Oral History of W. Ferrell Sanders

Interviewed by:
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Yamashita: This oral history interview is with W. Ferrell Sanders, a former venture capitalist and early contributor to many startup companies in the storage industry. Ferrell Sanders brings a unique perspective to the recent history of storage industry because of his background as an engineer, a career in sales and marketing, then as management consultant and troubleshooter to earlier startup companies, many of them in the storage industry, and as board members to numerous companies and finally as a venture capitalist funding early startups. He began his career as an engineer working at Westinghouse, AMPEX and Iomec, Inc., a peripheral component manufacturer in the early 1970s. He joined Shugart Associates at its beginning as VP of sales and marketing in 1974. From there, Ferrell Sanders consulted for many startup companies, often serving as interim CEO for companies such as Drive Tech Inc, Komag. He also served on the board of Archive Corporation, Adaptec and Solectron. In 1987, he joined Asset Management Company and later Alloy Ventures, venture capital firms which participated in funding of many companies such as Auspex Systems, Alacritech, Insite Peripherals and many other companies outside of the storage industry. My name is Tom Yamashita, and I will be conducting the interview today. So with that, thank you for agreeing to do this interview, and let's begin by if you could tell us your family background, where you were born, where you grew up and received your early education.

Sanders: Okay. I grew up in a small town in North Carolina, about 50 miles east of Charlotte, and it was kind of an interesting place because it was a company town that was built by Alcoa Aluminum company, and they had a big smelting plant there. And they had located the plant there because it was beside the Yadkin River and smelting aluminum takes a lot of power, so they eventually built four dams and hydroelectric plants with the dams to provide the power to the plant. My father was an electrical engineer that worked at the plant and he eventually became the superintendent of an electrical department and that's where I grew up in the small town.

Yamashita: I see.

Sanders: So I went to the local school in town and then went to North Carolina State.

Yamashita: So what was your major?

Sanders: Electrical engineering.

Yamashita: Is it because your father was an electrical engineer?

Sanders: You know, when I was trying to figure out where to go to college and what to study, I was reasonably good in math and science in high school and electrical engineer at the time had a reasonable status attached to it. It was a good profession that paid well and so forth. And so kind of because I didn't

have anything else pulling me in the other way, I did it, so I don't know how much of the decision was because my father was an electrical engineer, but interestingly enough, he graduated from North Carolina State in electrical engineering in 1926. I think he was a first member of both sides of my family to go to college. And then I got a degree there in electrical engineering and then my younger brother, Jim, also got an electrical engineering degree there.

Yamashita: I see. So back then, compared to today, electrical engineering probably covered very different type of topics.

Sanders: Yes. Transistors were very new. We spent a lot of time studying vacuum tubes in college and a lot of electrical engineers then worked for power companies.

Yamashita: I see. So did you start working right after college?

Sanders: Yes, I did. Right after college, I went to work for Westinghouse in Pennsylvania and I could have gone to work for Alcoa. They offered me a job, but I wasn't sure what I wanted to do. Westinghouse had a training program where they would give you assignments in different functions, like manufacturing, engineering, sales, various things. And that was attractive to me and that's why I went to work for them.

Yamashita: I see. So what sort of job did you do?

Sanders: I ended up in the steam turbine division in Philadelphia and I was one of few electrical engineers in a company of a lot of mechanical engineers because it was the steam turbine division. But they hired me as a manufacturing engineer and a test engineer on the test floor where they were testing turbine generators, that's for Polaris submarines. And it was-- they would assemble the turbine that was built there with a generator that was built in another plant. And then they would do very sophisticated tests, especially for noise generation. Needless to say, they were very interested in how much noise this thing made in a submarine. And so I was hired for the electrical side of that test support on the manufacturing floor.

Yamashita: So was this part of, like, a nuclear submarine?

Sanders: Oh yeah, yeah. Polaris was the nuclear submarine. They were the new nuclear submarines and Admiral Rickover was in charge of the program. He was a very hard-driving guy, very famous. And so that's what it was.

Yamashita: It must have been quite exciting.

Sanders: It was. It was interesting, and you know, I had a reasonable amount of responsibility because I was the only electrical engineer around.

Yamashita: I see. So I guess the heat source came from the nuclear power plant.

Sanders: That's right. That created the steam that they put into the turbine, and hanging below the turbine was a big condenser and that was all assembled and running when we ran the tests.

Yamashita: So how long were you at Westinghouse?

Sanders: I was there for three years.

Yamashita: I see. And so from there, where did you..

Sanders: Well, I had met a fellow in Philadelphia who had moved to San Francisco, and he kept telling us about how great it was out here and that there were a lot of jobs for engineers. And so I came out on vacation one summer and spent a couple of weeks and, you know, drove around the valley calling on companies looking for what kind of job I might get. And I got two job offers, one from Lockheed Missiles and Space in Sunnyvale, who was a big employer at the time. And AMPEX in Redwood City, and I decided to take the one from AMPEX I think partly because it was a smaller company. I was already headed toward smaller companies.

Yamashita: I see. This is '60s, early '60s?

Sanders: Yes, this was 1962 when I came out, the fall of '62.

Yamashita: So back then, out here it's mostly the orchards. Lots of farms.

Sanders: There were still a lot of orchards here. The people hiring engineers at the time were people like Hewlett Packard, of course. Varian, Watkins-Johnson, Lockheed. And, you know, a few others. Fairchild Semiconductor was new, was, you know, it was early days for them, but they had been formed before that.

Yamashita: I see. So by then, AMPEX was a very, very famous, famous place already, right? With their video tape recorders?

Sanders: The video tape recorder was the big money maker for them, yes.

Yamashita: Was there something besides it being small that attracted you to AMPEX? Technology or something?

Sanders: The work kind of interested me. I was hired for a corporate quality audit department, and what we did was we sampled the production of all the products that AMPEX made and tested them. It was like an independent testing lab. And we were interested in how well they performed and did they meet their specs, how reliable were they? The whole quality audit of the products. So that kind of appealed to me.

Yamashita: So this was across many product lines that they had?

