

<< ORAL AND VIDEO COLLECTION

SID TOPOL

Interview Date Thursday, 20 June 1991,



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INTERVIEW

TOPOL: Good Morning. This is Sidney Topol talking to you from the Monitor Channel headquartered on 1660 Soldiers' Field Road in Boston. It's a delight for me to be with my good and dear friend Strat Smith once again discussing some of my experiences over my lifetime. I am looking forward to it.

SMITH: This is the first tape of the second interview with Mr. Sidney Topol being conducted in connection with the National Cable Television Center and Museum's Oral Histories Program. It is June 20, 1991.

Sidney, the Monitor Channel is a new facet of your telecommunications career, which we certainly want to get on the record. But I would suggest that, for the sake of continuity, we follow from where we left off at the last session and get that out of the way, if that's okay with you.

At the end of the last session, you had alluded a couple of times to the open skies policy and in particular you referred to a decision by Comsat Corporation to call for bids on three ground stations. It appears that you considered that action on the part of Comsat to have been a critical one affecting the future of satellite communications and its ultimate relationship with the cable television industry. May we start at that point and continue.

TOPOL: I believe the request for bid by Comsat for three ground station TVROs--Television Receive Only Earth Stations--preceded by several years the actual decision on the part of the Office of Telecommunications Policy (OTP). But it probably precipitated the dialogue in the United States and was one of the factors influencing a policy decision being made in Washington. In fact, at that period, there was probably no question in Comsat's mind that they were the designated domestic satellite carrier. I mean, when they went out for bids for three TVROs to experiment with television domestically, they were saying to themselves and to the U.S., "Listen, we are an organization that was designated by Congress. We are the chosen gateway to the international satellite communications system. We have created an organization. We have Comsat Labs. We certainly should be the people who implement a domestic satellite system." So they went out for bids for these three TVROs.

I don't know if I had mentioned it earlier or not but I was at Raytheon at the time and I was general manager of the communications operation. I saw this as a critical, key contract to win. I saw clearly that we were now dealing with something that had some tremendous impact, first in the U.S., and then globally. It was a highly competitive bid. We had lots of experience in, as I said, microwave and some NASA experience on synchronous satellite communications. We won the job with a ten meter antenna, I think at that time, built by Andrews, a parametric amplifier built maybe by Airborne Instrument Lab and the receiver, which we built ourselves. It was a tunable receiver, which was very progressive at that time, in the very early development of tunable receivers, because up to that point most of the satellite receivers were fixed-tuned for international traffic. We won that job at \$250,000 each. I tell that story because, as you know, the prices of similar units today are dramatically lower.

Comsat bought those three units and that generated a lot of discussion in the U.S. of who really was going to be chosen to be the designated domestic carrier. Was it going to be Comsat? Was it going to be AT&T, who was also experimenting with big horn antennas up in Maine, if you remember. And at Bell Labs where the famous scientist, John Pierce, who was a real pioneer, along with Arthur Clarke in satellite communications. Of course, other entities started to make moves at that time. Western Union, American Broadcasting, ABC, Public Broadcasting, were all thinking of how the satellite system could be used to bring television to television stations.

SMITH: How did Comsat actually use those three stations?

TOPOL: Well, Comsat was always a very critical acquirer, a procurer. I remember a chap by the name of Rob Griskman, who was a very competent guy. He was very severe on us on specs and on noise figures and performance, etc. He stayed with Comsat and has been in the satellite field continuously. I just heard from him a few months ago.

We delivered the units at acceptance testing. They actually, I think, went into the warehouse. First of all, at that time, there was no domestic satellite in orbit, if I'm not mistaken. The only satellites that were in orbit were over the oceans for Intelsat use. So that there were really no domestic satellites in orbit.

INTERVIEW DATE

June 20, 1991

INTERVIEW LOCATION

Boston, MA

INTERVIEWER

E. Stratford Smith

PROGRAM

Program: Penn State Collection

As you know, simultaneously with that, the Canadians were starting to move rapidly in developing a domestic satellite system for Canada. Telsat was formed. Canadian Telsat. I think a man by the name of George Golden was the original chairman. They had determined that they were going to go ahead--that was a government agency, I believe, not private--and design, procure, launch, and implement a domestic satellite over Canada.

Raytheon had a Canadian subsidiary at that time called Raytheon Canada. Using the work we had done on these three experimental TVROs, Raytheon Canada bid for the TVROs of Canada. This was now in the late '60s, somewhere around '69 or '70. I believe the three TVROs were probably procured in '68 or '69. And Raytheon won that job in Canada for ten TVROs at \$100,000 each. Mind you, the first one went for \$250,000. The next ten went for \$100,000. That was kind of the real beginning of commercial TVROs in North America.

Now back to the U.S. again. There still was a big debate as to who was in charge. Who would be the designated, if you will, carrier for domestic satellite communications. Canada already decided Telsat was that. Now in this period--'69, '70, '71--where were you Strat?

SMITH: I was in private practice of law in Washington, D.C.

TOPOL: And involved with the cable industry?

SMITH: Oh, yes.

TOPOL: When were you general counsel of the NCTA, if I may ask, just to put it in perspective?

SMITH: I was general counsel of NCTA starting in, I think it was, 1952. I remained general counsel for about eight years and then I was special counsel to the NCTA for another ten years after that.

TOPOL: Okay. During this period then, you already were in cable for fifteen years at least.

SMITH: I performed the FCC's first field study of community antenna, as we called them in those days, back in 1949.

TOPOL: Sounds wonderful. I've got to introduce you to some people.

In any event, the dialogue reached some heated discussions. This was during the Nixon Administration. There was a young gentleman by the name of Clay Thomas Whitehead. Have we covered this?

SMITH: Only just to that extent. This is what we want to get into.

TOPOL: This young gentleman, Clay--nicknamed Tom--Whitehead. So I'll refer to him in the future as Tom Whitehead. Tom and I, during this twenty year period, have become good friends. I had lunch with him some months ago in Washington. He subsequently went into the private sector.

At this time, he was the head of the office of telecommunication policy in the Nixon Administration. He was a bright young man who, I believe, had some technical background. He did some work at Harvard and MIT, graduate degrees in public policy. He addressed this subject of domestic satellites. We were starting to lose ground to the rest of the world because, although we had pioneered the launching and the building of satellites and the building of ground stations, other countries like Canada--even Indonesia, Brazil, and the Soviet Union--were already talking about launching satellites and building networks because they didn't have quite the microwave and cable infrastructure that we had. So they had real need for domestic, long distance communications.

Tom addressed the subject. I don't know whether he put a committee together or what, but in any event, lo and behold, somewhere around late '71 or early '72, he came out with what is known as the "open skies" policy.

SMITH: Was this a result of conferences with industry people and those players that wanted to be the private carriers like Western Union and AT&T, or just what sort of a vehicle did he use to develop the policy?

TOPOL: Actually, you've prompted me to call him and ask him that because I never really knew. I would guess that he was getting a lot of lobbying from Western Union and RCA and from the TV networks themselves who all insisted that they wanted to move out on their own. I imagine they were coming to the FCC at that time. But I don't know of any kind of formal inquiry or hearings on that. So if it was, it was kind of one-on-one discussions between him and others. But in any event, he probably had a bright, young team who put this together and came out with either a document or a series of documents that made it clear that anybody who was technically sound--technically capable--and financially sound could launch and own and operate a complete domestic satellite network. I mean, that was really revolutionary that they would do that.

The second part of that, which we touched on earlier and we'll summarize now, the cable industry itself had been interested in satellite communications--probably led by TelePrompTer, Irving Kahn and Hub Schlafly. They were really pioneer thinkers. They had, evidently, knowing this was coming, indicated to the OTP the concept of customer owned earth stations--customer premises earth stations (CPES).

