as controlling machinery in plants, as well as decent communications amplifiers. Along came World War II and to meet the German threat, the government set up the Radiation Laboratories (Rad Labs) for the duration, and at Rad Labs in Boston, people were drawn from the academic community; from Harvard, from MIT, from Bell Laboratories, from the government establishment, Naval Research Labs and the like, and from other companies that were in the vicinity or elsewhere, and they were brought there and told: "We've got to beat the Germans. Do what it takes to do so." And basically, Rad Labs received the benefits of Bell Laboratories' then secret developments of the '30s and early '40s, and built on it. At the end of the war, a decision was made by the government to publish the results as soon as these things were declassified, and that set of publications, the Radiation Laboratory's series, disseminated to the entire public, read: an entire electronics industry, the results of the best minds, as a matter of public knowledge. So, at the end of World War II, any company that wished to enter the microwave business could do so. The technology was displayed for them. And they did. And many trace the service competition that began with the FCC's above 890 decision in 1958, and found voice in the Specialized Common Carrier decisions of 1966 and '69 and their implementation in the '70s, get traced to the notion that once the technology was out of the bottle, it was inevitable it would be deployed, and it was only a

question of where the political process would allow that to happen. So that was the paradigm I was using to say: "The same thing has happened in other fields."

Pelkey: Right.

Slomin: It's happened in the computer field. Some would say that a central office is just a large base ten computer. Well, you know folks, AT&T and others have been developing that one since the 1920s, but their concepts were not broadly disseminated. They started to be. Events like computer communications, local area networks, packet switching, sure those came out to some extent out of the defense establishment, out of ARPA, out of the space program, but the concepts were already resident in different forms in Bell Laboratories and places like it. So, perhaps in the '60s and the '70s, the space program and the Arpanet became the vehicle for broader dissemination of technology that was held up. Well, then you ask yourself: "Why did I raise this?" Because you can trace a lot of today's currents in the computer field and their effect on business practice, this dispersion of decision making, this distributed processing and distributed management, can be traced to things like digital networking, local area networks, metropolitan area networks and the like. And its -- the simple progenitor is to look to Arpanet, because the government spent a lot of money developing Arpanet, and that's quite true, but the technology didn't necessarily come out of ARPA. It may well have been sitting in Bell Laboratories used for another purpose, for the communications business. I happen to believe it was. I may be wrong. So, let's talk about those modems for the moment.

Pelkey: Yes.

Slomin: You said --

Pelkey: One fact -- the professor who became president of MIT who was responsible --

Slomin: Vanaveer Bush

Pelkey: Vandaveer --

Slomin: Vanaveer: V A N A V E E R Bush was President Roosevelt's technology advisor for the duration of the war.

Pelkey: And do you know of any book, off the top of your head, that I could read that would give me more insight into that process of RCA and Bell Labs and Communications Act of '34 and --

Slomin: Gosh. There was a good biography of David Sarnoff written in the late 60's or early '70s that went into a lot of the history of the confrontations between the radio industry and AT&T. The one, there's a biography of Bush I'm aware of that tells -- a very complimentary one -- that tells some of what he did in the establishment of Radiation Laboratories. There's also a biography of the company, or the Raytheon Company, oh God, that came out in the middle or lateish '70s that goes into more detail on Radiation Laboratories, because Raytheon was one of the beneficiaries of it. It was a very small, third rate vacuum tube maker in those days, but it

happened to have the production plant in closes proximity to Radiation Laboratories, and as they developed their concepts, they needed somebody to fabricate the prototypes, and Raytheon was there. It was literally in Waltham, MA five miles away, so Raytheon was a heavy player in this just be accident of location. Gosh, I can't remember the name of it.

Pelkey: But you've given me plenty.

Slomin: Ok. Modems. Modems are a very interesting business. What I will say, I suspect, the likes of Kodak and Codex and Racal-Milgo and the like, would violently disagree with, but tough. I think you can verify what I'm saying.

Pelkey: Ok

Slomin: Number one: There are modems and there are modems. There are modems that, until very recently, were usable at relatively low speeds on the switched telephone network. Until maybe five or six years ago they were generally limited to 1200 baud and below, and indeed at one time 1200 baud was though of as too high for the switched network, alright? There are also modems that can work reliably, in the early days of 1200 baud or at higher speeds, but, in terms of early technology -- by early I mean 10 years ago or earlier -- they really had to be hand adjusted for the aberrations of the communications channel. Well the trouble with the switched network channel is; it changes on every call. Every time you pick up the phone and dial, you get a different channel with different aberrations. And that was one of the reasons why you couldn't tweak the modems to work on those. In the private line world, however, you have a channel that's yours until it breaks, and then they give you another one, and you could send the repair men in to do whatever adjusting is necessary to tweak it again. But, basically, it remains unchanged for long periods of times until there's a failure.

Pelkey: Ok.

Slomin: All right? There were no data access required -- arrangement restrictions of the use of modems on private lines.

Pelkey: Right.

Slomin: There were modems on private lines before Carterfone.

Pelkey: Right.

Slomin: Before Carterfone. It was in the --

Pelkey: The commercial sector?

Slomin: Yeah.

Pelkey: But it was -- it was insignificant.

Slomin: It was insignificant to be sure because there wasn't that much use of high-speed modems.

Pelkey: Right.

Slomin: But they were there. Carterfone did not create the modem market for private -- private line modems. What's interesting is, the generally deployed modems were the 103 type and the 212 types, and those are Western Electric numbers, in fact, but they're used. The 300 and 1200-baud modems that Western was developing, those were the markets that opened up with Carterfone --

Pelkey: (Affirmative)

Slomin: -- that others could manufacture those because, prior to Carterfone, you couldn't connect customer provided equipment to switched network services, and that's what those were largely developed for. All right? The companies that entered the market after Carterfone, basically, replicated the Western Product. They didn't do any great advance. They didn't have any great breakthroughs. They came up with the same products. That to me is not the creation of any great technology.

Pelkey: But the 212 didn't come out until '76.

Slomin: I think it preceded that. Or maybe the 202 --

Pelkey: ATT did not introduce the first 1200 dial-up, though. Vadic did.

Slomin: Did it?

Pelkey: Yeah.

Slomin: Ok.

Pelkey: And then ATT came out with theirs and it was compatible. It was a 103 compatible, and Vadic's wasn't. Vadic's was only a 1200.

Slomin: Ok.

Pelkey: In fact it was called the 3400.

Slomin: I may be wrong. My own impression is that the intervention and the action was in the private line modem field, not in the switched field, until sort of the middle '70s and by that time, yes, you're right, it was a very competitive market, but by that time it wasn't Carterfone that made it competitive, it was the registration program.

Pelkey: Right. I agree with that statement.

Slomin: And that's why I -- in data, uniquely, I don't think Carterfone did that much for the industry.

Pelkey: But it did -- did it not communicate out to the outside world, the outside world being both users and the commercial sector, that one: you can buy products from somebody else and you, the commercial sector, you can build products to be able to compete with AT&T.

Slomin: Certainly set the tone.

Pelkey: ATT prices, at that point in time, were seen as high by competitors. Part of the reason they were high was the fact that ATT had the depreciation practices of capitalizing these things and writing them off over long periods of time, so they didn't want to go off and change the technology rapidly because they were -- they had put these things into the rate base almost in the sense of --

Slomin: There's an old bugaboo in this business, this notion that carriers don't want to introduce innovations because it will interfere with the depreciation. I think you'll find, and again you might want to check this more carefully with accountants, but my impression has been for many years, it wasn't so.

Pelkey: Ok.

Slomin: The way regulatory accounting worked, at least until fairly recently, and of course this all got deregulated so this game can no longer be played --

Pelkey: Right.

Slomin: -- but, until -- while customer premises equipment was still part of revenue requirements, there was an irony. It was called "fictitious plant." I come up with a new modem, ok. I put it on a ten-year depreciation cycle. Let's say its \$1,000 investment and I'm going to go 10 years straight line. What that means is I can write a hundred dollars a year.

Pelkey: Right.