Sanders: It was, but we-- there was a small group and we tended to specialize, and I ended up specializing in the computer products. And of course, the main product was the mag tape drives. But they had also purchased a company in Los Angeles that made core memories. And this is, you know, a stack of cores that were wired by hand and so there-- the computer products division, they had that-- those two products.

Yamashita: I see.

Sanders: And so it was during that time that I made a change in my career path, and I figured out that I didn't really like engineering work and I wasn't very good at it maybe as a result of not liking it. But I was good at working with people and coordinating things and making things happen. And so I'm-- I, as my engineering friends said, I went over to the dark side, marketing and sales and I was first in the application engineering and then I was recruited to the sales department where I primarily sold computer products.

Yamashita: I see. So who were the customers?

Sanders: Well, one interesting company was Hewlett Packard. And what they were buying, what they bought from us was a core stack for their first minicomputer. So DEC was in the minicomputer business. HP was getting into it, and so the minicomputer business was starting to blossom. And it's really funny today to compare what they used, but they were building a minicomputer which was, you know, a six-foot high, 17-inch rack full of goodies, and the heart and the core memory of the memory of that computer was a 4k by 16 core memory, so it was 4,000 words, 16 bits long. That was the main memory.

Yamashita: Not very much by today's standard.

Sanders: When you think what you have in your phone today, it's really, really interesting. And that-- we sold a stack, it was about that big, and it came with diode selection but no other electronics. And if I remember correctly, the price was about $2,000.

Yamashita: So this got you involved very early in this entire computer industry.

Sanders: That's correct. You know, first in that period of time, it was the minicomputer business.

Yamashita: So, you got familiar with a lot of other pieces of what went into the minicomputer system?

Sanders: Well, you know, then it was mainly core memories and some tape drives. Later, when I joined Iomec, we were selling disk drives to the same people.

Yamashita: So how long were you at AMPEX then?

Sanders: It was '62 to '69.

Yamashita: I see. So quite a few years?

Sanders: Yeah, a few years.

Yamashita: And how long were you doing marketing?

Sanders: Probably after the first two years.

Yamashita: I see. So you had mentioned Iomec. Not too many people know-- remember that name anymore. What were they doing?

Sanders: I was in the sales office in Redwood City working for the computer products division, which was in Los Angeles, selling core memories and tape drives. And I got a phone call from a headhunter one day trying to recruit me to join a startup disk drive company called Iomec. And there were four key people from IBM-- well, back up a second. This was the era when a lot of people-- not a lot-- yeah, a lot of people left IBM and San Jose disk operation and formed outside disk companies. Al Shugart went to Memorex, four people formed Iomec and there was another company formed by-- they called it the dirty dozen-- which was Information Storage-- I forget what the third name was. So long-term, Iomec and Information Storage were not successful. The Memorex, of course, was for a long time.

Yamashita: So Iomec, their first product was a disk drive.

Sanders: Yes. It was a 14-inch disk. It came in a cartridge, single-disk cartridge that IBM had developed. Fourteen inches, both sides of the disk used, it was, you know, an oxide disk. The capacity for that disk, 14-inch big cartridge, was 2-1/2 megabytes.

Yamashita: I see.

Sanders: And we built a drive had…that could have a removable cartridge and a second disk that was non-removable, so you could make copies and such.

Yamashita: So Iomec was based in Los Angeles.

Sanders: No. Iomec was based in-- at least at the time, well, it was based in San Jose.

Yamashita: Oh, it was?

Sanders: Yeah, just by the airport when we started.

Yamashita: I see. So you were there from the ground up?

Sanders: They were-- they had not shipped the product yet. The company was almost a year old, but they were just about to ship the first product, and I was hired as the western regional salesperson and it was, you know, I had half the country. And the main customers were minicomputer companies. Our first company.. and there were a lot of minicomputer companies started then. I mean, Varian had a computer company down in Orange County. There was another company down there called General Automation. It seems to me-- I don't know, if you add it up, the minicomputer started in the early ‘70s. there must have been a dozen of them, maybe more. So there were a lot of potential customers, you know? You’d never heard of most of them, but there were a lot. Our first customer was General Automation, which is a minicomputer company in Orange County. But then Hewlett Packard started buying this drive also for their computer, their mini.

Yamashita: This was a-- like a compatible system to IBM’s unit or it was completely different?

Sanders: I don't think-- now, it may be, but nobody was worried about interchanging with IBM and IBM customers.

Yamashita: How about the cartridge itself? Was that a standard type of cartridge?

Sanders: Yes, it was a standard cartridge at IBM, and I think the disk was the same as IBM was using. But, you know, very quickly we doubled the capacity and, you know, we were not worried-- it was not an issue to interchange with IBM.

Yamashita: I see. I remember these racks that would hold these cartridge disk drives, was that the sort of type of system?

Sanders: This thing-- the rack was, you know, six feet tall, a 17-inch rack that had the drive where it must have been that high in it, and had the cartridge and the fixed disk. And then there was a big power supply at the bottom and a controller. You could buy it with a controller or a higher-level interface and that was all down below. It must've weighed 200 pounds.

Yamashita: I see. So this is your real start to get into the disk drive..

Sanders: Into the disk drive business, that's right.

Yamashita: ...Business, doing the sales.

Sanders: Right.

Yamashita: I see. And this is, like, late '60s?

Sanders: Yeah, yes. Yeah, I joined in '69.

Yamashita: Didn't Iomec make a whole bunch of other different kind of products? I thought..

Sanders: They primarily made the disk drives, but they merged with another company called Digitronics that was based in New York and Boston, and they had a tape drive. They had-- Digitronics had originally been in the paper tape drive punch reader products. So we ended up with a larger product line.

Yamashita: I see. So was it acquired or merged or what happened?

Sanders: I don't know. Long-term, it was not successful and kind of disappeared. It was probably sold off in pieces.

Yamashita: I see. Yeah, again, it's just not many people remember a lot of these happenings back then.

Sanders: Yeah, there was a lot going on.

Yamashita: So from Iomec, you went to Shugart?