While the industry was talking about what to do and the cable satellite access entity was getting started, they had lobbied with the OTP. Part of this was that a cable operator could own his own earth station. That was really revolutionary stuff, Strat, because it was the Bell Systems that, at that time, still owned the whole network. You couldn't plug anything into their network yet. They were still talking about it. MCI was still in the very early stages. The Code-A-Phone decision was very early. And the Bell System was still very, very strong.

SMITH: And all you could get was a black telephone.

TOPOL: Right. They had a story that if you plugged anything into their network, you were going to upset the whole network. They convinced everybody of that. Subsequently, we found out that it was not true. But here we established the fact that a user could own and operate an earth station.

SMITH: Do you credit Irving and Hub specifically for carrying the message for the cable industry, in that respect?

TOPOL: I do. Of course, they will tell you that too.

SMITH: I'm sure they will.

TOPOL: There is no question that they were the prime movers. I would say that I picked it up personally after that. When I arrived in January of '72 at Scientific-Atlanta, I think by that time Irving was gone and Hub was actually the CEO of TelePrompTer. A technical guy who was never really an operations guy, I think, when Irving left he became CEO. After the "open skies" policy was determined and the customer premises earth station was accepted that you could own equipment at common carrier frequencies and be part of the network, Hub--somewhere in the middle of '72--determined that he wanted to procure and own a transportable earth station at common carrier frequencies. He put out a request for a proposal.

SMITH: Now this was for TelePrompTer's use?

TOPOL: For TelePrompTer's use, right. During this period there was a lot of discussion. I joined Scientific-Atlanta in, essentially, January of '72. It was actually in December of '71. There was a lot of discussion about pay television. Hughes was doing a lot of work in thinking about satellite communications, in thinking about pay television, in thinking about interactive television, and in thinking about boxes in the home. If I am not mistaken, Hughes was an equity owner in TelePrompTer at that time. I believe that's correct.

SMITH: I believe that is correct, yes.

TOPOL: So there was a bit of a connection between TelePrompTer and Hughes Aircraft. We had lots of discussions at cable shows about how was the satellite going to be used? How was pay television going to be brought? What about these boxes in the home? How many channels? Who is going to own the boxes? Who is going to own the programming? This was in the very, very early stages of all of this. An organization called the Cable Satellite Access Entity was formed.

SMITH: Who inspired that?

TOPOL: Who was the president of the NCTA? Bill Bresnan was just coming in as president of the NCTA and the chap who was the head of Cox Cable...I forget his name. I have a mental block.

SMITH: Leonard Reinsch?

TOPOL: No, no, no. It was somebody who worked for him.

SMITH: Marcus Bartlett?

TOPOL: No, no, no. It wasn't that high. The guy was only in the cable part. In any event, Bresnan was critical to that. He became the chairman of the NCTA and he formed this Cable Satellite Access Entity where everybody contributed \$10,000--operators and manufacturers--and we were going to study how the cable industry was going to use the satellite.

SMITH: Then this was really under the auspices of the NCTA?

TOPOL: Yes, it was. At every NCTA meeting there was a Cable Satellite Access Entity meeting. We started to meet in the year of 1972.

During that same year I met a gentleman by the name of Charles Dolan, Chuck Dolan. Chuck was the owner of Sterling Manhattan Cable. They also owned some franchises out on Long Island. It was during this period that Chuck Dolan had the idea that if we could get sporting events from Madison Square Garden--and maybe movies--and he could bring them to cable systems, that he could charge extra money for this programming with no advertising. It was then that HBO was born in his mind.

SMITH: Was this while Chuck was with HBO or before then?

TOPOL: He created HBO. HBO was his creation as a part of Sterling Manhattan Cable. During that time the cable business was in tough times and he eventually sold Sterling Manhattan Cable to Time Inc. and he wound up with some cable systems on Long Island. He sold HBO, along with Sterling Manhattan Cable, to Time Inc. and Jerry Levin took over HBO.

SMITH: That's the sequence.

TOPOL: That's the sequence. While he had Sterling Manhattan and while he owned HBO I was the president of Scientific-Atlanta in 1972. I don't know how but we, at Scientific-Atlanta, had thoughts about building microwave systems throughout the country. I don't know if I had mentioned that earlier. I eventually took Scientific-Atlanta out of that business mainly over the talk with Monty Rifkin, who was then CEO and entrepreneur of ATC (American Television and Communications), who made it clear to me, "Sid, if you want to sell us hardware you can't compete with us on microwave systems. I have microwave systems in Florida. If you're going to have microwave systems in Florida, it's going to be hard for me to be a customer of yours." So Scientific-Atlanta eventually got out of the microwave business.

But we were in the microwave business when I first talked to Chuck Dolan. Because Chuck Dolan's original idea was to deliver HBO via microwave.

SMITH: All over the country?

TOPOL: All over the country. And he was talking to me about what our Scientific-Atlanta microwave roots were on the east coast. Now, that was a follow-on of microwave distant signal importation. Basically, the first generation of cable was simply the retransmission of broadcast signals over community antenna television.

Then as part of that phase, the people out west--particularly Bob Magness and to some extent Gene Schneider and Crosby--started to build microwave systems and they brought in distant signals via microwave. But it was always broadcast production and programs.

So Chuck Dolan's first thought was, "We would have an extension of that and I will start to bring sporting events and movies to cable systems via microwave. Two things started to intersect: the concept of a domestic satellite customer premises earth station network and the early thoughts of pay television in 1972.

Hub Schlafly, now running TelePrompTer, was out for procurement for a TVRO quite independent of this cable satellite access entity and quite independent of HBO. At that time the Canadian satellite was already launched and Canadian programs were already up on the satellite. So if you were in North America, the only programs that you could receive in the United States then were Canadian programs. Hub Schlafly decided that he was going to experiment with those Canadian programs with a transportable system which he would move around to his systems around the country just to show how satellite delivered programming could be brought to cable.

He went out for procurement. We won the job at Scientific-Atlanta for \$100,000, the magic number.

SMITH: Tell me more about that magic number, if I can just interrupt for a moment. Was it a carefully considered number?

TOPOL: It was Hub's budget. He budgeted \$100,000. He probably got the \$100,000 figure from knowing what was happening up in Canada. But this was a transportable unit. They were built ten at a time and we were just going to build one. I guess I had learned the budget was \$100,000 and although it was going to cost us more to build that unit than \$100,000, we bid \$100,000.

Hub was not convinced that Scientific-Atlanta was a company that was in satellite communications. I mean, he looked at companies, in those days, like ITT and maybe Raytheon and Collins. Some of the big, major companies. He saw us as a little company that was making headends and instruments. Now, what could we know about satellite communications? Well, we knew a lot about it because we had been in the tracking and telemetry business for the military and for NASA. We understood the building of antennas and the mounting of complete systems on flat-bed trailers. That was something that we knew a lot about. In any event, we convinced them that we were capable, that we were eager, that we were enthusiastic, and that we bid \$100,000 and we won the job somewhere in the fall of '72--late fall, maybe in November or December.

The next NCTA show was going to be in Anaheim, California. I guess this was before the Western Cable Show had started. Now we're in the period of March or April of 1973. We win the TelePrompTer transportable unit. We build the unit in three or four months. A decision was made between TelePrompTer and HBO to run a demonstration of satellite delivered programming at the NCTA show in Anaheim in the spring of '73. By this time, HBO was sold to Time Inc. and Jerry Levin was in charge. This is the exact historical sequence of that.

I believe HBO decided that they were going to bring a fight to the cable show. There was a fight in Madison Square Garden--Ernie Shavers and somebody else--and HBO contracted with American Satellite Corporation, which was already formed, who contracted with Telsat in Canada to use one of their transponders because there was no U.S. launched satellite at that time. We hauled a transportable unit to Anaheim and set it up, not knowing whether this would work or whether we would get interference or not.