Slomin: Ok, and that's how I recover my investment cost for that. What happens if five years down the pike, where I haven't recovered \$500 of what I invested in this, there's so much technological change that basically I have a piece of equipment I can't give away as a door stop.

Pelkey: Right.

Slomin: Ok. That's the classical problem. What do you do? Do you write it off? Do you just clear it off the books? Well, that's not the way it works. It get moved out of the plant and service account basically -- it used to -- into what is fundamentally a clearing account, where it basically stayed as part of the rate base, and continued to earn the remaining \$500. See, they didn't lose a penny on it. If anything, you made money on it. You made money because, fundamentally, in a regulated industry, you take a return on investment.

Pelkey: Well, actually then, I can argue the point that, in being conservative and I wouldn't necessarily call it foul play, but if you were a manager in that situation, you wouldn't be motivated to reduce your depreciation period because, if you can't get it in the commercial sector, you just throw it over into this pool, and it goes in the rate base so you're going to get your money back --

Slomin: Oh, yeah!

Pelkey: -- A or B, it just depends --

Slomin: It's almost a I don't care. You're going to get it in one account or the other. That's the way it ultimately played out. Because it was moved to a clearing account, the carriers could, with a relatively straight face, try to maintain: "Hey, we took it out of the investment accounts. What are you worried about?"

Pelkey: Yes.

Slomin: And that was true, as far as it went, until you looked at where it went to after that.

Pelkey: Because of --

Slomin: The experts in the field would refer you to the -- under the old account system to the 171 account, if you really want to play this through.

Pelkey: But ATT did not sell modems, pre Carterfone. They leased them.

Slomin: They leased them.

Pelkey: And so the customer was always --

Slomin: AT&T did not sell anything, basically, except for some decorator housings, until Computer II came along and deregulation in -- became effective in 1980 and 1981.

Pelkey: Now, though the commercial sector looked at leasing these modems over extended periods of times, always having a lease payment, versus being able to buy a modem of equivalent functionality minimum --

Slomin: And take an investment tax credit, don't discard that.

Pelkey: -- take an investment tax credit and to be able to own it, if you will, and at some point in time perceive themselves as getting out from underneath the monthly payment, that was an attractive --

Slomin: Yes.

Pelkey: -- I mean there was an artificial economics that was put in place.

Slomin: Oh, it was -- it was more than just what you identified. Depreciation certainly distorted the pricing, but that wasn't the only thing. There was also value of service rate making involved here. State commissions who controlled these rates for all services other than wholly interstate --

Pelkey: Right.

Slomin: -- liked to play Robin Hood, rob from the rich and give to the poor. I mean, it's the classical populist view of regulation.

Pelkey: Right, yes.

Slomin: And little old ladies in tennis shoes didn't use modems. So, those prices were jacked up sky high, to create contribution.

Pelkey: Right, right. So there was a number of dimensions about what happened in '68 that wasn't necessarily -- it was a technological revolution in '68. Carterfone didn't do anything necessarily technologically.

Slomin: No.

Pelkey: It subsequently did when you got more competition in there and the competition started to outdo each other.

Slomin: Oh yes.

Pelkey: And it forced modem technology --

Slomin: Oh yes.

Pelkey: -- to change more rapidly than it --

Slomin: But ironically, if you're going to talk about the technology, I think the explosion occurred post registration program, when that data access arrangement was totally dispensed with, and everybody could compete on a relatively fair, even handed footing.

Pelkey: Right. Now DAA had nothing to do with the leased-line modem, though.

Slomin: No. It didn't, but remember, leased-line modems were a technologically easier problem to solve.

Pelkey: Yes.

Slomin: As long as the line had characteristics that were relatively invariant, you didn't need very complex design to make it work. You needed some, but a lot of the action has been

adaptive equalization, which is basically, at the beginning of each call, find out how to overcome the aberrations of the line.

Pelkey: Right.

Slomin: That's in the switch services. The explosion in switched occurred when the data access arrangement requirement was dispensed with, when a broad number of people entered the market, and as the personal computer came along and created a very different market for high-speed modems than the previous one. The previous one was the private line market.

Pelkey: Right.

Slomin: By and large.

Pelkey: Right.

Slomin: I don't think it accidental --very personal cynicism here -- that the leader in the personal computer modem market, is not Racal-Vadic, is not Codex, nor General Datacomm. The companies who were in that business for 10 years. Its Hayes, which got started in a garage by two kids down near Atlanta, GA, who bought an Apple and said: "I'd like to connect it to a phone line."

Pelkey: Right.

Slomin: I mean, so where's the entrepreneurial spark? Did it come from technology? Hell, no. All Hayes did was rip off essentially -- no, strike that -- is emulate the AT&T 12 -- 300 baud modem and followed by the 1200 baud modem.

Pelkey: Right.

Slomin: Certainly they did whatever product development innovation was required to bring its price down. I don't mean to minimize it, but this was not great, revolutionary design.

Pelkey: Actually -- that's true, but they did solve the technical problems --

Interruption in Tape Recording

Pelkey: Let's, for a second talk about the DAA.

Slomin: All right.

Pelkey: The DAA was an artifact of Carterfone.

Slomin: It was an AT&T response to Carterfone.

Pelkey: Right. Right. It was an AT&T response to Carterfone -- of this view at that time, rightfully or wrongfully or insidious or not about protecting the switch network from equipment that was being attached to it, that it could cause harm to somebody else on the network --

Slomin: Right.

Pelkey: -- or on the network or what have you, and that, there was a cost associated with three to eight dollars per month for having to put a DAA in and that there was a great deal of complaints about the fact that, one: how expensive it was given the amount of functionality it provided and that if you had leased lines you didn't need them -- leased-line modem you didn't need it to attach to private lines but you did to the switched circuits, you needed these things, and that ATT was slow in getting these things into the environments when they were being asked for and didn't maintain them or, there was a service quality problem associated with them as well as the cost of them in that that problem led to the enactment of Part 68 registration --the fact that the industry saying: "Wait a minute. This is bullshit, this DAA. Something's got to be done about this DAA because its, its, its not effective, its costly, it doesn't work and ATT is just perpetuating its own base there of dial-up modems because it has unfair competition. It doesn't require a DAA and everybody else DOES require DAA's. This doesn't make any sense."

Slomin: Reciting the arguments that were made at the time -- one of my functions along the way was as a member of a decisional non- separated trial staff to litigate precisely the proceeding where those allegations were made on the DAA. To my knowledge the FCC has never resolved that proceeding and I cannot give you any internal views on it. I will conform myself to what has been said on the public record because there's an element of attorney/client privilege in this and I'm sorry I don't want to be evasive or anything, but these matters are, legally and technically, still pending before the agency. I hope that tape wasn't running when I said that.

Pelkey: Actually --

Tape interrupts, but text edited out

Pelkey: We're back on tape now.

Slomin: We were just talking about how you stated that -- Why is it that most of these modem makers ignored the local area network business. They're not in that business. And I said: "Well watch out," because they are and they aren't. They really were, they just didn't use the name and didn't carry it forward. Those early multiplexers, what was it 208, 209? It's been so many years I don't remember the numbers -- that were basically modem variety cluster controllers, somewhat like IBM's cluster controller in the SNA and 3270 series products, in fact were technologically not much different than a local area network. They just didn't call it that, and they used it largely for a suite of offices right next door to one another, instead of extending the wires for several thousand feet and giving it that sexy name, LAN. And then, as the market moved towards today's conception of LAN, they didn't evolve their technology. They were fat, dumb and happy selling their 208 209 multiplexers and weren't noticing that the sales were starting to decline compared to the growth curves that they projected. Why? Because the actual sales growth

continued, it just wasn't at that rate that should have occurred. I mean, that's my guess. And I think I'm dead on in that.

Pelkey: I think you are too.

Slomin: Its funny. If you look technologically, not market, not business, a lot of things that don't carry the labels are. UNIX operating systems normally use suites of terminals connected through timeshared UNIX operating system microcomputers or central large mainframes. For that matter, why isn't that a local area network? I can send messages from one to another, but we don't think of it that way, so we never give it that name.

Pelkey: Let me come back -- you are going to be my primary source of material, I suspect, on this one area and I don't want to, again --

Slomin: Go ahead.