Sanders: That's correct. Yes, I got disillusioned and was look-- with the prospects of Iomec and was looking for something else to do. And as a matter of fact, I resigned and left without a job. And this-- and Al Shugart, who had gone to Memorex from IBM and the story is he took over a couple of years, like 150 people with him. And IBM got upset and sued Memorex, and so Memorex said, "Okay, we won't take any more." So anyway, Al Shugart decided to form Shugart associates to make floppy disk drives. And he left with ten people, ten key people from Memorex to start Shugart. And I had a good friend at Iomec who had worked with Al at IBM, and so he introduced me to Al about a job at Shugart.

Yamashita: I see.

Sanders: So that's when I first met him.

Yamashita: I see. Were you aware what they were up to?

Sanders: Yes, yeah, it was well-known in the valley what they were doing. They were going to build, and did, the eight-inch floppy, which was an IBM standard, at least the size of the disk and how it worked, how the media worked was an IBM-- been developed by IBM.

Yamashita: So you were in charge of all the sales and marketing?

Sanders: Well, when I was hired initially as a national sales manager, so I was working for the VP of marketing and sales, but about six months later, a lot of things happened, which I'll tell you about, but after that, I was in charge of all marketing and sales. And what happened was Al Shugart's-- a lot of people don't know this. Al was not at Shugart Associates for very long. It was less than two years. And he had a grand plan to build a-- build floppy disk drives, sell them OEM. Built a printer, sell them OEM, and then parallel he was developing a small business system that would use both of these products.

Yamashita: A computer?

Sanders: A computer.

Yamashita: I see.

Sanders: A small business system computer, so he launched all three of these programs. Floppy was the first one to come out. And what happened after a couple of years or less than a couple of years, is we ran out of money. The floppy was actually better-received than we had hoped for. There was a good market-- we could see there was a good market for the floppy. The other ones were more speculative and were eating up lots of money. And the investors and Al couldn't agree on-- investors wanted him to put the other products on the shelf and concentrate on the floppy. And Al wanted to go for it and they couldn't agree and so Al left. And so we did drop the other products, and concentrated on the floppy and were quite successful.

Yamashita: So this eight-inch drive is quite well-known in the industry as having started all of this, and so was it pretty well-developed by the time Al Shugart left?

Sanders: Yes, yes it was. I mean, a few bugs, but basically it was pretty well-developed, and we sold that product for a long time. And again, it was to the minicomputer industry that was growing then, and also there were a lot of or quite a few dedicated word processor machines, which had a printer, a storage and they usually had two of these eight-inch floppies and, you know, a tower underneath the desk that held all the electronics. So there was quite a big market in that area. And so that's where we were selling them.

Yamashita: Also, wasn't it for inputting software into minicomputers, you know, replace a card punch or a card-reader or something?

Sanders: That was IBM's original use of it.

Yamashita: I see.

Sanders: And that's why they developed it. And that was one of the uses, but people were just using it for mass storage. They were putting their documents on it and bringing them up, you know? That's where their work went when they were operating.

Yamashita: So there were quite a few, I mean, Al Shugart was a real character, but there were a lot of other people there, too, I guess you got to know.

Sanders: I got to know him pretty well because I worked directly for him for a while before he left, and I remember when I was doing reference checks on Al before I went there. I had a lot of friends, then, from IBM, because of the Iomec people and some other people that I'd met that had left IBM. And they said that people love to work for Al Shugart. That he takes care of his people, and if he has a program that's in trouble, everybody will work 24 hours a day until its fixed. And so that was a high recommendation and I found that to be true. He was; he was very charismatic and people liked to work for him.

Yamashita: I mean, it's his custom that he took so many people out of IBM. I've been told myself that, you know, people would just follow him to the end of the earth, especially engineers.

Sanders: Yes. That's a rare person.

Yamashita: So you found that to be the case?

Sanders: Yep. I'll tell you a funny story. I mentioned to you earlier that the last time I talked to Al Shugart was here at the computer history museum, and he was being honored. And I walked up to him and he said, "Ferrell Sanders, I thought you were dead." Which is a joke among us old people when we meet. But when I approached him, he was standing, talking to, like, four women. And I said, "Gee, Al, every time I see you, you're surrounded by women." And he said, "It's something you're born with." He said. He said, "You don't lose it as you get older." He was a funny guy.

Yamashita: So he had also a reputation for being an incredibly good engineer, solving problems and so on. Was there a lot of issues beginning at the Shugart?

Sanders: Oh yes, oh yeah. There were, I mean, you know, you build peripherals, and in those days you would build prototypes. You would send these evaluation units out to customers. They would test them, they would decide to use them. Then they had to design them in the next turn of their system. And so you typically had six months or a year to debug the product before you had to put it in volume production. And so we always had bugs, but we worked them out, and you know, there were a whole bunch. I mean, the double-headed floppy that had a head on both sides was an almost impossible thing to build. So there are a lot of stories about that.

Yamashita: The head would wear out, and, you know, I heard stories about the interface issues and so on.

Sanders: Yeah, there were a lot. I remember I was in Paderborn, Germany, meeting with Nixdorf (Computers) when we had the problems with the double-sided. And they were banging me for a lower price and I said, “I tell you what, we’ll give you a lower price if you buy less because we’re losing money on every one we ship.”

Yamashita: I see. So you stayed on Shugart Associates for quite a few years.

Sanders: Yes. I joined in early ’74 and I stayed until the end of ’80. We sold the company to Xerox in ’77 and we signed three-year employment agreements and I honored that agreement.

Yamashita: Oh, wow, so they wanted to make sure that they have people?

Sanders: Yeah, they did. So I mean, you know, it was easy to break and you could negotiate with them and leave if you wanted to. But we did it.

Yamashita: I see.