HBO made the arrangements to rent a suite. The arrangements were made to lease a Telsat transponder, the fight was on, people came to the suite to watch the fight. It was in the evening and it was pretty well advertised. We got everything working fine. The fight was about to commence. People went to get their drinks and hors d'oeuvres to sit down to watch a twelve round fight and bingo!! When they got back the fight was over. I've told this story dozens of times. One of the guys, I'm not sure who, knocked the other guy out in the first two minutes of the first round. But that was an enormously historic event because it was the first real demonstration of a live event specifically for the cable industry to demonstrate how one could bring premium programming, subscription television, pay television to the cable industry.

I heard subsequently--I didn't remember--that also during that show, I believe, President Nixon was brought in live to address the audience via satellite.

SMITH: No, I think actually what happened was it was the Speaker of the House. He was brought in the next day. I'm quite certain of that because we have a tape of him at the Cable Television Center. But, even so, it was momentous.

TOPOL: But I was busy with this other activity. We were worried about interference. We were worried about it working. Technically, it worked well. In a sense, pay television was born in the spring of 1973. Hub took the transportable unit from there and moved it around the country from cable system to cable system bringing in Canadian television, at the time. We all became convinced that this, indeed, was a way to bring programs to the cable industry.

Simultaneous with that Scientific-Atlanta, on its own money, built a rather substantial TVRO which was movable and quite expensive. We installed that on the front lawn of our Pleasantdale facility in Atlanta. So while Hub was moving this around the country, we were demonstrating satellite communications in Atlanta picking up the Canadian programs. We had kind of a makeshift demo area.

SMITH: Did you bring potential customers into Atlanta to see it?

TOPOL: Yes I did. And I must say they were very skeptical. Very skeptical about this idea. Pay television was starting; people were bicycling movies and tapes around. If somebody could build a \$30 or \$40 descrambler, that was what people were worried about. But the concept of live satellite communications, of sporting events and programs and movies was still very early and very skeptical.

I remember during the period of particularly 1973 and '74, of really talking about this to as many cable operators as I could bring in. Even in those days, preliminary talking to Ted Turner's people who were in town about how satellite communications could be used to bring programs. Seventy-three and '74 were skeptical years.

SMITH: Then the Anaheim demonstration didn't ignite a prairie fire of interest. Is that right?

TOPOL: Not at all. We were moving the TelePrompTer unit around. We were demonstrating it but no real excitement. To Scientific-Atlanta and to me it had great commercial implications. I mean, if this thing really took off, we were pioneering it. We were very proficient in receivers and in antennas, although we, at that time, made the structures of the antennas and didn't make the surface. We used to buy the surface and build the backing structure and the mount.

Around this time, the Alaska pipeline was being built. And around this time, RCA Communications and Western Union both became very active in satellite communications as a result of the open skies policy, along with a number of other companies I may have mentioned earlier. One of the original applicants for a domestic satellite system included TCI, along with North American Aviation. There were a number of applicants. Satellite Business Systems, which before that was owned by MCI at Lockheed. There were a number of people who started to think about being domestic satellite operators. But the most aggressive of those were, at that time, RCA and Western Union.

If my memory doesn't fail me, AT&T was precluded from building a domestic satellite system for several years. Like three or four years. I think that part of the ruling was that they could not get into the domestic satellite business.

SMITH: Was that an FCC edict or a congressional edict?

TOPOL: I think it came out of that original policy or maybe it was an FCC edict. It probably was an FCC edict. My memory is not exactly clear on that. But AT&T was precluded. The aggressive people then were RCA and Western Union.

So as I mentioned, I was personally convinced that this was the right way for the industry to go. Of course, I was motivated in my role as then president and CEO of Scientific-Atlanta to want to make this happen because it had some serious implications for the growth of our company. Seventy-three and '74 were really talking years with the cable industry and talking a little bit with RCA and Western Union and talking with HBO, who was the only person on the scene. I remember even preliminary thinking about talking with Turner, as I mentioned.

In December of '74 I remember very, very well that I wrote a series of letters to people calling for a meeting at Time Inc. head quarters. It was a significant meeting. I remember writing to several cable operators among whom was probably Amos Hostetter at Continental, Henry Harris at Cox Cable, and to Monty Rifkin, who was running ATC. They were the three big players at the time. I suggested then that we invite RCA. I was quite anxious to develop relations with RCA because they were building a network. We met in New York at Time Inc. headquarters.

SMITH: This meeting was instigated by you, personally?

TOPOL: I personally wrote the letters and suggested we do it. I had a clear idea of all of the names. But I remember a chap by the name of Lou Dinado at RCA. At that time, it was still RCA Global Communications. They had not broken it up into domestic and so forth. I know Monty Rifkin came from ATC. There were some people from Time Inc. and Jerry Levin, I believe, was at that meeting.

The idea was, "Listen, gentlemen, I think we have everything in place now for satellite delivered television programming. HBO, you have the programming. RCA, you have the satellite. Monty Rifkin, you have the subscribers. Sid TOPOL; you have the capability of building earth stations. What's preventing us from going ahead?" At that time, microwave importation was still very big. Most of the cable operators owned microwave subsidiaries. I remember Monty Rifkin looking at a map and saying, "Sid, maybe ten TVROs are what we need." We put them at the heads of these microwave systems and we use them to pick up the signal and then feed them over our existing microwave signals, which were already delivering. But you would need another microwave channel and another set of frequencies. In the end, by the way, it turned out it was much cheaper to put a TVRO at a cable headend than to build one TVRO and feed it via microwave. The various microwave stations were more costly than what a TVRO came to. But at any event, Monty said it looked like ten earth stations. Jerry Levin, was sort of interested. We said, "What we have to do is some promotional pricing. The satellite cost has to go up as we get more and more cable operators hooked on." We said we will start the price of the earth stations as if we were going to sell them in quantity. I said, "I think we ought to get going."

Jerry Levin went back and really explored this with his own organization. He had already been thinking about it. Everybody in that group was thinking about this. The next convention was the spring of '75. This is two years later after Anaheim. It was held in New Orleans. At that time, Jerry Levin made an announcement that he was going to put HBO up on the satellite on the RCA bird. Bobby Rosencrans stepped up with Ken Gunter and said, "We're going to buy some earth stations. We're going to put these on our systems." I don't remember how many he committed to us at that time. We said, "We're going to go into production of ten meter earth stations."

Why ten meter diameter earth stations? Because we already had built a couple of these for the Alaska pipeline that I mentioned earlier. The Alaska pipeline system was going ahead and they bought two antennas from us at two ends of the pipeline.

You couldn't meet the FCC standards at that time with anything less than nine or eight meters. But we had ten meters. We had the tooling finished for ten meters. We were pretty clear that we knew how to get the surfaces built in production and so we proposed to Bobby Rosencrans, "Look, let's not go to the FCC and ask for a smaller size at this time. It will take too much longer. Let's stick with ten meters. Here's what our price is." I believe it was something like \$65,000 per earth station. Bobby Rosencrans committed to something like five and said, "I'm going to go with HBO."

HBO, subsequently, went on the air in September of '75 with the Ali-Fraser fight from Manila.

End of Tape 1, Side A

SMITH: We're back on the second side and we were talking about Bob Rosencrans having committed to five or six systems at \$65,000 each.

TOPOL: Right. HBO had made the commitment with RCA to lease some transponders. They had made arrangements to launch with the Ali-Fraser fight from the Philippines which came over by Intelsat and then back up again via RCA. At this point, I got a call from Monty Rifkin. At that time, you still needed construction permits from the FCC for a TVRO which was eventually done away with. We completely deregulated TVROs later on. Not only could there be customer premises earth stations but you didn't have to file with the FCC and get competing filings so that the FCC would have to decide which one. But at the time, I think we still had to do that. Monty was worried about that. He had filed for a construction permit. I assured him that if he got the construction permit, we would have a TVRO ready for him. So to make a long story short, in September of 1975, Bobby Rosencrans' system is on the east coast of Florida. I forget exactly where.

SMITH: Fort Pierce.