Pelkey: -- infringe upon your legal responsibilities, like confidentiality and the fact that this thing is still open, but, to the extent that you are able to help educate me in things that in public domain and so on --

Slomin: Ok. Sure, sure. The arguments that gave rise to the proceeding, and the proceeding is Docket 19419 at the FCC --

Pelkey: Now, go back -- the Carter -- the DAA came in into data communications --

Slomin: 1968 the -- I'll review it quickly. 1968 the FCC applied what some people would regard as a legal theory established 12 years earlier by the United States Court of Appeals for the District of Columbia Circuit in the Hush-A-Phone case. Hush-A-Phone -- my humble view has been that it's been a slight misapplication of what was actually decided in Hush-A-Phone, although perhaps the legal theory is correct. Hush-A-Phone, as you may recall, was a plastic cup that fit over a telephone microphone.

Pelkey: Yes.

Slomin: And it was intended to give you some privacy of communications, much as your hand would do, by preventing other people in the room from hearing you talk into the phone. AT&T's Foreign Attachment Tariff Restrictions, which were in the tariffs from about 1911 onwards, had banned not only electrical interconnection of things to telephone facilities, but any type of physical attachment of anything to a facility, up to and including a plastic cover on a telephone book in a public phone kiosk. And AT&T for whatever reason decided to go after the Hush-A-Phone Company. The facts are sort of interesting. The Hush-A-Phone had been sold from 1929 onwards at Goldsmith Brothers, a very large stationer in New York, three blocks from AT&T's headquarters. AT&T had never noticed it, but in 1949 they decided they were going to beat up on Hush-A-Phone. They sent nasty letters both to Goldsmith's and to Hush-A-Phone. Case got litigated. Went to the FCC, 1954. AT&T defended their tariff restriction against the Hush-A-Phone saying: "Well, you know, the Hush-A-Phone distorts speech, and any one of 200 million

people in this country might be called by or might call someone using a Hush-A-Phone. They're going to get a lousy telephone call. That's harm. They're not getting what they paid for." The FCC thought that was dandy, and agreed, and dismissed the Hush-A-Phone complaint. An appeal was taken of that decision to the United States Court of Appeals for the DC Circuit, Judge Bazelon, David Bazelon wrote the decision. What he did was he set up a straw man and then knocked it down with language that was the centerpiece of the Carterfone decision. The straw man that Bazelon set up was, it was established on the briefs to the Court that, yes the Hush-A-Phone distorted speech, but so did your hand. Cupping your hand around the mouthpiece did exactly the same distortion. So Bazelon said: "Now, let me think about this." I'm really paraphrasing. "Carried to its logical conclusion, therefore, the tariff bans people cupping their hands around the microphone. Now that's absurd. That would be an unlawful interference with the subscriber's right, reasonably, to use his telephone service in ways that are privately beneficial without being publicly harmful."

Pelkey: Right.

Slomin: Very strictly speaking, that was Judge Bazelon's answer to the straw man he himself set up, namely that you couldn't ban -- tell people they can't cup their hands around the mouthpiece. And he sent it back to the FCC. The FCC fastened on that language and said: "Yeah, he's right. This tariff restriction on these attachments, these physical attachments, is an unwarranted interference with the subscriber's right, reasonably, to use the telephone service in ways which are privately beneficial without being publicly harmful," and voided the tariff restriction. AT&T then refilled tariffs that were confined to the exact facts of Hush-A-Phone, and basically permitted anything to be physically attached, provided it did not communicate, and that's the way it stood until 1968.

Pelkey: Now, was this -- were these in North Carolina courts that dealt? Where did North Carolina --

Slomin: North Carolina courts came in in the '70s in two -- three significant ways.

Pelkey: Ok.

Slomin: Ok. 1968 -- 1966, Carter came up with a device; basically that was a robot. You put your telephone handset into this device and it had a little loudspeaker that talked into the telephone handset's microphone, it had a little coil of wire for inductive coupling that received from the telephone handset's earphone. So this was a robot head, basically, that talked into the telephone set and the other end of the robot was connected to a private land mobile radio system, a two-way private land mobile system, and Carter was hawking this around the country, and AT&T decided to beat up on him and they filed a complaint with the FCC saying: "Well, this is unlawful interconnection." Interconnection was broadly defined as ANY way of co-joining two communication systems. They didn't argue it as an attachment case. They argued it as an interconnection case. The FCC, in its Carterfone decision, applied the legal principle, perhaps wrongly, as I said before, of the Hush-A-Phone case and said: "Un- un (negative). This is a -- an unwarranted interference with the subscriber's right, reasonably, to use his telephone service in ways that are privately beneficial without being publicly harmful."

Pelkey: Right.

Slomin: But, the Commission was cautious. It said: "Look, we will allow AT&T to refile its tariffs in ways that prevent harm, and we're not going to allow you to distinguish robots connected acoustically and inductively, which was what the coupling is, from electrically, but you can establish tariff provisions that protect against harm. This one seems to be a clear one that protects, since robots can't harm the network, but who knows." AT&T's response to that was to file tariffs that said: "Anything may be connected, attached or interconnected." Attached means use a piece of apparatus with the telephone network. Interconnected, again, traditional language was, co-join another communication system with the telephone circuit, although ever since that time people have used interconnection to refer to both. Be aware. It's a terminology shift. AT&T's response was to say: "Anything could be interconnected or attached, provided that, number one it is used with a prophylactic device, a protective device that protects the network against harm, and, number two, to the extent that the prophylactic really isn't all that good, for certain problems, we'll publish some technical requirements in the tariff and say you've got to conform to those as well." There were certain things that the prophylactic just didn't protect against, from day one.

Pelkey: Such as?

Slomin: Out of band energy.

Pelkey: Ok.

Slomin: So there were filtering requirements in the tariffs. Instead of having a prophylactic, it basically said: "Make sure your equipment is sterile," to carry the analogy forward.

Pelkey: Right.

Slomin: Ok! That was the filing, and the commission allowed those tariffs to become effective without making a finding on their lawfulness in 1969. Two major pressure groups, from that time onwards --

Pelkey: Ok, let me ask you a question -- conceptually, what did Carter's product do, this robot?

Slomin: The robot? Oh, it was used to permit somebody in his truck who had a radio, to go back to his base station and say: "Hey, hook me up to the phone line so I can talk to my wife," ok. And the person would pick up the telephone, dial the number, stick the handset into the robot; the robot that now connects the handset to the radio. That's all it was. It was an auto patch.

Pelkey: Oh. So in order to connect the radio to the switched network.

Slomin: You got it.

Pelkey: Did they sell many of them?

Slomin: I'm not sure. I think they actually did. I mean, there's an irony in this. The irony is that the radio amateurs were doing just this with hard wire connection from the 1930s onward.

Pelkey: Yeah.

Slomin: But probably owing to the fact that a fair number of telephone men were radio amateurs, number one, and number two, one of the major uses of this was for the armed forces, somehow or other, nobody ever raised the fact that the tariffs were being violated.

Pelkey: Yeah, yeah. Good. So anyway, there's two pressure groups that --

Slomin: Two very well funded pressure groups, virtually from the day those tariffs became effective, started challenging them. The first was the PBX manufacturers, joined with the key telephone set manufacturers, and in those days they were synonymous. Same companies. The second were the modem makers, the data people. The modem makers, other than AT&T, pooled their resources and formed the trade association IDCMA, and once they had pooled they could get very good counsel who would challenge those tariffs at every turn. The PBX makers had their own groups and -- but they all were rather large companies in their own right, and they would challenge them. And the FCC's response to both sets of pressure -- there were more minor pressure groups that came along later -- was to do what any good bureaucrat does when he doesn't know what the hell else to do, form a committee. The Committee they formed was the PBX Advisory Committee, to advise the government on how you solve this problem without the access arrangements. At the same time, the FCC commissioned the National Academy of Sciences to study this, and the NAS came back with a report that said: "The prophylactic approach is an approach that can work. It does solve the problem, protecting the network. It's not the only approach. There are alternatives, and it suggested one." And what it suggested basically was a combination of equipment certification combined with some enforcement mechanisms to be sure that it was kept clean.