Sanders: There’s one thing I wanted to talk about in Shugart, and that’s the 5-1/4 inch floppy. IBM had set the standard for the large, eight-inch, and I had mentioned that we had a lot of customers in the word processing business. Wang Labs was probably our biggest customer, and they were buying two eight-inch floppies for their big system. But they made a desktop system, and they wanted something smaller. They were using a cassette. A Philips cassette as a storage on the desktop system. And the front of it was about that size, and you’d fold down the door and put the cassette in. So our salesman in Boston that called on Wang started talking to Wang about-- Wang said, “We need a floppy disk that’s physically smaller. We want it to fit in the size where we have the cassette.” And so we basically designed the 5-1/4 inch. Nobody had it. This was new. We designed the 5-1/4 inch for the word processing industry. And so we said, “How many pages do you want to store? And they said, “Twenty.” So that’s 100 megabytes. And I mean, it’s 100 kilobytes. A hundred kilobytes; 5k per page. So that set the track density, the bitrate. We dumbed down the technology to make it cheaper. And so we built that product and we used, you know, a slow stepper and all these things. But it was a great product for that. The thing that we didn't know about at the time was that over the hill was coming the personal computer business. And we-- and the availability of this 5-1/4 perfectly intercepted the wave of the personal computer business. And the volume of that product just sky-rocketed. And we were there first and we ran hard and we just dominated that business for a long time.

Yamashita: This is after Xerox took over? You had the product already before?

Sanders: We had it-- it was about the time they took over, but we had started it before, but the real takeoff came in the late '70s. And so Apple was the first big customer. Remember, they used one or two of these drives with the Apple II or whatever they were selling in those days. It was a funny story I'd share about Apple. Everybody knows that Wozniack was a brilliant engineer and he loved to design circuit boards with less components and less cost and everything. And so he wanted to do something different with the electronics on the floppy. And so we just sold him the mechanism and he designed the card. And we helped him with the data separation and stuff like that. But he wanted to put more capacity on it than we had. And as you know, there's more room on the outer track so he would do it in bands and put a higher bitrate-- not a higher bitrate, but more bits on the outer tracks, and so he was making a non-standard drive that we didn't want to make. So anyway, he got it designed, and he and Jobs came over to Shugart to show us what they had done. And so they demoed the product in the big conference room and we were-- and he had done a good job. It was impressive. But anyway, in those days we all wore suits and ties to work and so there's five officers from Shugart in coats and ties, and Wozniack and Jobs come over and they're dressed like homeless people. And Don Massaro, who was our CEO at Shugart, who had taken over from Al when he left, was a funny guy, and he would say anything. And he said, "Now look, Steve," and he was looking at Jobs and he said, "We're just regular folks here. You don't have to dress up to come over here."

Yamashita: This IBM culture is still pervasive back then.

Sanders: Yeah.

Yamashita: I see. So that's extraordinary, that Wozniack did these kind off modifications.

Sanders: Well, he was doing everything he touched back then.

Yamashita: Still a very young guy. So this 5-1/4 sort of became a standard.

Sanders: Oh, it did. Everybody copied it.

Yamashita: Everybody had to kind of fit around that form factor, is that true?

Sanders: I'm sorry?

Yamashita: Was it Shugart's 5-1/4 format that set the standard?

Sanders: Yes. Yes, everybody adopted it because we were there first and we grabbed a big share of the market. So everybody made a compatible drive to ours.

Yamashita: So the hard disk drive later on had to fit that box size, too? More or less?

Sanders: You know, there was no compatibility between the two, but I guess they just picked that as a size. And I mean, in some places, people had a space for that in their configuration of a drive.

Yamashita: Why wasn't-- I mean, it was such a hugely expanding market for these 5-1/4, why didn't the Shugart capture more of it, or was there more competition that came in?

Sanders: Well, there was a lot of competition that came out. I mean, CDC, Memorex-- oh, I can't remember about Memorex then, but there were a lot-- Control Data, there were a lot of people that..

Yamashita: Jumped in.

Sanders: Yeah, Control Data. There were a lot of big companies that got in the business, but what really doomed Shugart Associates was selling it to Xerox.

Yamashita: Ah, okay.

Sanders: We were-- and I can't complain, I voted for the sale myself. We thought we were pretty smart people, but we overlooked a big flaw, and that was that once we sold to IBM (sic Xerox), there was no longer stock options for key people. The officers got Xerox stock options, but even we knew that in the size of Xerox, if Xerox was a dog, we were a hair on the dog's tail. And there wasn't anything we could do with our performance to affect the stock price. So it wasn't a big incentive even for the director. Even for the officers of the company. And what happened very quickly is we started losing our engineering teams. We would get a product halfway developed and Quantum would start and suck off the key technology and we could just not hold the engineering teams. And kind of long story short, it killed the company over time.

Yamashita: That's kind of the importance of a venture company.

Sanders: You know, the people in Silicon Valley at the time, a lot of them, what the engineers were interested in, something new and exciting to work on with a good team, and the chance to catch the gold ring and make some money on the stock. So we just completely overlooked that, unfortunately, and should not have sold it. We would have been a lot more successful. But Xerox had this great plan, I think, they had bought a daisywheel printer company. They were going to buy us.

Yamashita: Diablo, I guess.

Sanders: Diablo, right. Was it Diablo?

Yamashita: I think so.

Sanders: Diablo was the hard disk.

Yamashita: There was Century Data-- maybe the printer was something else.

Sanders: Yeah, they did. Anyway, they were making these-- the word processor and they were competing against IBM and IBM was making all the peripherals. So they said, “What we want to do is buy people who make a lot of peripherals and have low cost and then we’ll use them.” Didn't work.

Yamashita: I see. Well, a lot of things that they tried to do I guess didn't ultimately fix things.

Sanders: Yeah, PARC. SDS.

Yamashita: But you did, for a little while, you had some really good engineers at Shugart.

Sanders: Oh yes, oh yeah. Just top-notch. I mean, you know, the first group of ten that came from Memorex to start Shugart Associates, I mean, we had people whose names were on the patents for the media. People were on the patents for the drives. You know, we had all the key-- or a set of the key technology.

Yamashita: This way you got to know a lot of people that you worked with later on, right? With Shugart.

Sanders: Yes.

Yamashita: Let’s see, like Larry Boucher.

Sanders: Larry Boucher was there at Shugart toward the end.