TOPOL: Fort Pierce, thank you. Monty Rifkin has a system in Jackson, Mississippi. TVROs were delivered to both sites. We had on the lawn at Scientific-Atlanta in Atlanta this experimental unit. So three TVROs were ready in September of '75. That system went on the air with a fabulous fight. It went twelve or thirteen rounds, I

forget which.

By sheer coincidence, during that period, there was a southern cable show going on in Atlanta. We invited all of those people to come out and see the fight at our facility. So there were three sites that were picking up the signal: UA Columbia, ATC, and Scientific-Atlanta. Once again, history was made. That really convinced the industry that this was a good proposition.

SMITH: Was that the fight that was called the "Thrilla from Manila"?

TOPOL: That is it. That made history. It was only seen by a few people in three locations. From that point on, we had the explosion.

SMITH: HBO was the one that brought the fight?

TOPOL: HBO paid for the fight and organized it. They pioneered in live sports, as well as movies, in the early days. Jerry Levin was a leader and a visionary and convinced Dick Munro, who was heading up the whole broadcast cable group for Time Inc. in the mid-'70s. They determined they were going to bring pay television. At that time, everybody started to think about "going up on the satellite." Ted Turner, Showtime and a whole group of operators--particularly the religious broadcaster. Televangelism was born--Pat Robertson, Jim and Tammy Bakker--and they saw clearly the use of satellite communications. They were willing to give away earth stations to cable operators who would carry their programs.

Somewhere in the '76 period, we started a very serious dialogue with Ted Turner and Channel 17. He made a decision to go up in '76 or '77. Ed Taylor was a consultant and I remember many meetings that he and I had with Channel 17--Turner Broadcasting. Ted created the first Superstation. Then I don't remember what happened between '77 and '80. It was just an avalanche. We at Scientific-Atlanta just couldn't keep up with the production. We were just swamped with earth stations and receivers.

I remember going to China in 1977 to talk to the Soviet Union about satellite communications. We led a whole group. I was chair.

SMITH: I'm just a little confused. You went to China you said to talk to the Soviet Union.

TOPOL: Excuse me. I made a mistake. We went to China to talk to the Chinese about satellite communications. Deng Xiaoping was just coming in and the Cultural Revolution was just ending. I mentioned that because when I returned from that--those long trips make you a little ill and it takes you quite a while to recover--I remember Jay Levergood saying, "Sid, I know you just got back from China but we've got to fly out to Denver because TCI is thinking about making a very big procurement for earth stations and we've got competition." This was in 1977.

So Jay and I went out to TCI and we talked with John Malone and with J.C. Sparkman and with Larry Rombrell and we were fortunate enough to win that contract. That was a major volume contract, at that time. I think one of the last companies that decided to participate in satellite-delivered pay programming was then Warner Amex under Gus Houser. I remember a few years later we won that job. So we won a bunch of key jobs. But the most key of all was the TelePrompTer order itself. TelePrompTer came out with the largest procurement in that period--somewhere around '75 or '76. Bill Bresnan was then the CEO of TelePrompTer and it was a very competitive procurement for a large number of ten meter earth stations. We won that job. So we won the major MSOs like TCI, TelePrompTer, Warner, and ATC, to some extent.

We went into volume production of antennas and receivers. At that time, a critical part of a TVRO is what is known as the low noise amplifier, LNA, which had a particular technology in it. We became the largest producers in the world, at the time, for LNAs because we were the largest users in the world for LNAs.

SMITH: I just have to ask you this question as part of this story on the original TelePrompTer order for the movable earth station. At \$100,000 did you make or lose money on that specific project?

TOPOL: It cost us probably \$160,000 to build it. So we lost at least \$60,000.

SMITH: Overall, you made a great deal of money out of it!

TOPOL: It was a very critical order. It was an investment, it wasn't a loss, of course. We got paid back many, many times over. We built tens of thousands of earth stations--Scientific-Atlanta--around the world. We're still building them and today we're one of the largest producers around the world of domestic satellite earth stations--Africa, Asia, Indonesia.

Just around that time, as an aside, Indonesia decided to build its own domestic satellite system. It was a natural. There were thousands of islands that didn't have microwave or cable. I believe it was the period of '75, '76, '77. We became a major sub-contractor to the three prime contractors who were, at that time, ITT, Hughes, and Philco-Ford. All three of whom are out of the business today, for all practical purposes, in that particular area.

Hughes came back in again when they acquired a V-Sat business of Maycom. Maycom was a competitor of Scientific-Atlanta in satellite communications. But they eventually sold their business to Hughes and so they're out of satellite communications entirely. But ITT is no longer in it. Philco-Ford, for all practical purposes, is no longer in it. So we became a major subcontractor to them for antennas and electronics. That launched us, in that period of '75 and '76, in the international business. Today we probably have sixty, seventy, eighty million dollars a year international business in satellite communications, maybe bigger. We're a big supplier of satellite communications around the world, all coming out of this period in the mid to late '70s of going into volume production and creating this cable satellite network.

SMITH: When you went to Scientific-Atlanta, I guess the timing was right or that you foresaw Scientific-Atlanta as becoming sort of a catalyst for the combination of satellite communications and cable communications?

TOPOL: I saw that when I first came. In my first strategic plan, which I wrote in 1972, one of the objectives and strategies that I introduced to Scientific-Atlanta was that we were going to become complete suppliers of cable television equipment, all the way from earth stations to home terminals. I wrote that in the spring of '72, long before I knew what was going to happen in satellite communications and long before I knew what was really going to happen in set-top converters.

Both ends of those businesses have become very big businesses for Scientific-Atlanta, including all the middle parts. So I took Scientific-Atlanta from what I call first generation cable television--which was off the air antennas, high towers with antennas trying to pick up signals all around--well into the second generation. A part of that first generation was the microwave signal importation. The second generation was satellite earth stations, pay television, subscription television into forty channel systems, into urban systems. Satellite communications took cable television from community antenna to urban systems to fifty channel systems.

Once we had the programming via satellite to feed the fifty channel systems, which we did in the late '70s, then there was a big demand for fifty channel converters. Then the concept of addressability came in. So the second generation was satellite-delivered programming, fifty channel addressable systems, which created a big demand for earth stations, headend equipment, amplifiers, and set-top terminals.

We, as a company, delayed the development of set-top terminals for a long time because we weren't clear that we had anything to bring to that. It looked to us in the early days like a consumer commodity product. But when addressability came in and scrambling came in and encryption came in, it became very complicated. I remember another meeting with Monty Rifkin at the airport in Atlanta where Monty said to Jay Levergood and me, "Sid, you guys have got to get into the converter business. The industry needs fifty channel addressable converters. The reliability is bad. The security is bad. We need Scientific-Atlanta to be in this business badly."

We were not anxious to get into that. We were busy with headend equipment, we were busy with satellite earth stations, and we were busy making inroads into the distribution electronics--the amplifiers--which took us a long time to get profitable. They were just starting to get profitable. But somewhere around 1979, we agreed that we would develop the famous 6700 converter, which is a drama in itself.

SMITH: Tell us about the drama.

TOPOL: We were a company that was very, very successful in building products, being in the right place at the right time, being ahead of the market both with the product and the ability to deliver reliable products. But the products we were making were in quantities of tens of thousands and the converter business gets you into quantities of a million a year. Thousands a week, thousands a day. We explored that challenge.

At that time, we had Jack Kelly, who was the chief operating officer, who had a good manufacturing background. Working for Jay Levergood, at the time, was a chap by the name of Larry Bradner, who was a Harvard Business School graduate who spent most of his career in operations and manufacturing. He became the project engineer or program manager of the 6700 converter. We launched the design of this converter. We visited as many factories as we could.

By this time we had started to get into automatic insertion equipment and automatic testing equipment. We were convinced, at the time, that we could lay out a complete converter on a single printed circuit board and insert all of the components and test it automatically and build it in the United States in Atlanta. We subsequently built a factory and designed the product. We introduced the 6700, I believe, in December of 1979 at the Western Cable Show.