Pelkey: It was -- the National Science Foundation?

Slomin: National Academy of Sciences.

Pelkey: Excuse me, National Academy of Sciences.

Slomin: NAS.

Pelkey: Do you know who was involved in that?

Slomin: The chairman of that committee, of that effort was one Lewis Billig, who at that time was at MITRE Corporation.

Pelkey: Ok.

Slomin: I don't know if he's still alive or if he's still around. He might be. He was in his fifties at the time, I think.

Pelkey: How many people were on this, do you recall, on this --

Slomin: 21, 22, or 23. Something in the 20s sticks in my mind.

Pelkey: And, and this committee that the FCC formed --

Slomin: The advisory committee --

Pelkey: The advisory committee.

Slomin: -- It was the PBX Advisory Committee, which itself formed subcommittees.

Pelkey: Ok.

Slomin: Ok, and there were two formal subcommittees formed. One was for answering devices and the second was (unintelligible) --what was the other one. I forget what. Anyway, the IDCMA folks, the data folks, participated heavily, even though they never got a data subcommittee, interestingly.

Pelkey: Yeah, that is interesting.

Slomin: Ok. When the --

Pelkey: Wait. Who was head of the FCC during this period of time?

Slomin: Dean Birch followed by Dick Wiley.

Pelkey: There's a gentleman named Bernie Strassburg?

Slomin: He was chief of the FCC's Common Carrier Bureau.

Pelkey: Ok.

Slomin: The chairman of the agency were, in those days, Dean Birch, and then he resigned to go over to the collapsing Watergate White House, try to hold it together to some extent, probably the only decent Republican who didn't get --

Pelkey: Tarred and feathered.

Slomin: -- tarred and feathered in that period, and then Dick Wiley became the chairman. He had been a commissioner, and prior to that General Counsel to the FCC. Bernie Strassburg was chief of the Common Carrier Bureau until roughly January 1974. He then retired and Walter Henchman became chief of the Common Carrier Bureau.

Pelkey: And was Strassburg Chairman of the Common Carrier Bureau through the Carterfone period.

Slomin: Yes. Oh, yeah, he was chief of the bureau from the '50s on, I believe.

Pelkey: Ok.

Slomin: I think it was late '50s.

Pelkey: So the FCC said, because you had these two pressure groups: "Wait a minute. We don't know what's in the public's best interest here. These issues are very complex --"

Slomin: But, we need them studied. One, we'll have them studied by an august panel of scientists and, two, we'll form an advisory committee to implement the august panel of scientists' recommendation, which was there are other ways to solve the technical problem of protecting against harm than the use of a prophylactic.

Pelkey: Right.

Slomin: As I said, the NAS panel concluded the prophylactic does the job.

Pelkey: Right.

Slomin: Ok.

Pelkey: And so certification came out of this --

Slomin: Came out of that, both sets of efforts.

Pelkey: And then NAS, having blessed, if you will --

Slomin: A certification approach --

Pelkey: And did that go back to the advisory committee at that point?

Slomin: No, the advisory committee came up with its recommendations for how one might come to a certification program, which were in part followed by the FCC and in part were not. Remember I said to you, and I chose my words carefully on this, I said that both the NAS and the advisory committees recommended a program of both equipment certification and enforcement. In general, the FCC ultimately rejected the enforcement half of that, in general, in its registration program. But, we're talking of time frame '71, '72 for the -- and I think the NAS recommendation came back in '71. I think the PBX advisory committee was formed in '72. The data folks decided that this wasn't moving quickly enough. They filed a complaint with the commission against the data access arrangement itself. Ok? They weren't willing to wait for the committee process, and maybe it was fortuitous for them, I'm being VERY careful with my

words here, that the following fact pattern, which they could then form the basis of their allegations, emerged. AT&T changed two sets of tariff rates in 1972 and '73. Number one, they lowered the rates, the lease rates, for the modems that were produced by AT&T and leased by AT&T. At the same time, or contemporaneously, they raised the rates for the data access arrangements.

Pelkey: (Slowly rising laughter.)

Slomin: IDCMA went to the Commission and basically said: "This is manifestly anti-competitive. This is evidence of a grand master plan to wipe us out, and furthermore, it's predicated on a false premise anyway. This data access arrangement is ridiculous. It's not needed. Our devices are designed properly to work with the telephone network, indeed, our companies sell them to about a hundred governments abroad for use with their telephone networks and there's no problem whatsoever. And finally, the data access arrangement is a Cadillac when a Chevy would have done the job. It has extra functions and, on top of all else, it impairs our communications. It introduces its own aberrations and makes our actually communications service stinky. Do something about this, FCC." Now, the FCC was locked in a jurisdictional struggle now with the states.

Pelkey: Now, this must have been '73?

Slomin: End of '72, beginning '73. The FCC was locked in a jurisdictional struggle with the states on all of this in this period. All right? Remember, the vast majority of telephone equipment was offered under state tariffs, not interstate. From almost the inception of the FCC, the FCC had followed a contamination theory of tariffing of terminal equipment that was, if the equipment had a use for intra-state with a service that was leased intra-state . . .

Tape side ends

Pelkey: . . . The only equipment that was --

Slomin: The only equipment used -- in interstate tariff, was equipment used with a wholly and solely interstate service, read: interstate private line.

Pelkey: Gotcha.

Slomin: The FCC sought to sidestep the state arguments that it was improperly trying to assume control of the state tariffs by confining the docketed preceding that it opened in Docket 19419 on these allegations, solely to interstate services. So the actual caption of the preceding is basically: Data Service Requirements in Connection with Interstate WATS and Interstate Private Line, FCC Tariffs 260 and 259, the two services that were wholly interstate which had terminal equipment and the DAA rates in them.

Pelkey: I'm confused. If DAA was only dial-up --

Slomin: Ah, private lines can be dial-up. Did you ever hear of FX? Foreign exchange.

Pelkey: Ah.

Slomin: Those were the dial-up ones. Not to mention CCSAs, Common Control Switching Arrangements.

Pelkey: Ok, so there were --

Slomin: Networks of FXs.

Pelkey: Ok, so there were dial-up interstate --

Slomin: Right. Wholly interstate, and as long as it was used with a wholly interstate offering, then it was in the interstate tariffs. So 19419 were not broad enough to encompass the vast majority of use, but that was because of the jurisdictional struggle. You asked before what was going on with North Carolina. It was very simple. North Carolina challenged the FCC's policies directly twice and indirectly once. In the "so called" North Carolina Utilities Commission Number 1, North Carolina issued -- the State Commission in North Carolina purportedly under its state authority, banned interconnection with their services. They issued an order saying Southern Bell, I think it was in those days or maybe C&P, you may -- we are prescribing tariff language that says customers may not interconnect with any intrastate tariff service in the free and sovereign State of North Carolina. That's 1973. At the same time Nebraska issued a slightly different decision that said, to the extent that a PBX is connected to any intrastate facility in our state, we believe that the PBX is now a common carrier, and therefore it has to get a certificate of convenience and necessity, and by the way, it's going to take a long time to get one of those; translation: they ain't going to issue them. So the FCC was getting buffeted. Carterfone -- Carterfone ended up at the FCC in the first place as an accident of history, not explicitly --

Pelkey: Cause there was no Texas FCC.

Slomin: You got it! You got it! Section 2B of the Communications Act of 1934 removes FCC jurisdiction over wholly intrastate services. Everybody remembers that. They forget the little clause that says something like "unless there's no state commission." It happened there was no state commission in Texas where the Carterfone case arose, and maybe that was not an accident. Maybe it was a very good tactic of very good attorneys involved, to have it arise there. So Carterfone really started as an anti-trust case filed against AT&T and it was removed to the FCC under the doctrine of Primary Jurisdiction, but there was no state commission to send it to, so the FCC didn't have to focus on "am I doing it at the state level or the federal level." It just simply did it at all levels, and there was no state commission to pitch.

Pelkey: Right.