Yamashita: Could you say a little bit about some of the work that he did?

Sanders: Yeah. Larry-- the main work that he did was to develop the SCSI controller for the drives. And by that time, we were building an eight-inch hard drive at Shugart. And so it's interesting, at Shugart Larry and I used to be at odds because he had this vision of making a business out of selling the controllers. And we were concentrated on selling all the disk drives we could. Anything we could do to sell disk drives, we wanted to do it. So we wanted him to design the controller and then we wanted to give the design to the customers, not sell it to them. Not sell them cards, which is what Larry wanted to do. So we worked together reasonably closely on that issue at Shugart and never agreed, but I had a lot of respect for him. And then, of course, he went and formed Adaptec to do what he wanted to do at Shugart and Shugart didn't want to do it.

Yamashita: Really, he's the guy that developed the SCSI interface, after all.

Sanders: Yes, yes.

Yamashita: It became a very important technology for..

Sanders: That' lasted a long time. Yeah. For high-performance disk drives.

Yamashita: Some of the people that is associated with the floppy drive have names like Herb Thompson, Warren Dalziel.

Sanders: Warren Dalziel.

Yamashita: And Jim Adkisson was part of that team also?

Sanders: Yeah. Jim..

Yamashita: Well, he was doing sales, too, I guess.

Sanders: Yeah. When I joined Shugart, Jim Adkisson was already there as a salesman. So I inherited him when I went there and he was one of the greatest salesmen I've ever associated with. He's the guy who worked with Wang Labs to develop the size and the specs for the mini floppy, 5-1/4 inch drive. And then later on, I made him a national sales manager, and then he left to be the president of a printer company in Florida. Then he came back to be the VP of sales and marketing of Vertex, which was a hard drive company started by Joe Booker, who at Shugart was our VP of manufacturing. So I've known Jim for a long time. And anyway, Warren and Thompson were engineers. Herb was a head disk guy. His-- he was the guy with his name on the media patent. Warren Dalziel was a brilliant mechanical engineer. But

one of the really good engineers at Shugart at the time, drawing blank on his name. I'll think of it in a minute. The guy who actually did the mechanical-- most of the mechanical design on the many, many floppy-- anyway. So-- but the other person that I kind of inherited when I went to Shugart was Finis Conner. Jim Adkisson was my eastern regional manager and Finis was my western regional manager. And there again is an interesting character who was very successful for a long time. You know, he was just a phenomenal salesman.

Yamashita: So he came out of IBM directly?

Sanders: He was a buddy of Al Shugart's. IBM, Memorex, Shugart. And then he went on-- then he re-hooked up with Al and formed Seagate and then he formed Conner Peripherals.

Yamashita: So after Shugart, you went on a different career track.

Sanders: Yes, I did. That was another break in my career.

Yamashita: Do you have anything to say about that?

Sanders: What happened was I had been, for ten years or so, I had been in two startups. Iomec first and then Shugart. And being in a startup in a really growth-spurting time is a 24/7 job. And I was a little burned out after that. My wife, Page, had been keeping the home fires burning. We had two young sons that I hadn't spent a lot of time with and, you know, the joke when you say you want to spend more time with your family, it's a euphemism for "I was fired." That was not the case for me. I really did want to, and so there was a number of years, six or seven years where I consulted and did things part time and spent a lot of time, long vacations, three-month trip to Europe one summer, riding around in a Volkswagen van, things like that, with these two young boys. Anyway. So during that period of time, what happened is Venture capitalists that I had met over a couple of startups would come to me and say, "Hey Ferrell, we need some marketing and sales advice. We'd like for you to go on the board of this startup." And the first one was Archive, the cartridge tape company down in Orange County. And I went on the board of that and that kind of led to the next one, which I think was Adaptec, the same investors in both companies.

Yamashita: So they were just getting going and at that point you went in to the boardrooms.

Sanders: Most of the time, yes. Yeah, they were two years old or less when I would join.

Yamashita: That took a lot of your time or it didn't?

Sanders: You know, half my time.

Yamashita: I see.

Sanders: And then, then what happened is, well, Herb Thompson started Drivetec. We were talking about Herb later. He started Drivetec. I consulted with him on helping with the business plan and a few other things. We had put together the first round of financing with a couple of VC firms, and Herb got sick and it wasn't sure when he was going to be back at 100 percent. So what happened is the VCs drafted me to be the founding CEO of that company, and they would put the money in and then I would start building the company, staffing it and hire a permanent CEO. Usually, and I did this several times, but we would like to get that president in before the next round of financing so that people knew who they were investing in. And so Drivetec is the first one I did like that. And what happened is the venture capitalists would find a technical team with a product idea. And they would be willing to put some seed money in, but they would want me to go in to start building the rest of the company around while the engineering team got started with the product. There's always this lag of time and I would build the rest of the company around it.

Yamashita: So you were looking for new CEOs and marketing people?

Sanders: You know, first thing you do is, you know, a more detailed business plan. You start hiring more engineers. You hire a finance person. I try not to hire too many key people because you want the long term CEO to select those people.

Yamashita: So your familiarity with just the ins and outs of doing the startup set you up with..

Sanders: I did that with Drivetec first. I did it with Trans Image, which was a pen that-- an OCR reader and a pen. And then Komag, of course, which was the most successful one.

Yamashita: Tell us how you got hooked into Komag.

Sanders: Okay. I had met Art Spinner, who was at Hambro Ventures in New York. He had been introduced to Tu Chen and company, the other two fellows from Taiwan who were at IBM. He had been introduced to them by Jim Adkisson. Remember Jim Adkisson? And so, he was interested in putting some seed money in and getting started and he recruited me and introduced me to Tu Chen to do this interim CEO role to get it started. So they had done a business plan and then there were the three of them and me. And we hadn't incorporated the company yet. So Tu Chen and I flew to New York to meet with all the Hambro partners to get the commitment for the seed money and we did that and Tu Chen and I were on a plane coming back to California. And we had to pick a name for the company. And so, we

were using Mag for magnetics and playing around with names and Tu came up with the name Komag and he said that Ko in Chinese or some language that he spoke, stands for “good fortune.” And so, “Good Fortune Magnetics; Komag.” So we kind of liked that name. We thought we’d do that. And so we got back and we called up Art Spinner, the lead investor, and told him we’d come up with the name Komag, and what did he think? And he asked his wife, Cookie, what she thought and she said, “Komag, kind of sounds like a hemorrhoid medicine.” But we named it Komag anyway.