That type of franchising in the big cities, at that time, was ferocious. All the big MSOs who were in the franchising business had to make big promises to the cities, as you know.

SMITH: Yes they did. Excessive promises.

TOPOL: At that time, the whole converter business went rapidly from twenty channels to thirty to forty to fifty. From mechanical tuning with sliding devices and switches to electronic tuning to addressability to digital control to remote control--all in a period of two or three years.

SMITH: The 6700 was a how many channel converter?

TOPOL: Fifty-four channel addressable converter as its objective. We introduced it at the show as being capable of fifty-four channels, which it was, with scrambling and descrambling and with the ability to add an addressable module either under or as a side-car. We hadn't finished that development. This was demand pull. This was customers pulling us into this business. I'm going to give you a short history of that.

SMITH: I'd love to have it on the record.

TOPOL: But the fact is that we ran into--month after month, quarter after quarter, for about a two year period from about '79 through '81--major technical and production problems. First, on the tuner. We had to redesign the up-down tuner because we could not build it on a single board. You had to build a special tuner. Then we ran into trouble on the descrambler. Then we had to redesign the tuner using some special kind of stable circuitry. We built a special factory for that. We eventually got a design that worked and that could be produced. But it was too expensive. It was then that we started to explore components and sub-assemblies in the Far East.

Now if you remember the period of 1982, it was a deep recession. Cable construction hit a peak in '82 of 100,000 miles and then headed down. Interest rates started to go up, not dissimilar to what we've had in the last year. Financing was tough. The country went into a recession. Other parts of the company started to have problems. We had to, through a series of decisions, discontinue the production of the 6700 and phase in the production of the 8500. We saw that we had the good, addressable technology but we did not have a design that could be produced economically. So as we were phasing down the 6700, we had started the development of the 8500.

We had a hiatus of about six months where we were out of production on the 6700 and not in production on the 8500. It had disastrous effects on the quarterly results of the company at the time, if you look back in history.

SMITH: Is that the period that you are reported in the trade press as not wanting to talk about?

TOPOL: Yes, probably that period. That was a very difficult period. But we did talk and we reported consistently in our quarterly reports that we were losing money on the 6700. It had difficulties that we reported to the outside world. Each time we thought we were out of the woods, we felt pretty good about it, the next two or three months we would have another problem.

But we eventually went into production. We had selected the Mitsuchi Corporation to be our partners. We made an arrangement with the Mitsuchi Corporation that they would build a factory for us. We would commit to a certain level of orders over a five year period and they would build the unit to our design. The 8500 was our design. It was not as if we had bought a Mitsuchi product. We designed it. We had a great deal of facility on how to build the up-down converter, what to do and what not to do,

how to build a descrambler, and how to build the addressable software for the addressability. We developed and produced the 8500. Shipments started at the end of '82.

We told all of our customers that we would convert any 6700 to 8500 at a very favorable agreement--trade-in policy and that anybody in the field who had the 6700 and wanted to trade them in, we would trade them in for an 8500 and take them back. So we created a trade-in policy, which really established Scientific-Atlanta's name in the industry. People were very impressed with how we handled the recall and the trade-in and the conversion from 6700 to 8500.

Now the 8500 became the most reliable converter on the market at that time. We went from reliability figures of ourselves. By the way, all manufacturers were having trouble at this time because the whole technology was moving so rapidly. All manufacturers--Scientific-Atlanta, Jerrold, Magnavox, Oak, Zenith--had problems. Zenith probably had less problems than the others because they took a different approach. We came out of it dramatically with the 8500. It became a standard in the industry in '83 and '84. We have subsequently shipped over twelve million 8500s of which six and a half million, according to the numbers I got from my people, were addressable converters to date. We recovered dramatically from that period but a significant part of that period was a real down-draft in the general economy and, certainly, a serious delay in implementation of systems.

One of the things we talked a lot about in those days was rebuilds. Rebuilding all the old twelve-channel systems. We thought there was going to be a major rebuild program of twelve and twenty channel systems to thirty, forty and fifty. In actual fact, the rebuild program really didn't get started until de-regulation in 1986. It was the de-regulation, it was the Cable Act of '84, which went into effect in December of '86, that really spurred the rebuild program in America. In '87, '88 and '89 were boom years, again, like '77, '78, '79 and '80. The rebuild program which was to fill in behind, didn't take place until about '86.

In fiscal year 1990 the company did over \$600,000,000 in sales, of which about \$350,000,000 was cable business. That was from a beginning in 1972 of about \$1,000,000 business. So during my tenure at Scientific-Atlanta we took the business from about \$1,000,000 to \$350,000,000.

Now I might mention that this last twelve months has been a very difficult period for the cable industry. HLT, (highly leveraged transactions), discussion about re-regulation in Congress, all the issues of cable service and cable rates have had a great deal of discussion in Washington. It has impacted the cable operators procurement.

SMITH: Would you care to comment on the fact that the Cable Policy Act, as you just mentioned, did open the door to rebuilding in the industry. It also opened the door to extensive additional programming in the industry. Now today there is a movement on Capitol Hill and at the FCC to reverse that trend and slow the industry down again. Does this make any sense to you?

TOPOL: It doesn't make any sense to me. I can understand potentially what has happened and that is that subscribers, during this rebuild period and during this additional programming period and additional raising of rates, have had some problems and they wrote their Congressmen.

I represented the industry in high definition television in two hearings. The last place you solve any problems is at a Congressional hearing. I mean, you're not dealing with facts and logic, you're dealing with emotion and the camera and Congressmen who want to get re-elected and want to get some press. So, we've been in the middle of that. Out of all of this now, comes some other issues of competition like DBS and Telco entry. The fact of the matter is the cable industry has done an outstanding job in building a huge network of satellite earth stations and cable television product without a single penny of government subsidy. That's not true in every other country in the world. There was not a single penny of government money that went into this satellite network which we just described of thousands of earth stations and dozens of uplinks. By the way, I did mention the fact that Scientific-Atlanta then become a major supplier of television uplinks to the programmers as well as downlinks to the cable operators. Very large, extensive uplink facilities--ESPN, Warner with Nickelodeon, which then eventually became Viacom, Showtime, MTV, all the religious networks. An enormous network that went up all privately funded. No subsidy. All of this occurred because it was market oriented, market driven. We have demonstrated that. That seems to get lost in the rhetoric in Washington of the accomplishments of raising capital--mostly debt by the way--paid off to a great extent. A lot of equity and cash flow now helping to regenerate.

Now we enter the third generation of cable television. First generation, once again, off the air signals microwave importation. Second generation, satellite delivered programming, franchising the big cities, fifty channel systems, converters, addressability, some interactive systems--but not much because the market won't pay for it. It is not that the cable industry didn't have the technology for interactive. We have built two-way amplifiers for fifteen years. We have built two-way boxes going back twenty years ago. And we have experimented; QUBE being the most notable experiment of two-way interactive systems. It's not that we don't have the technology or the desire, it's just that the market won't pay for the cost.

SMITH: That's a subject, Sid, that I wanted to get into and as long as we've got there, let's stay with it.

TOPOL: Can I suggest a break?

SMITH: Yes, you may, as a matter of fact.

(Short Break)

TOPOL: Let's discuss interactive television for a moment. It's very timely because, as you know, the telephone company uses interactive television as one of the many reasons why they think they should come into the cable industry and become deliverers of television programs into the home. They insist that their experience in digital switching and fiber and two-way systems--of course, voice is always two-way--that their experience in these areas will lead to all kinds of wonderful benefits. I've seen presentations by the telephone companies and the suppliers to the telephone companies who talk about all of these wonderful services--shopping, banking, polling and so forth.