Slomin: North Carolina took the position, some years later, that: "Wait a minute. They didn't -- they don't have the authority to proscribe that in my state." Well, that issue, which was then pending before the Commission as the Telerent Proceeding, was: "How do you keep the Carterfone doctrine alive in the face of one state banning it outright and the other state trying to

kill it administratively." And "In Re: Telerent," which came out early in 1974, again contemporaneous with everything else, but it had been brewing in '73, finally the Commission declared that it was preempting inconsistent state action. That was ultimately affirmed by the Court in the 4th Circuit -- the United States Court of Appeals for the 4th Circuit, in the North Carolina Utilities Commission v. FCC first case. There were two of them. Thereafter, in 1975 when the FCC first adopted the registration program, in November '75, North Carolina immediately took a second appeal, saying: "They didn't have the authority to do that," and in the second North Carolina case -- utilities case, the panel upheld the FCC a second time.

Pelkey: Why did they come back and say -- just to be obstructive? Or is it --

Slomin: I suspect that they sincerely believed that the FCC had overstepped its --

Pelkey: Its bounds.

Slomin: -- its bounds.

Pelkey: This is a state, federal government --

Slomin: But also there was an irony, which was, in a sense, they were trying to ask for rehearing of the first case --

Pelkey: Right.

Slomin: -- and, in the wake of the Carswell-Haynesworth disasters of the Nixon administration, the 4th Circuit, which was Haynesworth's Circuit, had adopted the most stringent recusal rules in the United States for judges. If they had any interest in a proceeding whatsoever, whoever peripheral, they had to recuse, say they won't hear a case. The irony was, every single judge of the 4th Circuit had recused himself from hearing these cases because of ownership of AT&T stock, except for one. So that when the first North Carolina Utilities case decision was issued, motions were filed for rehearing en banc. There was no banc to hear it. In fact --

Pelkey: En banc?

Slomin: Normally, Courts of Appeals have 15 or 20 judges on them, and technically, all of the judges should hear a case, but they don't, they come up with a panel, a subcommittee of three judges, to hear. If you don't agree with the panel, instead of going to the Supreme Court, one thing you can ask for is rehearing en banc, by the whole bench.

Pelkey: Right.

Slomin: Well that was asked for in this case but there was no banc to hear it. In fact, the first panel had consisted of two judges brought in from two other circuits because, as I said, the entire 4th Circuit but one had recused itself. In fact, one of the two judges who issued the first decision dropped dead the day that the decision was issued, so you had one judge in favor of that decision, which was a two - one, one judge opposed. The banc not being available, the panel, now

consisting of two judges, voted on whether they should rehear it. One voted for, one voted against. Since there wasn't a majority to rehear it, the case was never reheard. When it came up the second time, with a new panel put together, one of the things they decided to do was, they would act as the panel to rehear the first case, so in part it was the second appeal, in part it was rehearing of the first appeal. It was absolutely bizarre.

Slomin: These were heady days for this kid lawyer, by the way, in the middle of all of this.

Pelkey: Oh, I can imagine. This stuff must have kept you up at night. This is --

Slomin: This was amazing stuff. So anyway, back to 19419. 19419 was restricted in scope to just two interstate carriers.

Pelkey: Finish that one thought first -- so then, the second North Carolina, number 2 --

Slomin: Affirmed North Carolina 1, sitting as a panel to rehear it, as well as dealing with the registration program, and affirmed the FCC.

Pelkey: Ok.

Slomin: Certiorari was denied by the Supreme Court. It's been the law of the land ever since.

Pelkey: Ok. Good.

Slomin: In fact, the Supreme Court denied Certiorari on both cases, but they --

Pelkey: Certiorari

Slomin: You file a Writ of Certiorari with the United States Supreme Court asking them to hear an appeal. You don't have it as a right.

Pelkey: Oh, ok. So, you were going back in terms of --

Slomin: Ok, but I digressed. Because of all these jurisdictional currents that were swirling in 1972, '73 and '74, when Docket 19419 was in its major action, 19419 was confined to the interstate uses only. Ok? SO in a very strict sense, 19419 could not have dictate the results of the registration program because that one was jurisdictionally addressed to all switch services, state and federal, as a legal matter. 19419 went to hearings on the ratemaking issues, years of them, and on the technical issues, namely: is there a need for the data access arrangement? If so, is it a Cadillac where a Chevy would have done the job? And does it in and of itself introduce aberrations? There were about 28 or 29 days of hearings on just those technical questions, and a record was compiled.

Pelkey: This was '75?

Slomin: '74 and '75. Ok. I conducted most of the cross examinations, in fact. In 1975 --

Pelkey: Was it around the end of the year of '74?

Slomin: Yeah, mid year and to the end of the year. Tommy Thompson was a witness, among others. General Datacomm. Farrel Peltz of AT&T. Larry Homan of AT&T. Who's the third one? He was the designer of the data access arrangement.

Pelkey: It would be fascinating.

Slomin: Oh, I can't remember his name. It's in the record. Anyway, in 1975, midyear, the then Chief of the Common Carrier Bureau, Walter Hinchman, had already received the recommendations of the PBX advisory panel, number one. Number two, in the previous year, the PhoneMate case had been settled. It was another element to this. PhoneMate made an answering machine. It ran on four flashlight batteries. They were told they had to use an access arrangement, a voice connecting arrangement. PhoneMate went to the FCC and said: "Isn't this ridiculous? Number one; there are 10 times as many parts in the connecting arrangement as there are in the whole PhoneMate. Number Two, whom are they kidding about harm? This is four D cell batteries." (Laughter). Oh, it was rather compelling argument. We litigated that one. We played it straight. We sent the thing off to the FCC's laboratories in Laurel, MD. We said: "Use the recommendations which have come out of these PBX advisory committee and the answer devices subcommittee. See if this device conforms." And something funny came back. God damned thing wasn't designed right. It actually took the phone line and connected one of the phone line wires to about a dozen places on the outside of the box that were metallic, which meant that if you put it in contact with anything grounded, you'd cause harm on the phone line, or if you had the misfortune to touch it while you were grounded while the phone line was ringing, it would hurt, and if a lightning bolt happened to hit a phone line it would probably kill you. Not great. They didn't save anything by doing this. There's an irony in this. The irony is, had they designed it right, it would have been a cheaper product. They just didn't know any better, because nobody was telling them how to do it right, ok? So, when our engineers at the laboratory let this be known, which they probably shouldn't have, but they did, both sides decided this was settlement time at this point. AT&T was afraid of the precedent that might be established and PhoneMate was afraid that they'd be brought out in the cold. So they cut a deal, and the deal was AT&T designed some protective circuitry, which PhoneMate agreed to then build into their devices, and as long as it had the protective circuitry in the devices, it didn't need any external prophylactic. In principle, it was the prophylactic approach, but the manufacturer could manufacture it and sell it for hard wire connection. That settlement had gone forward also in '74, end of '74.

Pelkey: Ok.

Slomin: So, you had the results of the advisory committees, you had a record assembled in Docket 19419 which was contested, which had not gone to a decision but which sounded on what is the real vulnerability of the telephone network. Ok? You had the parameters that came out of the PhoneMate settlement, and whatever AT&T might say, whatever parameters that thing permitted to reach the telephone network, by their own course of conduct, they were willing to live with, otherwise they wouldn't have allowed it.

Pelkey: Yes. Right.

Slomin: And we went to decision on the registration program. What we basically did was we said we'll treat it almost like a summary judgment motion in federal courts. When you move for summary judgment, you're saying: "Court, accept every allegation of my opponent as true, ok? Assume that we went to trial and he proved everything he said. Having said that, is there enough in this record for the case to go forward?" And if the answer is no, your kicked out on your "hinny." We did the same thing with the registration program. We took every AT&T allegation, co-joined with every recommendation that had come before us, co-joined with the record of AT&T's witness's testimony in 19419 on data access arrangements, took the most restrictive set of those and said: "Those are the technical requirements to which equipment will conform," and then we put in a hooker. We said: "And by the way, Western Electric equipment is going to have to be registered to these." The FCC's Program 68 Rules, you see, reached the phone company's equipment as well. There are some (unintelligible) who way that the Commission's staff involved may have known that most Western Electric equipment in fact could not conform to those requirements that were adopted in November of 1975. I won't comment on that, I will note that in February of 1976, AT&T filed a petition for reconsideration -- technical requirements of Program 68 be relaxed, almost every one of them, and they were.