Yamashita: It’s kind of a story, you didn't have a company name when you went to talk to the investor.

Sanders: Yeah, right. Yep. No, we came back, we worked with the lawyers, got to-- got it incorporated, got started, rent some space, start the engineering program, start adding engineers. And we were fortunate that in six months we had recruited Steve Johnson to follow on and we did another round of financing and, you know, it was very successful for a long time.

Yamashita: So you were pretty involved in doing these recruiting for these key positions.

Sanders: Yes, yes. No, that was one of my prime jobs.

Yamashita: Was it one of the more successful ventures that you were involved with?

Sanders: Yes, I think so, yeah.

Yamashita: Adaptec was another one.

Sanders: Adaptec, Komag, Solectron.

Yamashita: Komag rented a space from Solectron.

Sanders: It turned out that Winston Chen, who was the CEO of Solectron was acquainted with Tu Chen and the other fellows, two fellows from IBM. And so he offered to give us some space. So we operated out in the very early days, for a short period time, we operated out of that. So I got to know Winston. That’s how I got to know Winston Chen and started my association with Solectron.

Yamashita: I see.

Sanders: You know, and so anyway, and Winston was on the Komag board.

Yamashita: For a little while.

Sanders: For a short period of time. I mean, a couple years, maybe. I can't remember.

Yamashita: You were on the board, too.

Sanders: Oh, I was-- must've been for more than 10 years. A long time.

Yamashita: So it must-- it must've been interesting to see company go from, like, nothing to a pretty good size.

Sanders: It's the most exciting thing I've ever done. Yeah, it's the, you know, the group, the team we had at Shugart we still get together, was just magical the way it worked and the way we grew that company very quickly.

Yamashita: So I've been told, from Tu Chen, that Jim Adkisson was just instrumentally got him to talk with the Vertex people. There's a name that comes to my-- Max Ross. I guess he was a former Xerox guy that started Vertex, and the two got a lot of ideas about what's really the key that they were looking for, for the media. So that connection, that got him connected to you, I guess, in a way.

Sanders: Yeah, right. So I'll tell you a funny story about the early days at Komag. Jim Porter and Ray Freeman were people who analyzed the storage industry, and they had a conference and it was usually held at the Marriot here. And so when we hired Steve Johnson to be the new CEO of Komag, he did not come from the storage industry. He came from a laser company, but he adapted very quickly and it was a good pick, I truly believe. But he didn't know people in the storage industry, so I took him around and introduced him to people, so we're in this conference and we're in the bar before the conference starts and I introduce him to Ray Freeman, and told him what Komag was doing. And Ray said, "Oh, let me think. That's about the 12th company I've heard about that's going to make thin-film media." And the blood drained out of Steve's face.

Yamashita: I see.

Sanders: So we went back and told Tu Chen about this, and Tu Chen said, "Don't worry, it's harder than people think and I know how to do it." And he was right. It was harder, and he figured out how to do it.

Yamashita: I see. So it's quite interesting now. So I mean, Tu Chen has, like many people in this kind of business, he's got a pretty fiery temperament, too. So I'm sure you have some interesting experience there as well.

Sanders: For years, I got a lot of late-night phone calls from Tu Chen.

Yamashita: Oh, okay, complaining I'm sure.

Sanders: Yes.

Yamashita: So, after Komag, you know, what other companies were you involved in? You mentioned Solectron. Was that afterwards?

Sanders: Yeah, yeah, and the OCR company. Those were the three main ones where I performed the interim CEO job. The others, like Adaptec and Archive and Solectron and so forth, I was just on the board and maybe did some marketing and sales consulting for them in addition to the board membership. But they were wanting advice primarily on marketing and sales. Because I had been in the OEM marketing and sales peripheral business for a long time.

Yamashita: Let's talk about Solectron, it's not a storage company but I know a little bit. I mean, it went through this sort of different reincarnation. Originally it was like..

Sanders: Assembler of circuit boards.

Yamashita: Yeah, Winston and Roy Kusumoto and, I don't know maybe a few others, but it kind of morphed into this contract manufacturer. Did that occur when you were in the board?

Sanders: Well, all of the time that I was there, they were in the contract manufacturing business.

Yamashita: So it was basically..

Sanders: It was the contract manufacturing business. But they had just finished-- when I joined the board, they had just finished a year where they did, like, $60 million in revenue. And that, and the year before they had dropped to 40 because they had lost a big contract with IBM. IBM cancelled the product. It was a small PC, a small cheap PC. I forget what it was called. It was cancelled. So they had a drop, and the year I joined they did $60 million, and the last year I was on the board, they did, like, $15 billion.

So that's how fast they grew in ten years or so. And what happened, it was a combination of things that grew the contract manufacturing business. They started out assembling circuit boards. The manufacturers would send them a kit or kits, and they would assemble them and wave solder them and test them and maybe test them, maybe not. So then back to the manufacturer. Over time, that morphed into, Solectron would buy all the components. So a lot of that $15 billion in revenue they had was cost, buying components. But it inflated everything. But they had more control that way and it worked better if they bought the parts. The other thing that happened in the contract manufacturing business is that a lot of big companies were trying to get out of the manufacturing business completely. And IBM particularly would sell you their whole plant. Plant, people, product line and a big, long-term order. And Solectron took over IBM plants in Charlotte, North Carolina, Bordeaux, France, I don't know where all. They bought businesses from a lot of big companies, and so that fed this growth.

Yamashita: It was really one of the early innovators in this entire contract manufacturing.

Sanders: In contract manufacturing, yes. Yes.

Yamashita: So how did you end up on the Solectron board?

