Oral History of Dan'l Lewin

Interviewed by:
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John Markoff: I'm John Markoff, and this is an interview with Dan'l Lewin. And it is June 1, 2015. Why don't we start at the beginning? Where did you grow up?

Dan'l Lewin: Well, I grew up in Buffalo, New York.

Markoff: And tell me a little bit about your family.

Lewin: A typical family in the Buffalo area. My father was a US Marine in the World War II era. He left the Marine Corps in 1945. He was 19 and had a career thereafter in all kinds of odd job kinds of things that evolved into professional wrestling. My mother was a homemaker, and so I grew up in a very atypical family.

Markoff: And professional wrestling… I've always thought of it as being as much entertainment as sport. What was the reality of professional wrestling at that [time]?

Lewin: There's a code of conduct you have to be very careful about. No, it's theater. It's performance art, and you could liken them to stunt men in many ways, although there were men and women involved, and people of all kinds. But, in that era… coming out of the late '40s, into the early '50s… it was programming, frankly, for television, because it was something that you could time, something that could draw a reasonable audience with a sort of play acting that mirrored what was going on in society. So there were good guys and bad guys, and of course there were Germans, and Japanese, and then [the] US. And my dad was a US war hero, so he was a good guy and played within that realm. And then over time there was a nice documentary effort called 'The unreal world of professional wrestling', [http://www.worldcat.org/title/unreal-world-of-professional-wrestling/oclc/39709824] and the whole psychology of what wrestling was like relative to issues in society… and wrestling has always sort of been a mirror of that.

Markoff: At that point, was it a job that required a lot of travel?

Lewin: He did travel a fair amount up until I was about five years old. So, from the late '40s until the late '50s, he, and my mother, and my older sister were traveling around a lot all around the United States -- Venice Beach, LA, Gold's Gym, Joe Gold, all those guys, Santa Monica, Tennessee, Texas, everywhere. So they lived out of a station wagon and travelled around with crazy animals and things.

Markoff: Did he have a professional name?

Lewin: He used his own name. You can find him in Wikipedia. It's Donn -- with two Ns -- Lewin, L-E-W-I-N. And later on in life, when he aged up, and still used that as a primary means of income, he became the Masked Executioner. So he became a bad guy, and you can find him up there. Along with the rest of my extended family -- my uncles and my father's sister's husband were all in this game in that period.

Markoff: And I saw that Dan'l comes from Dan'l Boone.

Lewin: Yeah, my parents met after the war, were dating. A family friend who became my metaphorical godfather was also named Don, and they met at a club. And the comedian surfaced. Buffalo was a happening town then. Post-war, still had a lot of a Great Lakes shipping sort of flowing through -- last port on the Saint Lawrence Seaway. So it was an active town, a nightclub town, all that kind of stuff. And there was a comedian there, and the guy misheard my father's name—and said Dan'l Boone?. And it stuck, and so it became my father's nickname. And so I just like to say that I'm vowel challenged, because they threw away the I and the E and gave me a little apostrophe.

Markoff: And, growing up, were athletics a big part of your life you up into to high school because of his wrestling?

Lewin: Yeah, that's right.

Markoff: And was it all things athletic?

Lewin: Yeah, boot camp would be more like it. No, I grew up in a household where all sort of training -- so running, weightlifting, later on swimming -- physical fitness was a primary agenda. As well as diet. My father was real involved with the folks in York, Pennsylvania. If you've ever been in a gymnasium, you've seen the York Weight brand. So was Bob Hoffman. All those guys were all family friends, and so he was quite a fitness freak, if you will. And so I grew up in that environment.

Markoff: Did you embrace it?

Lewin: I didn't have a choice, so the answer is -- inevitably by the time most adolescents were making a choice to get involved in those things, I was very accomplished at them. So it was easy to embrace at that period of my life -- sort of adolescence. But, up to adolescence -- I mean, starting this training when I was in kindergarten was serious.

Markoff: And was competition a part of it right from the beginning?

Lewin: Yeah, pretty much, weather it was running track, lifting weights, or swimming, and then later on just almost exclusively swimming, which is what I picked up on when I was about eight.

Markoff: Yeah, and by your own volition?

Lewin: No, my sister was the motivator. She was particularly good in the water and swam at Nationals. She was a very serious swimmer, and she was three and a half years older than I was. And it was following along with her as a family is like, OK, your sister Holly's going to swimming practice. You should try it, too. And it was like, OK, I'll try. And of course I hated it, but--

Markoff: Because it was cold?