Pelkey: That's outrageous. That's fantastic.

Slomin: That's the real history. We were talking about what proceedings were ongoing at that time. Number 1, there was Telerent Leasing Corporation. That was the name of the proceedings, where after the North Carolina Commission had purportedly banned interconnection within the State of North Carolina, they issued an order to the Telerent Leasing Company to disconnect certain lines, and Telerent went to the FCC asking basically for preemptive -- a protective order. That decision by the FCC, in re: Telerent Leasing, was the decision that was appealed in North Carolina Utilities Commission number 1.

Pelkey: Yeah.

Slomin: Second thing ongoing was the data access arrangement proceeding, limited to the purely interstate services, which was 19419, and there was also a tag on proceeding, believe it or not, that's also still open, called 19691, which was not limited to data. It was what requirements should govern all private lines, pure private.

Pelkey: Ok.

Slomin: Third thing ongoing was the registration program docket, 19528, which had been opened in 1972, but was suspended pending the PBX advisory committee and its subcommittees, and that was the one that went to a decision that became the registration program.

Pelkey: Gotcha.

Slomin: Fourth thing that played also in '74 and '75 was the Mebane Home Telephone Company case, also out of North Carolina. Mebane Home Telephone Company went back to the actual words of the Carterfone decision and said, the actual Carterfone decision in and of itself never mandated replacement of telephone company apparatus with customer owned apparatus. All it mandated was allowing adjuncts to it. There was a reading of the decision that supported that view. It had to do with some rather bizarre words that AT&T had introduced into the lexicon called Network Control Signaling Unit, NCSU. Said AT&T, at the post-Carterfone tariff filing time, the NCSU is the unit that signals towards the network. Carter's device never signaled. It was a robot. You picked up the phone and used my phone to signal. Clearly, your Carterfone decision never spoke to the NCSU. The NCSU is normally in the telephone --

Pelkey: Right, right

Slomin: -- or is a telephone, and clearly the FCC, never mandated customer provision of the NCSU, why that could cause all kinds of network harm. The problem was that your friends, the data folks, had a different cut at it. Their cut was, God darn it, data sets have to be able to dial and answer the phone. So AT&T said: "Ah. In that case, the NCSU is in the data access arrangement."

Pelkey: Ok.

Slomin: All right! So for data, AT&T conceded the NCSUs is in the data access arrangement. For everything else they (unintelligible) it was the equipment that wasn't being interconnected to. Well, of course, that distinction fell apart within six months once the PBX makers came along and said, you know: "We want an access arrangement too." Mebane forgot that. Mebane went back to the Carterfone decision and said: "Well, that's fine that AT&T volunteered that, but we didn't, and YOU NEVER RULED it. So, we're going to ban anything that replaces phone company supplied equipment in the territory of the Mebane Home Telephone Company," which is some small independent in North Carolina. North Carolina Commission, not surprisingly, given the time period, thought that was a dandy argument and supported them before the FCC. The FCC rejected it out of hand, but they also said --

Pelkey: Wait a minute now.

Slomin: -- they said, well -- Oh, the other part of the argument was, Mebane said: "By the way, you never said the harm never had to be technical. It could also be economic harm. We're getting harmed economically. Every time they replace a PBX here we're getting stuck with this stuff that we can't give away." So the FCC -- "and rates are going up." So the FCC said: "(Buzzer sound)," Carterfone did reach both kinds of harm. You've got to come in and show us your economic harm. These conclusory allegations are not enough. We want a study. We want good stuff on this," and of course they never came back because it was impossible to show.

Pelkey: Right.

Slomin: And then the Commission dismissed the complaint. So that was the other one. That went off to the courts, too, by the way. Affirmed. The FCC was affirmed on that one. So you had this whole play going on here --

Pelkey: That's right.

Slomin: -- There were other byways going on at the same time. Basically, in those days -- I'm not telling tales out of school on this - we regarded almost every FCC decision of a policy nature in the mid '70s as a brief to the courts, phase one, because virtually every single one of them was appealed, most of them to the United States Supreme Court ultimately.

Pelkey: All right.

Slomin: It was an interesting period.

Pelkey: Well, now, within the FCC organization at that point in time, what was your role during these intensive activities and who else was involved and what was the structure like?

Slomin: Oh.

Pelkey: Is it complicated? There was a Common Carrier Bureau.

Slomin: Yes. I was a member of the Bureau. I was an attorney/advisor in those days in the Common Carrier Bureau.

Pelkey: Common Carrier Bureau, and the Common Carrier Bureau was where most of this was going on?

Slomin: Virtually all of it.

Pelkey: Virtually all of it.

Slomin: Ah, the Common Carrier Bureau makes recommendations to the then seven sitting commissioners, and the commissioners, of course, are appointed by the President, confirmed by the Senate, and they had to vote. Ok? But generally, commissioners don't write their own decisions. They are prepared by the staff and sent to them, and if the commissioners agree, that becomes the decision.

Pelkey: Right.

Slomin: If they disagree, they might get the staff to change it or, by their vote, adopt it on less than unanimity.

Pelkey: Yes.

Slomin: But the Common Carrier Bureau, in general, has the first cut at any common carrier issue, and sends its recommendation to the Commission. I was an attorney within that bureau.

Pelkey: Ok.

Slomin: Until '76, I was a member of the Hearing Division of the bureau, which is why I litigated a number of these cases.

Pelkey: Ok.

Slomin: At the same time, because of my rather peculiar background where I was very soundly grounded on the technical side of this there, I just happened to have been a key resource to the chief of the Bureau, to Strassburg followed by Hinchman, and I worked for both of them directly on sort of special projects, and we also coordinated with other branches of the agency. There was an Office of Chief Engineer that had some responsibilities for this, the Tariffs Division, etc. etc. But I would say a lot of policy decisions, on registration particularly, were made as legal policy decisions. I, and other lawyers and lawyers in the General Counsel's office, who were litigating these proceedings or were going to, and some of the technical ones were very frankly made by Walter Hinchman and me. We just sat in his office, because he had functioned as an electrical engineer and manager for -- off and on for 15, 20 years and I had done so for about five, and we would sit there and debate this issues back and forth and go to closure, and then I went and wrote it, period.

Pelkey: What an exciting period. How many lawyers were in the Hearing Division?

Slomin: The Hearing Division in those days had a dozen lawyers. The Bureau probably had about 35, 40.

Pelkey: You guys were busy.

Slomin: God, yes. Oh, yeah. I used to do recruiting for that agency and in those days I would say: "You go to work for the FCC and, if you are in that rare minority that we'll hire, since we typically get 1600 hundred applicants for one or two jobs, you will basically be working on decision that effect, indirectly or directly, about 40% of the GNP, and to do so we have an entire staff of professionals and non-professionals of 240 people. Half of them are secretaries, so you're down to 120. Half of those are economist and accountants and engineers and, we're down to about 40 or 50 lawyers, and lawyers generally control the decisional process in this place.

Pelkey: Right.

Slomin: Yeah, it was a heady --

Pelkey: You must have been able to recruit some of the best talent there was, because of that.

Slomin: Oh God, yes. Oh, yeah. There's one person who's still on the staff there who was a clerk to two Supreme Court Justices.

Pelkey: Yeah.

Slomin: A graduate of Stanford and the Harvard Law School. We had another person on the staff in the '80s who had an undergraduate degree from the University of Chicago in Economics, a doctorate from the London School of Economics and Summa Cum Laude from the Harvard Law School. That's the caliber of people we could bring into that place.

Pelkey: Yeah.

Slomin: It's unreal.

Pelkey: So, and the IDCMA, during this period of time, were they constructive, helpful? Were they competent?

Slomin: They were extraordinarily competent. The lawyers were, their technical people were. They were sometimes helpful, sometimes obstreperous, from our perspective, and our perspective was, you know, we were not out to do their job for them. They had some very parochial interests. We had to balance the general public's interest against the legitimate claims of the telephone industry –

Pelkey: Yes.