The catcher for the New York Yankees, Yogi Berra, has all of these wonderful sayings. He says, "It's déjà vu all over again." For me, it's déjà vu when I hear the telephone because that's what we were talking about years ago. During those franchising battles in the urban areas if you pull out some of those proposals you would see all these same things. We proposed all these two-way systems like banking and shopping. Then all the amplifiers that we have built over the years have reverse amplifiers that can be plugged in. The reason that interactive cable television isn't here today is that it is just not economically viable. People will spend ten, twenty, thirty, forty dollars a month on entertainment. They will not spend five dollars a month on banking.

This Prodigy system of IBM and Sears, which is basically an interactive graphic system that can still use the telephone lines, I don't think has a million subscribers.

SMITH: That's an on-line computer.

TOPOL: Right, computer interactive system. But the telco said, "If you let us in we are going to give you this wideband interactive television." We cable guys say, "Nothing special there. We've been doing that for years. If you want to get in and lose money, fine, but that's what you're going to do."

They use, as an example, a system in France, Minitel. Well, the reason the Minitel system works--first of all it works over telephone lines like Prodigy--is that the government gives away the terminals. So interactive is fine.

The cable industry, once again, is starting to look at some interactive systems. There are some experiments going on, again. I believe a Canadian company is working in Canada on how you can select a given...you're watching a sports event and you can decide which camera you want to watch. That requires additional channels to do that and so forth. Nothing special about interactive. We have been experimenting for twenty years on interactive systems. We don't have a lot of interactive systems in operation for one reason only: you can't make money on them.

SMITH: Are you saying that there simply isn't a product to sell or have we simply not found the product?

TOPOL: There isn't a service that the customer is willing to pay for the cost of the terminal and the transmission path. We haven't found that service that people are willing to spend a lot of money on. Oh, there are buffs that will pay for anything. We've got 55,000,000 cable homes today and we know what they will pay for. They're not ready to pay for an interactive service. By the way, there is a form of interactive service which is television in one direction and the telephone line in the other direction. That's working today on shopping and on call-in. But the return path is a telephone line. That's economically viable because everybody has a telephone and 55,000,000 people have a cable system coming in their home.

SMITH: But the home path wouldn't be economically viable on a home cable system?

TOPOL: The return video path we haven't been able to support. The return video path.

SMITH: Do you see a future for it?

TOPOL: Well, we're coming into the next subject. Is the future two-way interactive systems or is the future more channels into the home?

SMITH: That is coming into another subject. It's a logical enough one to go into.

TOPOL: I see a limited future for interactive video where a full video bandwidth comes out of the home. That may not be true in the office place. There is a lot of talk about graphics and multi-media in the office. There is a lot of talk about on the PC, the personal computer, having a video. And there is a lot of discussion about whether or not that's going to be economically viable. That may be. If we can, with digital techniques and digital compression on the personal computer, have two-way video where we might have training by video and so forth. I think that will develop long before two-way video develops in the home. An office place can afford additional capital costs.

SMITH: I'm curious as to what useful purpose would be served by two-way video in the home? This implies some sort of a camera or device to take the picture of the subscriber?

TOPOL: For example, picture phone has been tried. It has limited interest. I think the home, for a long time to come, is a one-way system of entertainment into the home. I think we're much closer to what is called "video on demand" than to interactive video. That, of course, brings us into the next wave of video compression and digital techniques and HDTV. But probably, Strat, before we get into that you wanted to spend a little bit of time on DBS.

SMITH: Yes, I did. This is a good time to interrupt it because I have the flashing signal again.

End of Tape 1, Side B

SMITH: This is Tape 2, Side A of the interview with Sidney TOPOL: in Boston, Massachusetts at the offices of the Monitor Channel. We were preparing to go back to the discussion of direct broadcast satellite service. I noted in a trade press article reporting an interview with you some time ago, apparently you, expressed enthusiasm for direct broadcast service as something that cable could take part in but that it raised hackles on many necks in the industry. I'd like to explore the subject with you.

TOPOL: Yes. Well, of course, I've always felt that one should be in the delivery of entertainment into the home independent of the delivery system. That's why I've always felt that the cable operators should, indeed, in many ways embrace the direct broadcast satellite or satellite direct to home and be participants in that.

To take the history completely back ten years, that article was probably written--might be close to ten years or eight years ago--if you take it right up to today that's exactly what the cable industry has done with this program called K-Prime or Primestar. As you know, a group of cable operators have launched a K-band system and own and operate a DBS system, which has superstations and pay-per-view and some other programs. It's in operation today at K-band. It's coming under a little investigation by the Justice Department in these days of competition.

But my own experience on DBS goes all the way back to a subsidiary we set up in the late '70s called Homesat Inc. At a certain moment we saw that these satellite delivered cable television services had applications beyond cable operators. Hotels, motels, apartment houses, churches, hospitals, prisons--all started to install satellite earth stations for private cable systems. Until one day the thought came, why not build one to put in your backyard if you don't have a cable system. We formed a company called Homesat to do just that and we visualized the cable operators as marketing these Homesat earth stations outside their franchise areas. As a matter of fact, either in '79 or '80, the Neiman-Marcus catalog had one of our Homesat terminals in it.

SMITH: I do remember that.

TOPOL: Thirty-five thousand dollars is what they priced it at, which was kind of ridiculous.

SMITH: His and hers?

TOPOL: Yeah, his and hers earth station for \$35,000. Scientific-Atlanta, at that time, was the largest producer of earth station in volume so we had the best economies of scale in terms of manufacturing costs of antennas, LNAs--which I mentioned before--and receivers. We were building them more than anybody. The Japanese had not even discovered this business.

SMITH: Did the cable industry react favorably to your thought of Homesat?

TOPOL: Well, they did. This is a little known fact: John Malone and Larry Rombrell came to visit Jay Levergood and me sometime in the late '70s early '80s and said, "Hey we want to become a Homesat distributor." So these homesats started to get built and other people came in the business and said, "Gee, we can build these inexpensively." The Neiman Marcus catalog that brought them out said, "We can sell them for less than that." We could have too. So the thought came, "How about a business of installing earth stations in back yards?" The back yard earth station was born.

At a certain moment, these back yard earth stations started to show up in the middle of the cable franchises.

SMITH: Yes.

TOPOL: They were marketed by people who said, "Why pay twenty, thirty dollars a month when for x number of dollars you can buy this and get all these programs for free?" One hundred channels: football games, baseball games, religious programs, children's programs for free.

SMITH: There was a little fraud in that wasn't there?

TOPOL: In those statements, yes. But essentially you could if you could move around from satellite. Then the motorized version came into play and you could find programs. Each city brings in its sports events from the distant city--the away game business was brought in by satellite by that time. So if you could find that you could get all the away games.

SMITH: Ted Turner was a pioneer in bringing in away games wasn't he?

TOPOL: In bringing in away games, exactly. Then every city went to that. They brought in the away games and so if you had an earth station you could put those up. That business started to develop.

We were a major supplier of cable television equipment to the cable industry and when this business started to show up in their franchises, they weren't very happy with Scientific-Atlanta. So we went out of the business. Everybody else went in. There were a number of people who saw a real market for backyard earth stations. That business grew very, very rapidly. Basically, what was happening was that that was a very profitable business for earth station people and very friendly to consumers as long as they could steal the programs.

SMITH: That's what I was referring to when I mentioned there was a little fraud involved in that promotion.

TOPOL: Yes. Basically, they were "stealing the programs." They were getting the benefit of the investment of the cable industry who helped create the cable programmers. But they were not generating any revenue for the programmers. So we started the era of scrambling and encryption.

Somewhere around 1980-1981 HBO decided that this was a serious problem so they put out an RFQ for scrambling equipment; how to scramble the signals. That was another drama for Scientific-Atlanta in that after a period of a couple of years--'81, '82, '83, the same period of addressable converters--they acquired a company in Canada called Digital Video Systems that had an excellent approach to encryption and scrambling using hybrid analog digital techniques and the system of MAC (multiplex analog components). But the fact is that HBO, and then subsequently Viacom and Showtime, selected what was then the Maycom Video Cipher system. It went through some problems--Video Cipher I then Video Cipher II--and we kept insisting to the industry that Video Cipher II was not secure enough; that it would have problems; and that besides it was not upward compatible to HDTV for satellite transmission. All of these prophecies turned out to be true.