Lewin: No, more of it was just frankly tied to, generally speaking, not wanting to go underwater, sort of the suffocation thing. So I ended up swimming a lot of backstroke.

Markoff: But you were good.

Lewin: I was good at it.

Markoff: But before college you were competing…

Lewin: Yeah, when I was… eight was the first year that I started swimming competitively, and I won the Western New York state championship for the ten-and-unders. And then, by the time I was 12, I was a national record holder. I was seriously good at it. And then, through sort of growing spurts, I was still good at it, but I wouldn't say I maintained being best in the nation. But I was always in sort of the top ranks. And then in college, when I swam, I was sort of top 20 in my race at NCAAs and division one stuff.

Markoff: And were their intellectual threads in your household? What was the path to Princeton?

Lewin: The intellectual threads came from a couple of early teachers. I grew up in a community that was the beneficiary of the Buffalo State Teachers College, which was doing a lot of -- with hindsight, when I look back on it -- experimental work with educators. And the school system in New York state was quite good. And in second grade, for example, I had a teacher who taught us binary, taught us how to add and subtract in different bases -- base two, et cetera. And I was in second grade, and I took to it. And I had some other good teachers again. Again, with hindsight, over the years I've looked back. So my elementary school education was good. I was out of control with energy, didn't really learn how to read until I was seven plus, eight years old. Because I couldn't sit still. I had a lot of kinetic energy. And it turns out I am very much a kinetic learner and came to discover that over the years.

But not so much in my family, there wasn't any higher education background on either side in any detail. But, by the time I was in junior high school, I realized that school was going to be a bit of a ticket for me. I was a good athlete, but, once we broke down into going to different classes, and I sort of found my groove and started --

Markoff: You did well in academics in high school.

Lewin: In high school, yeah, I was in, you know, the National Honors Society, those kinds of things. But at a big public school, 1,000 students per grade, three grades in high school. [It] turns out -- again, with hindsight -- I mean, there's a physicist at Stanford who was a year ahead of me. There's a whole bunch of really astoundingly bright people that ended up going through my high school. And you don't know it in the moment.

Markoff: What was name of the school?

Lewin: Kenmore East was the name of the high school, and Kenmore West was the arch-rival.

Markoff: Why Princeton? What were the dynamics about going [there]?

Lewin: Well, you mentioned athletics. I was good at swimming, so a number of schools were reaching out to me. Recruiting was different back then in terms of what they could do and how they would go about it. So, when I was about 14, colleges started reaching out to me and saying hey, you should pay attention to North Carolina, or you should pay attention to Michigan, or you should pay attention to what have you. The Dartmouth coach reached out to me when I was in eighth grade. So they had sort of been courting me all along… and the Naval Academy. My dad was a Marine-- you know, that whole thing-- West Point, those kinds of places.

So I had a high school class advisor. I was a class officer. And he had gone to Dartmouth. We didn't really have much financial wherewithal, and he said hey, you should apply to Dartmouth. And, if you can't afford it, I'll pay for the application. You should apply to Dartmouth. Because he knew that they had reached out to me. And, similarly, Princeton… I had done some life guarding in the summers for making ends meet, and training, and being around pools and things.

And there was a guy that I had lifeguarded with, and trained with some when I was 12 or so. I started swimming with the local college talent when I was 12. And he was a little older -- six, seven years older. And he'd gone to Princeton, and so he wrote me a letter and just said you should really apply to Princeton, and here's why. And then the university had a couple of existing swimmers -- one was an All-American world record holder -- send me letters and said you should apply to Princeton. So I did. So people coached me along. So it was really through athletics that I had the awareness, and that one teacher in high school. And the good news is I ended up having a choice, and I chose Princeton for a variety of reasons.

Markoff: And [it] was a full ride kind of situation?

Lewin: Well, Ivy League schools don't give athletic scholarships. And that was one of the choices that I wanted to make, frankly, because I didn't want to have to pay to play. I didn't want to have to swim, because we had no money. And frankly, my family was changing at the time. My parents were divorcing and all that kind of stuff. So I didn't have any real infrastructure support. My sister was already married and off, and so I was really alone. And I wanted to go someplace where they were going to give me the financial aid based on need, not on my performance.

And so Ivy League schools did that. They stopped giving scholarships in the '60s or so. And so the financial aid that I received was almost a full ride. They required that I work in the summer and contribute $500, or whatever it was in the day. And they offered and guaranteed that I would have a job on campus

of some kind to also earn while I was a student. And that's how I paid my way through, subject to the loans that I then spent the next 10 years after I graduated paying off.