Slomin: -- against the possibility that this might all go down the tubes in court and leave us in a worse position than when we started, so we were very concerned with the tactical calls and the precedent, as well. Now they, obviously, had more parochial interests, and also they might take somewhat extreme positions to try to move the behemoth bureaucracy sort of towards the middle, and maybe they did that as a matter of tactic, I don't know. The final piece of this chapter in our discussion on the 19419 proceedings relation to the registration program is, as I said, the registration program, in general, accepted all of the AT&T allegations as valid, and then it subsequently modified, but what it conceded in February of '76. There was one AT&T allegation that was unique to data, and it led to something that was worked out cooperatively and informally and then passed through the formal procedures that govern, uniquely, the data connection field. AT&T had argued that the network is vulnerable to different types of electrical aberrations that they called 'harm.' One of them was excess signal power. If I put too big a signal on my phone line it'll leak into your phone line and --

Pelkey: Crosstalk.

Slomin: -- you won't be able to hear. Ok. In general, the FCC has rejected that argument in the context of live voice. The theory being, if you and I are talking on the phone, in general, if you're screaming, I'll tell you to shut up.

Pelkey: Ok.

Slomin: It's a self-healing process. Also, you hear a part of your voice in your own earphone, and you adjust accordingly, there's sort of local feedback that keeps you honest. So, in general, there are not controls on the amplitude of live voice. On the other hand, AT&T argued, with some force, that in the data world, there are no such controls. There's no feedback mechanism that says: "Modem, shut up. You're coming in too loud." And also, there was a generally held belief, many cases untrue, but the belief was there, that if you were getting errors, one way to overcome them was to turn up the signal. Crank up the signal and the error rate would go down. I say that's a belief rather than a reality because, usually, when people did so too far, the amplifier started distorting and in fact the error rate went up, but the users didn't know that. They would just turn the knob. So that AT&T made, what the commission accepted as a compelling case for controlling signal levels for modems, ok, at least the ones that were sort of on the edge of being able to work or not being able to work, the high-speed ones used on the switched network. And, because of that, some mechanism was needed where that could be customized.

Pelkey: Ok.

Slomin: And it had to be customized for the simple reason that the level was not a level at your premises. It was a level measured at the central office. So the problem with that is, in a rural area, where you're five miles out on the line, you would put in a much bigger signal at your premises to produce the desired level at the central office than in the city environment one block away.

Pelkey: Right.

Slomin: Ok. So you needed customization. The issue was, how do you customize? We had a formal proceeding to arrive at sockets and plugs for connection to the telephone network, a proceeding that ultimately brought you the modular plug.

Pelkey: Right.

Slomin: And that went -- started as a formal proceeding, then broke into what was tantamount to an advisory committee. It was broad technical negotiations under the aegis and supervision of Commission personnel. It started literally at the departmental auditorium of the Department of Commerce in Washington, which is the federal government's largest auditorium in D.C. Over time, it moved down to a smaller working group of about 100 active participants, and many of those meetings were held in the FDD's meeting room.

Pelkey: And what time frame is this?

Slomin: 1977.

Pelkey: Ok, host?

Slomin: May '76, I'm sorry. It was an essential element of Part 68.

Pelkey: Yeah.

Slomin: The Part 68 Rule said you got to use plugs and sockets, but we'll spawn another proceeding to tell what they are.

Pelkey: Yes. So, although there was a Part 68, it couldn't --

Slomin: You couldn't do anything without plugs and sockets.

Pelkey: Right.

Slomin: So this other proceeding arrived at the plugs and sockets. The data people formed a subcommittee to deal with these difficult issues here, and they came up with two techniques whereby this customization could be performed automatically by the phone maybe as part of the installation. One of them was put into the jack, the socket, a part that could be sensed by the data equipment to set its signal level. So the phone company would put in the part that says: "Set the signal level to four." --

Pelkey: Right.

Slomin: -- and then, as part of registration, you would demonstrate that your device would accept that signal and generate that. That was one approach. The second approach was that they would put in an attenuator. You would generate the same much louder than normal signal for all purposes and their attenuator would just introduce whatever loss was required to make it the right level at the other end. That was done cooperatively. There was strong impetus and supervision by the FCC staff. I had a hand in it myself, but it was largely a cooperative venture between IDCMA and AT&T, and that has worked swimmingly since. There is then a permissive one, which is the one we all use at home, if you have one of these play toys at home, where it's not optimized.

Pelkey: Right.

Slomin: If you generate a signal that's no more than -9 dBm, which sort of assumes that you're a block away from an urban central office, there, then you don't have to use any of these customizations. On the other hand, if you're out in a rural area and down at the end of a long line, you're really sending a signal that's lower than you should.

Pelkey: Yes.

Slomin: Fortunately, the technology has made it work, even though it's not optimal. Ok, so that was the other relationship between 419 and the registration program.

Pelkey: And when did that get --

Slomin: That was '76.

Pelkey: But when did the universal jack and --

Slomin: '76.

Pelkey: '76. So that wasn't a very long hearing.

Slomin: Oh no. Oh no. That went on for --

Pelkey: A couple of hours.

Slomin: -- five weeks of weekly negotiations and, don't put this into what you want to say. I'll give you the truth but I --

Pelkey: Yeah, I agree with that. The DAA didn't (unintelligible). A few more questions?

Slomin: Go ahead.

Pelkey: The data communications industry at the point in time largely went its own way. I mean, there were subsequent events relative to --

Slomin: Well, the critical element was data speed 40. That played in the later '70s, sort of '77, '78-ish. The computer rules that the FCC had adopted in 1970, to address the --

Pelkey: This is out of Computer Inquiry 1 --

Slomin: (Affirmative). In those days, they didn't have Roman Numbers. It was the Computer Inquiry, sort of like the World War.

Pelkey: Which was really driven because of timesharing?

Slomin: Yeah. Oh, yeah.

Pelkey: It was computer companies and --

Slomin: No, that is the policy issue. Actually, the precipitating event was a series of speeches given by Western Union Telegraph Company, where it said: "We're going to be the computer utility of the future."

Pelkey: Oh, right. Yeah.

Slomin: They wanted to follow the utility model, and that precipitated it directly. The Computer Inquiry Rules, by their terms, did not apply to AT&T. The rules said: "In view of the fact that AT&T is independently restricted under the 1956 Western Electric Consent Decree, we don't have to address them in these rules." Along came the data speed 40, which was just sort of a modern day teletype machine, which instead of having clanking gears had a cathode ray tube, but basically wasn't all that much different than an old teletypewriter. However, it did have a few

bells and whistles on it. It was a somewhat smarter than totally dumb terminal, people alleged that those features brought it functionally under the Computer Inquiry Rules. Well, one of the issues was, do they even apply to AT&T? But they didn't go far enough to take it out of the Consent Decree limitations, and the agency was faced with a difficult problem, which was, they had this long standing policy, at that point, well not that long, seven years standing policy, at that point that you should have structural separation, and the like governing the offering of data services. This seemed to fit functionally with it. That seemed to be the pro-competitive approach. On the other hand, Rules didn't seem to specifically apply to AT&T, and it was sort of dropping through the cracks. So the agency first issued a decision saying: "Yeah, well, the Rules really do apply to AT&T. What we really meant was that so long as the '56 Consent Decree constrained the conduct, the Rules don't apply, but if it doesn't, then they do apply."

Pelkey: Ok.

Slomin: Structurally separated. This was not a great decision. Indeed, IBM perceives this, in part, as a decision by the FCC to exercise jurisdiction over data processing. This IBM did not want to see happen.

Pelkey: Right.

Slomin: AT&T didn't like it for its own reasons. So the two groups filed petitions for reconsideration, and the agency did an about face on it and said: "Yes, it could be offered as part of the common carrier offering on a regulated basis, but it's a very difficult policy problem. We've already started the second Computer Inquiry to consider some of the service issues. We want to bring the terminal equipment issues into that as well." And that spawned an additional Notice of Proposed Rulemaking in the second Computer Inquiry, which was already under way, by the way, just to consider services, and brought in all of terminal equipment into it. IBM was even MORE unhappy with the second result than the first, because now the agency had characterized it as data processing and said it could be offered as part of the common carrier enterprise --

Pelkey: Absolutely.