SMITH: What do you mean by upward compatible to HDTV?

TOPOL: It couldn't handle HDTV signals via satellite whereas the HD MAC scrambling system didn't make any difference whether it was NTSC or whether it was HDTV. You know the drama that occurred in the backyards in that many people have been able to defeat the scrambling system.

Today, at C-Band there are a little over three million earth stations out there but less than one million people paying for the programs. So something is happening.

SMITH: I didn't know that that was the ratio.

TOPOL: Yes. Something is happening. There has been all kinds of cases. Of course, as that signal spills over into Mexico, Central America, the Caribbean, and Canada, those people are defeating that system. But, essentially, the C-Band direct was the beginning of DBS.

Now, simultaneously with that happening, the World Administrative Radio Conference (WARC)--you must remember that from FCC days--determined that there would be certain frequencies set aside for high power satellites called direct broadcast satellites, which had capabilities of five channels. Comsat was the early pioneer in that in the United States and, indeed, moved out into something called the Satellite Television Corporation (STC) and we became a collaborator with Comsat to develop a scrambling encryption system.

SMITH: We, being Scientific-Atlanta?

TOPOL: Scientific-Atlanta. It was a result of these digital video systems. Comsat must have put two or three hundred million dollars into it, maybe more and then closed it down.

SMITH: Why was that?

TOPOL: Well, when you're talking high powered direct broadcast satellite, which is now still being discussed by Hughes, by Hubbard, by British Satellite Broadcasting in the UK, (BSB), and to some extent by the Japanese, you're talking about a system which is high powered in the satellite, has limited channel capacity--five channels--but with the ability to be received, hopefully, by very small dishes, flat plate in the end. The real problem with high power satellite is that they are competitive to terrestrial and cable.

SMITH: By terrestrial you mean terrestrial broadcasting and cable?

TOPOL: Yes. Because they want to bypass the cable operator and they want to bypass the terrestrial, over-the-air broadcaster and go in the middle of these systems like what started to happen with C-Band, and sell dishes. They claim that they want to do the rural areas but they really want to do national areas. The problem is that programming is essentially owned and controlled by either the terrestrial broadcasters or the cable operators. When these DBS high power operators try to get programming, they run into economic problems or political problems where the established forces say we are not going to allow you to have our programming to compete with us in our franchise.

SMITH: That's reminiscent of problems in the cable industry way back.

TOPOL: It's the cable industry now objecting to something that the broadcasters objected to originally. But the fact is, that it takes a minimum of a billion dollars to become a DBS operator. The problem is that you're going to wind up with new programming. You've got to pay for the price of this high power satellite, which is quite expensive and they haven't really been perfected yet. And then who pays for the ground segment? So it's an enormous investment that has been tried in Britain, the U.S., and is in the process of being tried in Japan but has not been economically successful yet. My guess is maybe two billion dollars has been invested in high power satellite DBS systems without any return in Europe, in the U.S., and in Japan. It is not yet economically viable.

What is starting to make sense now is compression. If we can get compression on the satellite, and that was the teaming up of Hughes, NBC, Murdock, and Cablevision--which is Chuck Dolan again; you remember that called Sky Cable--their idea was to build a high power satellite and, basically, build a cable system in the sky by compression and having literally one hundred channels which you could pick up with a small dish. But the problem was the investment was huge. That consortium just broke up.

There is a new consortium between Hubbard and Hughes which talks about launching in '94. My very good friend Burt Harris is an investor in that and I wish them well.

But, British Sky Broadcasting (BSB) in the U.K. invested something like a million pounds and couldn't make it. They had to merge with another system. There are various investors dropping out having invested fifty, sixty, seventy million dollars. It is a tough business.

SMITH: Is it going to make it?

TOPOL: What has worked is this, that if you're putting up programs for the cable operator, a backyard dish can pick up those programs and there is no incremental cost. If you can scramble those programs--you can get the backyard person to pay for them--that's viable. But to have a separate stand-alone, high power DBS business is still yet to be proven.

SMITH: Does this scrambling system that you were interested in have any advantages that would make it more feasible for this direct broadcasting scrambling and descrambling?

TOPOL: We think so. And as I told you, we lost the original scrambling to HBO and Showtime. But when the cable operators formed Prime Star, they selected Scientific-Atlanta B-Max scrambling system. So Scientific-Atlanta is aggressively marketing its MAC system for satellite communications and in satellite encryption. But, objectively the high power satellite business--the stand-alone DBS business--is yet to be proven. Maybe Hubbard can do it. Do you know Stan Hubbard?

SMITH: No, I don't.

TOPOL: You know Burt Harris, of course.

SMITH: I know Burt Harris very well. I'm a little surprised to hear you say that he has invested in this.

TOPOL: He is an investor. And it would be worthwhile to have a telephone interview with him and get his thoughts on it.

SMITH: I really should do that.

TOPOL: More consortiums are breaking up than are forming now. You know, the economics sound marvelous. If you can get five or ten million subscribers to pay twenty dollars a month, which is \$200 a year, you get into the hundreds of millions of dollars per year.

SMITH: Do you see a structure in your own mind that would enable cable television to work in tandem with direct broadcasting to their mutual benefit?

TOPOL: Yes, yes. That's what K-Prime was and I see that. But what's happening is this recent pressure of creating competitors for the cable industry as a result of the rate increases and the "poor service," and the "rate increases." There are those who feel the way to keep the cable industry providing good service and keep their rates low is to introduce competition in the marketplace either from the telephone company or from MMDS or from DBS. And there is great pressure in the Congress to do that. Once they do that it's going to be difficult for the cable operators to be in a competitive business because the competitive business was set up to create competition and "better service and better rates."

SMITH: What is your personal reaction to these pressures to generate other competitive businesses to keep cable in line?

TOPOL: Well, I grew up in the cable industry and just spent the last twenty years helping the industry and the company create a number of jobs and so forth. My own intellectual and emotional alignment is with the cable industry. We are now close to sixty million subscribers. We are now in the forefront, through Cable Labs, with coordinating technology. We are a leader in digital compression, along with the broadcast industry. We think that we made the early introduction of HDTV. I don't think that the "consumer" is going to be benefitted by all this competition. But it's a tough argument because you've got people like Gore and Danforth and Markey. You're closer to that than I am. I started to try to stay on top of that but there's a lot of pressure. The telephone company is playing right into that. Telco entry, probably from what I hear from reliable people, is a real serious possibility in the next couple of years.

SMITH: They are spending enormous amounts of money trying to promote themselves into it. There is no question about that.

TOPOL: Do I think the consumer will be better off if there is telco entry? I'm not sure of that. I personally think it's going to be a very, very tough time for a stand-alone DBS operator like Hubbard to come in and be successful.

SMITH: Could cable help him be successful?

TOPOL: Yes, it could.

SMITH: In what specific ways?

TOPOL: By marketing. But cable has its own plan with K-Prime and Prime Star. The cable operators will now sell and install small dishes in homes and do the billing and marketing. That was my idea ten years ago. That the cable operator would not only install cable but he would install dishes and he would be involved in the revenue.

SMITH: What kind of position does that put him into when a market develops within his cable service area for that service? Can he live with that? Can he refuse, for example, to sell to somebody who might otherwise be a cable subscriber or should that really be a problem for him?

TOPOL: Refuse to sell what?

SMITH: The home satellite installation.

TOPOL: The cable industry is involved in that program right this minute with K-Prime - Prime Star. That is their satellite system and their plan is to market the dishes and there are cable operators who are doing that right now. It is still in the very beginning so the volumes are very low but that is what the plan is.