Sanders: Well, through Komag. I met Tu Chen through Komag. He was trying to figure out his marketing and sales strategy, and he sensed that I knew about that, and so he recruited me.

Yamashita: After you joined, Ko Nishimura was hired or was he there already?

Sanders: Yeah. So here you've got this big manufacturing company run by Winston Chen, who is an engineer from IBM. And so, as the company got bigger and Winston and the board decided they would hire somebody else, you know, first as president and then later as CEO, whatever, Winston picked Ko. And so, I remember interviewing Ko for the job. He came to my Asset Management office in Palo Alto and I interviewed him. And so then I called Winston and so Winston said, "Well, what do you think?" I said, "Winston, he's your clone. He's an engineering guy from IBM. You know, it's not the pick to run a big manufacturing company." But, I said, "What do I know? I wouldn't have picked you, either."

Yamashita: I see.

Sanders: So, we hired Ko and he did a fantastic job of growing the company.

Yamashita: Right. So I should tell you that before that, Tu Chen was looking for somebody, too, right? It wasn't for CEO or anything, but Ko's name came up.

Sanders: Is that right?

Yamashita: And of course I knew him from Stanford, so Tu, you know, asked me, “So what do you think of Ko Nishimura,” and I thought, “Tu, he’s a great guy, but I think you're going to get into a big fight. He said, “Well, okay. Maybe I shouldn't.” He went to Solectron and the rest is history.

Sanders: Yeah.

Yamashita: Anyway, so you had some spectacular growth. That must’ve been very interesting.

Sanders: Yes, it was. It was.

Yamashita: So somewhere there you start your own venture capital company.

Sanders: Yeah, I didn't start my own. I didn't start my own, actually I joined the firm. What happened was I talked about spending more time with my family and during the six or seven year period, I did, but what I found out at the end of that period is my children are now teenagers and they don't want to spend that much time with me anymore. They don't want to take a one-month trip. They want to go to camp with their friends, you know? So, I was coming back from a board meeting at Archive with one of the other board members and I was telling him how I was kind of getting bored in the troughs of activity. I’d be starting a company and I’d be busy for a year or two and then I would be a big trough before I lined up the next gig. And I said, “I’m kind of getting bored in the troughs.” And he said, “You know, we just lost a partner and we’re kind of under-staffed and we need some help at our venture fund. Why don't you come and hang out with us and you can help us evaluate things. You can maybe do some consulting for our portfolio companies for us, and we’ll look for the next thing for you to start. And that sounded good to me. And so, I went there, this was Asset Management Company, and the senior partner there was “Pitch” Johnson (Franklin Pitcher Johnson, Jr.), who was a legend in the early venture capital business. And so I was there, I was there for a year. I made two investments. I think one of them may have been Drivetec, I’m not sure. No, no, not Drivetec, Insite Peripherals.

Yamashita: Insite, yeah.

Sanders: Which was Jim Adkisson’s floppy disk company. Anyway, I made a couple of investments and I found out I liked the venture capital business. And we didn't find a new company for me to start in that period of time, so I joined the-- I went to work in the venture capital business.

Yamashita: I see. So you were there for how long?

Sanders: Almost 20 years. It was ’87 to 2009, I was out completely. I was part-time for a number of years as I wound down my portfolio of companies.

Yamashita: This is at Asset Management?

Sanders: Asset Management Company was the firm that I went to, and then later on Pitch Johnson wanted to kind of semi-retire and the rest of the partners took the managed funds and moved them to a new company called Alloy Ventures. So it kind of morphed into Alloy Ventures.

Yamashita: I see. What is it called Alloy?

Sanders: Alloy, like the metal. Alloy.

Yamashita: Why is it called Alloy?

Sanders: Because it starts with A. That’s a trick that Larry Boucher learned. Arc, Adaptec, Auspex, Alacritec. The way people used to find companies is there were lists of all kinds of companies, and you want to be at the top of the list.

Yamashita: I see. I didn't hear that before. I see.

Sanders: So anyway, we invested in a couple of storage things. Nothing was successful in that area, and I went off and did software companies and, you know, mainly software companies.

Yamashita: Is there something that kind of stands out as a success?

Sanders: Well, yeah, one that you’ve probably never heard of but was a big success for us was a company called Rasna, and it was a mechanical CAD software company.

Yamashita: Rasna?

Sanders: Rasna, R-A-S-N-A.

Yamashita: I read about it.

Sanders: Again, it was some people out of IBM that started it. And that would-- we were going to go public, the company was doing really well, we were going to go public, and a company in that industry called Parametric Technology (PTC) came and made us an offer we couldn't refuse. And so we sold the company instead of going public. So, that was successful. Another one that's still around is Nuance, which is a voice-recognition company.

Yamashita: Still going?

Sanders: Mm-hmm.

Yamashita: I see.

Sanders: Been quite successful.

Yamashita: A lot of success and failures. What differentiates the successes from the failures?

Sanders: It's hard to say. There's no magic answer. When I would look at opportunities to invest, I used to think of the companies as being a three-legged stool, and one leg was the people. Another leg was the technology slash product and the third leg was the market potential, competition, profile, you know, things like that. And if there were high risk in two of those areas, you probably wouldn't do it. But if there was high risk in one area and it was something you thought you could mitigate, then you might do it. I found that overall the successful companies that I was associated with were ones that-- where the people had the capacity-- that you invested in, the people-- mainly the CEO, had had the expertise and the personality and the capability to take the company all the way to some kind of exit for us, either sell it or take it public. Because statistically, when I looked at things I invested in, those were the most successful companies. Because when you start changing the management halfway through, it's an upsetting factor that often damages the company. But I've got to tell you there are very successful venture capitalists who, if they had one leg, which was a big market, they would be happy to fix the other two. And some of them were pretty ruthless about that fix. I didn't want to do that.

Yamashita: I see. But part of the venture capital firm is to be able to recognize the strength and weaknesses and make..

Sanders: You know, it's a-- being able to adequately analyze the risks. And sometimes you just have to accept the risk. And often, it was in the technology. If it was a new technology that wasn't proven, you know, at some point in time you could do all the due diligence you want. There were still unknowns, so if the market potential is really big, if this risk works out, you might still do it. If it's a so-so market and a high tech risk, you don't do it.