Slomin: -- which looked like a direct assertion of jurisdiction over data processing, so IBM took the appeal on that one, and it was IBM versus the United States and AT&T in that case. The agency was affirmed.

Pelkey: And what year was this?

Slomin: '78, '79 the appeal. But, that was the reason the Computer Inquiry was expanded to consider terminal equipment. In fact, the CI-2 decision, when it finally came out, said: "Yeah, this is an unanswerable conundrum. You never will be able to tell the difference between, sort of, good and bad terminal equipment. The only way to deal with this is to deregulate it all, and they did."

Pelkey: Which meant that AT&T could only compete in that if they set up a separate --

Slomin: Subsidiary.

Pelkey: Subsidiary.

Slomin: Subsidiary to offer the premises equipment, which they did. That was American Bell, initially.

Pelkey: A couple of questions? Where did this pro-competitive philosophy come from, that factored in these days? Did it come from the political? Did it come from the White House? Did it come from --

Slomin: All of the above. There was, and remains, an irony in decision making at the FCC. The left wing, the right wing always came together on competition. They may have come there for different reasons, but they ended up at the same place. The right wing was pro-competitive because that is what good, solid Republicans like.

Pelkey: Right.

Slomin: The left wing was pro-competitive because they saw this behemoth, AT&T, with far too much power, and the only way to blunt it and to constrain it and to control it that they perceived was competition. It is not accidental that the Carterfone decision was written by Nicholas Johnson; probably the most left wing commissioner that ever sat on the agency. He was assigned the job of writing that decision by Dean Birch, one of the more conservative chairmen in the history of that agency, and these are two people who so intensely disliked one another that it has been said they generally wouldn't talk to each other otherwise, but on that one proceeding they came together.

Pelkey: Yeah.

Slomin: And that has been seen in every chairman since, and, in fact, before. Charley Ferris is a liberal moderate Democrat; very pro-competitive. Mark Fowler was a very conservative Republican; extremely pro-competitive. Dennis Patrick, exactly the same.

Pelkey: Yeah.

Slomin: Even before Dean Birch, the chairmen of the '60s were pro- competitive, in the Johnson administration: E. William Henry; Kenneth Cox, who is now a vice-president of MCI.

Pelkey: Good. The Western Union speeches, you referred to. Where could I find them?

Slomin: Telegraph.

Pelkey: Telegraph?

Slomin: The Western Union Telegraph Company gave speeches, and I think actually made a filing of some kind with the agency around 1966. I would suggest you talk with a person who is on the staff of the FCC who was at Western Union at that time and may have written some of them. He would know. His name is Raymond L. Dujack. He's on 202-632- either 6363 or 9342, I'm not sure which.

Pelkey: Ok. This sounds like a stupid question but I just want to make sure I'm straight on this, this issue between the Computer Inquiries and what was happening at the FCC, they kind of overlapped in time but they were independent events.

Slomin: What do you mean? The Computer Inquiries were conducted at the FCC. In general the same staff worked on all of these things. They weren't independent events.

Pelkey: But where did the court -- the courts were brought in through the FCC --

Slomin: The way the courts play in this is, when as and if the FCC issues a Rule or Order, a decision, in other words, alright, under the Federal Administrative Procedures Act, any aggrieved party may go to court and ask that Rule or Order be set aside, be nullified, or be nullified.

Pelkey: Ok.

Slomin: Ok? And that's how. When they reach a decision, if it is a final decision, people can take it to court if they don't like it.

Pelkey: Ok. And so, the FCC was trying to deal with these policy issues, which it did through Computer Inquiries, and they also had to deal with specifics in the case of a Carterfone or --

Slomin: Well, except Carterfone started as a specific, but in fact the decision was a broad scale policy decision.

Pelkey: Right.

Slomin: The registration program was a policy proceeding. It was what do you do with interconnection across the board?

Pelkey: Gotcha.

Slomin: Mebane Home Telephone Company, while it had policy ramifications, was a very narrow question.

Pelkey: Yes.

Slomin: Could this one little, itty-bitty phone company have its own non-Carterfone in a town in North Carolina?

Pelkey: Ok.

Slomin: Well, at least it plays as an individual decision. Of course, everybody recognized it as a major policy decision.

Pelkey: Western Electric, during this period of time, this issue about innovation and -- let me ask a question before that. Were you worried this '60s and early '70s that ATT had such things as local area networks?

Slomin: I'm not aware of them having them. I think they had the seeds of the technology in place and used it the telephone business.

Pelkey: Right.

Slomin: I know they didn't offer them.

Pelkey: Why, in your opinion, were Bell Labs and Western Electric, not been more of a factor in terms of the data market?

Slomin: Well, in fact, the '56 Consent Decree limited their use of some of the developing technology.

Pelkey: But I mean, at Bell Labs, they certainly were courting --

Slomin: Oh yeah. I know, they --

Pelkey: But since divestiture, or even in the '70s, with American Bell, when they could go off and have done something in these areas. They could have innovated in the modem market. They could have introduced better modems, higher-speed modems.

Slomin: I don't know. I have my own views. It would not be based on anything but just beliefs. I sincerely believe that large organizations are not going to come up with major cost reducing breakthroughs. Maybe only large organizations will come up with the technological breakthroughs, the revolutionary ones, because these days they seem to take a lot of money to produce. Ok. I don't expect the garage operation to invent the laser or to invent optical fiber cable or to invent the transistor. I know better. It takes a lot of resources to do that kind of fundamental work, but when it comes to the day to day innovation and development and product extension, I don't think large companies in general create the kind of environment to promote that activity and, more importantly, to keep the kind of people who can do it.

Pelkey: Yeah.

Slomin: Particularly in the high-flying days of the '60s and into the '70s, your business made it too easy for those people to leave. They'd come up with the bright idea, and if their lawyers could tell them they could walk with it, or if the company would say: "We're not interested in it," it was too easy to get venture capital and form a company.

Pelkey: Yeah. Right.

Slomin: So, it's not an environment that would produce that. It's just a very personal view.

Pelkey: Were you aware of the Racal-Milgo-Codex patent dispute?

Slomin: I was aware of it from afar. I never followed it closely.

Pelkey: Patents, I mean patents haven't played much of a role. I mean, they cause --

Slomin: There was also the Hayes dispute with some of the others now.

Pelkey: Yeah, the ongoing one now, and certification issues, and standards and all those sorts of things. You've been very valuable -- I mean you've helped me with the questions I wanted help with and I greatly appreciate your time. Like I say, I'll get a copy of this to you and --

Slomin: Thank you. I hope it's been --

Tape interrupts

Slomin: -- about the '70s and AT&T, and I really believe what I said. I don't know that that pervades the '80s at that company. First of all, I think they're facing some degree of market realities now, particularly in data.

Pelkey: Right.

Slomin: They're having their "tushes" kicked in. They've discovered, you don't blithely go into the data field, the computer field, and say: "Here I am. I'm the phone company. I'm wonderful. You've loved me for all time. Buy my product," and the world will beat a path to your door. It doesn't work that way. And I don't know that their PC incursions have been all that successful. I keep reading in the financial pages each --

Pelkey: How much money they're losing.

Slomin: Yeah, how much money they're losing, but I think they're learning the lessons of that. I think they're joint venturing with companies who understand commercial realities. I think their Olivetti venture is one example of that. I think they're also managerially -- they've assigned, sort of product responsibility and made it visible.

Pelkey: Yup.

Slomin: And people are going to stand or fall on their performance and not going to bury it sort of in revenue requirements and rate base where nobody cares all that much. I don't know if I'm all that positive on their future, but I would say that maybe that "Not invented here," and -- syndrome that pervaded some much of their earlier thinking maybe has changed.

Pelkey: I agree with you. DataKit is an example of what they're doing in that product category, I mean, they're trying to be more responsive to the market. It's important that they do get --

Slomin: Having said that, I don't for one minute believe that AT&T can or will compete worth a damn at the low-end consumer market. They might be a retailer who purchases, you know, the \$8 throw-away telephones at the same time when they are sold by everybody else

END OF THE INTERVIEW