SMITH: Well, I guess I'm looking at it in terms of how attractive will that be to the cable industry as a whole. Would it be wise, in your opinion, for the cable industry to say, "Look, this sort of thing is going to happen anyway and we'd better get in. If we can't sell the cable, sell the home sat. If we can't sell the home sat, sell the cable."

TOPOL: That decision was already made by the cable industry when they created Prime Star. I think the answer is, yes amongst a half a dozen of the big MSOs. Now, the real question is will the Justice Department let them do it.

SMITH: What MSOs are involved in Prime Star now?

TOPOL: TCI, Cox, Continental, ATC; they're all owners.

SMITH: They don't come much bigger than those.

TOPOL: No. They're all owners. You don't read much about Prime Star in the press today because they're still in the very early stages and they're exploring also how they can get into digital compression to get more channels. But the chairman of Prime Star was John Sie of TCI. It's now Dowvy from Cox and the general manager is David Beddow and it's in operation. It's using Scientific-Atlanta encryption equipment.

SMITH: How is its growth rate?

TOPOL: Slow, very slow.

SMITH: Can the cable owners be accused of controlling its growth rate deliberately?

TOPOL: I don't know. Strat, now I've been away for a couple of years. I can give you more clear, definitive answers on the history than I can on the present. But to answer your question, should the cable industry participate in DBS, my answer is yes; and they have. Now the testers are both from a commercial, practical, operational point of view and from a legal-jurisdictional point of view. To answer the question you asked, will the cable operators promote satellite communications in their area versus fiber hook-ups; and, two, the big question is will the Justice Department let that happen. Three, the big question is, will the cable programmer be forced to sell their programming at competitive rates to competitive DBS systems. That is the big issue in Congress today.

SMITH: Well, I would expect that that would be a big issue in the courts if Congress decides, yes they must. Then I think you've got constitutional issues.

TOPOL: Yes. You're right up to the present. The guys who can talk more current on this are Jim Mooney, of course, of the NCTA. That's all he is doing now. The various cable operators like Continental and a chap by the name of Bob Sax, and all the companies now are spending a lot of time in Washington trying to pull together on these issues; the exclusivity on programming, the entry of telco, and the re-regulation of rates by the cities. Big issues. I'm not on top of those now.

SMITH: Well, they are big issues. I will just comment that it seems interesting to me--its anomalous--that there is so much pressure to put restrictions, whether they're competitive or regulatory, on cable and then expect cable to turn around at the same time and provide the programming for these so called competitive services.

Something seems to not quite mesh in there to me.

TOPOL: People like Amos Hostetter make powerful arguments at Congressional committees on that point. Really intelligent, professional presentations on that. But Congress operates in mysterious ways.

SMITH: Yes, it does. So let's set Congress aside for the moment. There is no predicting them. You've mentioned compression two or three times in your conversation this morning and I would like to explore compression and its impact on cable and cable services to the public.

TOPOL: I see digital compression coming from two sources. The introduction of the HDTV signal requiring more bandwidth put a lot of both pressure and incentive on scientists to re-explore digital modulation and digital compression and to see if there wasn't some processing and some algorithms to use the mathematical term, that could really start thinking about HDTV being put into the same six megahertz. That was one of the pressures.

The other pressure came from the fact that if you ask people around the world, "What is it you want from television?", they rarely mention technology or more brightness or bigger screens or this and that. They consistently say more programs. "What do you want?" More programs. That's the cable motto. Cable invented more programs.

So you have these two pressures of trying to get HDTV into narrower bandwidth and trying to get more channels into existing bandwidth and that pressure broke here in about the last eighteen months. The concept of digital modulation of television and the concept of taking the redundancy out of the picture, people have been working on that for years. But the pressure has gotten so great now that the television people and the computer people and the mathematicians all seemed to converge in the last eighteen months. New ideas have come out.

It really broke when General Instrument proposed an all digital HDTV system that could operate over six megahertz for terrestrial HDTV. Then it broke when Hughes, NBC, and Murdock proposed one hundred eight channels from the satellite using digital compression. Ferociously, people started to work on this. Companies like Zenith, AT&T, General Instrument, Scientific-Atlanta, Thompson in the U.S. with Sarnoff Labs, Phillips in the U.S. with Phillips Labs, put a tremendous amount of effort and whereas we thought two years ago that the Japanese and the Europeans were way ahead of us in HDTV, for example, when compression came in it suddenly looked like--although some people would disagree--we have leapfrogged. We are now in the forefront of compressing video transmission of NTSC signals into narrower bandwidth and HDTV signals into the existing bandwidth.

SMITH: In this context, we, is the United States?

TOPOL: Yes, we, is the United States. So all of this has said to the cable industry, "Wait a minute. We really have something here. We have been leaders in fiber deployment." This is not a very well known fact of how much fiber is really going into cable systems. Now if we put fiber in and we put compression in we are talking about lots of channels and you've read about it--one hundred fifty, two hundred, three hundred, four hundred. Companies like Time-Warner and TCI are leading the way and saying, "What we ought to do now is leave the present NTSC signals on the lower part of the cable and on the upper part of the cable where we have lots of bandwidth we can put HDTV signals and compressed digital signals. We could have hundreds of new channels with a concept called, "video on demand." Are you familiar with video on demand?

SMITH: Yes I am.

TOPOL: The idea that you could put the same movie channel on say eight channels--if it's a two hour movie start it fifteen minutes apart--so that you can watch a movie in the next fifteen minutes. Which means, why go out to a video store to get a movie when you can watch it? Now we can have lots of movies. So it looks like we're entering the third generation of cable television, which is fiber, digital compression, and HDTV and video on demand.

SMITH: Is this going to be as dramatic as the second phase satellite cable?

TOPOL: Well, here's the challenge. The cable industry quickly recognized that it was worth the investment to put in satellite earth stations and satellite receivers and modulators. It was worth the investment to put the converters in because you got a pretty good return on that investment. The rates that you had to charge were friendly, as it were, to the cable operator. So there was a pretty good pay back for the investor. Now the real challenge is can we get the pay back for this investment because we are going to have to charge additional fees for all of these channels. The question is, how much is it going to cost to implement it and how much incremental are we going to have to charge the consumer and will he pay? That's the big challenge.

SMITH: Is part of that in how much will the municipalities allow cable to charge for it? In other words, what's the impact of regulation going to be on this?

TOPOL: Good question. You keep coming back to this theme, which is a valid one, and you've got more experience on it than I have. I mean if you have heavy regulation you are going to blunt the investment attitude of the cable operators. If you create things like highly leveraged transaction edicts on the banks which say the cable operators are now HLT candidates and therefore you have to be very careful if you lend to them. That's where we are this minute. The capital expenditure on the part of the cable industry has dropped dramatically in the last twelve months. From twelve months ago to today many of the equipment manufacturers are talking about procurements that are down twenty, thirty, forty, fifty percent from a year ago. That's HLT, regulation, and the question of technology.

SMITH: What had cable done or failed to do to warrant being included in this HLT category? Cable is always paying its bills. The banks haven't been losing money on cable.

TOPOL: I don't think they have. I can tell you I know of cable MSO-CEOs who have spent the last eighteen months restructuring their financing and trying to spread their financing out to as many banks as they can. Even many of them are going overseas. That has diverted their attention from the real question of the opportunities facing us ahead with HDTV and compression and hundreds of channels. I believe the consumer wants choice. I think we were absolutely on the right track when we talked about diversity and choice and niche channels. That's what people want. When I went to Europe, I found that's what they want too. They don't want three government-controlled channels. They want fifty unregulated channels and they can decide which they're going to watch. As a result of that, some quality programming has come out, in my opinion: C-SPAN, Arts and Entertainment, Discovery Channel, the Learning Channel, Mind Extension University, and from my point of view, the best of all, the Monitor Channel.

SMITH: We'll certainly get into that. I'm very much interested in that. Obviously, from my current position, the educational potential.

TOPOL: Can we be interrupted for a moment?

SMITH: Sure.

End of Tape 2, Side A

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