Yamashita: I see. And venture firms, you know, where do you-- the investors are-- you have other investors that puts money into the--

Sanders: Yeah. Typically the way they work is the money comes from so-called institutional investors, pension funds. College endowment funds have invested a lot in venture capital. They usually, you know, they have people at the university that understands technology and so on and so forth, and so they're interested in it, and so they do it. And there are some very wealthy individuals that are invested in these funds, but mainly they're institutions like pension funds, college endowment funds, some mutual funds will invest in them. So they commit for X million dollars for a period of five years. And as you make the investments the venture funds, put a capital call out and get enough money to last a little while and then they call for some more. And then hopefully you invest it over about five years, at least initially. There'll be follow-on investments later. And then you harvest it over the next five years, so the funds are less-- are designed to last ten years. Most of them go beyond that because there are a few things of value that haven't been realized at the end of that and they run-- there'll be dribs and drabs going out for 15 years. So it's a long, long timeframe investment.

Yamashita: I imagine it still, like, requires quite a bit of teamwork. You've got people that needs to get the sourcing of funds and you need to evaluate potential investments. Then you've got property management of the investment companies by sitting on the board and so on. So you played-- you played the board and the evaluation, is that..

Sanders: I'm not sure I understand the question.

Yamashita: I mean, did you-- there are people in the venture firm that has the role of gathering funds, right? To get the investment money; were you involved in that as well?

Sanders: Yes, a little bit. All of the partners are. In other words, there are-- the hierarchy of most venture funds is you have partners, and then below that you have associates who are not partners. And that's kind of like a law firm, okay? And in our firm, which was reasonably small in the scope of the overall industry, we didn't have many associates. It was mainly the partners doing all the work, so we were all involved in money raising. Usually, the older, senior people did more of that than the younger partners. But we were all involved. We were all out making presentations to potential investors, and they would want to meet us and talk to us. They wanted to do their due diligence if they're deciding to invest in a particular fund we have. And so that's a big part of the business is raising the money. And that's when we have to put our sales hats on. And then we get the money and then we come back and we're the recipients of the sales jobs, the entrepreneurs.

Yamashita: So many, many comes in, you only find so many, I suppose. So there must be a lot of presentations that you have to go through.

Sanders: I don't know what the statistics are, but it seems like you look at 100 deals to make one investment. Now, sometimes that looking at that deal is you just read the business plan. You know, and your network of people in the valley, I found, was really important and valuable in the venture business. I know when I first got in and I had been in-- particularly in the storage industry here for 20 years, I knew a lot of people. And when I got a business plan, I could go to the back, to the resumes of the people and nine times out of ten, I would know someone who had worked with the key-- a key person, at least one, at some other company. And I knew him and I knew he was there at that time. And I would call him up and say, "What about this guy?" So that's very valuable.

Yamashita: So getting back to the beginning, you said you went to the dark side, to marketing.

Sanders: Marketing and sales, right.

Yamashita: But this human relationship is what served you very well for a while.

Sanders: It did. Yeah, you see through this talk it's people coming back as your career progresses that you've associated with for a long time.

Yamashita: So I think I want to finish up by asking some other more general questions, like other things that you do, your hobbies or things that you're interested in or involved with that you want to talk about.

Sanders: Okay. I would say that when I was retiring, and I've thought about this for years, the thing that-- you look back over your career and you say, "What do I wish I had done?" or your life, "What do I wish I'd done that I didn't do?" And one of them was to be a ski bum for a year or two.

Yamashita: A ski bum?

Sanders: A ski bum. I fell in love with snow skiing when I was in Philadelphia working for Westinghouse when I got out of college. So I've been a big snow skier ever since.

Yamashita: Philadelphia, it's not much of a--

Sanders: The Poconos.

Yamashita: Poconos, oh, okay.

Sanders: The Poconos in Pennsylvania. Just an hour's drive from Philadelphia. I only skied there one year. I was a beginner. It was tough enough for me. But I came to California, went to work for AMPEX. They had a ski club, they had a lodge-- a house rented in Alpine Meadows for the ski season. I went up to Squaw Valley and I looked up at the mountain and I said, "God, I've died and gone to heaven," you know? So I've skied every year since then at Alpine Meadows in Squaw Valley. We have a house in Alpine Meadows.

Yamashita: Oh, wonderful.

Sanders: And now that I'm-- for the last 10 or 12 years, we have-- my wife and I, Page, have spent the winters at Tahoe, so I am a ski bum now.

Yamashita: Oh.

Sanders: So that's one of the things that interests me. I read a lot, mainly mystery stories.

Yamashita: Oh, I see.

Sanders: We have done some philanthropy, mainly to kids like YMCAs and education.

Yamashita: Wonderful.

Sanders: Colleges, schools, scholarships, stuff like that. We both have a strong interest in that.

Yamashita: That's great. And you pretty much wound down your venture activities?

Sanders: Right, yes. I told you there was a long tail when you decide to get out of the business. By the time I got down to the end of that tail, I was happy to..

Yamashita: Mission accomplished?

Sanders: ...Not be on another board.

Yamashita: Okay, great. So how does Tahoe compare with Poconos?

Sanders: Well, the joke about the Poconos was, and it was true, it's a big summer resort area, so there are these lodges and golf courses. And so in the summer, it's a golf course. In the winter, they put up a rope tow on the golf course and it's a ski area.

Yamashita: Yeah, I've bene to Alpine Meadows when I was younger, quite often.

Sanders: Oh, you did?

Yamashita: Yeah.

Sanders: Yeah, well I've..

Yamashita: It's a wonderful place.

Sanders: ...I've been going to Squaw and Alpine since 1962. I've skied 55 years there; haven't missed a winter.

Yamashita: I see. That's great. So I think I'm pretty much done with questions. We covered your career, a lot of interesting stories. So thank you very much for the interview.

Sanders: You're quite welcome.

END OF THE INTERVIEW