Markoff: Before I leave high school entirely, you got binary math early on. Did computers show up on your radar at all in high school? Was there any exposure to [them]?

Lewin: Well, the closest I came in high school, there really wasn't much access. But, in eighth grade-- you know, I was taking algebra, and I didn't miss any questions. And I was a little bit of a crazy one, a little bit of a wise guy. So it was like I was good at math, right? And that was very, very helpful. And then, when I got in high school, the closest I came to computing was my chemistry teacher, who was a brilliant guy-- Mr. Izzard. His father had worked at DuPont, and had worked on rayon I think and invented-- interesting guy, really smart guy who was a real educator.

And it was a required course for a Regents diploma, the higher level diploma in the state of New York, to take chemistry. And I was fascinated by chemistry in any event, so math and science was the thing for me. And what he did was amazing. However many chapters there were in the text… it was the standardized text for the state for this Regents exam, and the Regents credit. And he had a big box that had punch cards in it.

And [for] every chapter that he taught, he had accumulated a history of all the questions on the Regents Exam from the beginning of the state level exam, all the questions that had ever been asked about the subject matter in that chapter. He put the questions and answers, and there were multiple choice and what have you, on punched cards, and had a long poker that you slid in. And you could pull out all the chapter three punch cards. And, if you flipped through those, he said you will learn how to take this test. And you'll educate yourself. And so the closest I ever came to the punched cards was in chemistry.

Markoff: Those were called McBee sort-file cards?

Lewin: It was unbelievable. He was a great guy. I used to go, and we'd hang around the lab with him. And he explained where they came from. He knew. So that kind of was my initial introduction. And so that would have been in, say, 1970-ish or so.

Markoff: And then you came to Princeton. The anti-war movement was winding down. Did you have a sense of what were the politics, or what was the world like when you started school?

Lewin: Yeah, fascinating. Well, frankly, it was one of the fundamental reasons why I didn't end up wanting to go to the Naval Academy or West Point. I had choices. Because the war thing was… it was kind of interesting because my father having been in the war. But he was also dead set that I not go, right? Because he'd seen. Here was a guy who, by 19, had [earned] three Purple Hearts and two on Iwo Jima.

Markoff: Oh, in the Pacific?

Lewin: Yeah, so I mean he'd been on [the] Day Two landing party at Iwo Jima. If he was on Day One he undoubtedly wouldn't be alive. But he got wounded twice on Iwo Jima and had been wounded once prior to that. So he was a serious guy who knew the horrors of war, if you will. And so he didn't want me to go, but it was a conflict, if you will, at the same time.

So, when I got to the campus, the seniors were the last ones to have been sort of protesting where people got arrested on campus, because there was a fair amount going on. In fact, I think the stuff that happened on the Princeton campus ended up leading to that sort of Fall break where you could go and campaign, if you will. There was a period, and they did something. They took over the chapel. Stephen Weed was there, and some… remember those?

Markoff: I do. I do.

Lewin: So it was a motivator for, actually, some of my work, because I ended up studying in the Politics Department, which they called Politics Department, not Political Science. And my adviser, H.H. Wilson, was a civil libertarian and a famous – infamous -- guy, depending on which lens you looked at him through at the time.

Markoff: And was that random, or did you pick him?

Lewin: I picked him, because I was doing some work about street politics merging with electoral politics. And I did an independent piece in my sophomore year which he liked, which motivated me to want to take that forward and eventually do my thesis, which was required for graduation, not an Honors thesis, but it was an undergraduate requirement. And so I did thesis work about city politics in Ann Arbor, Michigan.

Markoff: Oh, interesting. Ann Arbor was- - let's see, wasn't there a well known political science study of Ann Arbor?

Lewin: Well, there was a ton going on, because Tom Hayden been there. He'd written the SDS charter there. A lot of the Freedom Riders stuff emanated from Ann Arbor. So it was the 18-year-old vote, residency requirement, women's rights, civil rights, and rock and roll. And it was rock and roll, the MC5, John Sinclair, Rainbow People's Party -- all that stuff was going on in Ann Arbor. And I was interested in sort of the social implications in society, because I had a just firm belief in people as people as opposed to sort of men and women. So the women's rights thing was reasonably meaningful at the time.

Markoff: The lottery had started, right? Were you affected but the lottery?

Lewin: Yeah, somebody asked me that the other day. I was born in '54. I think the last year that they took from was '53. So, if I recall, they had a lottery, but they didn't take anyone. But I don't remember exactly.

Markoff: But it wasn't like a big…?

Lewin: Well, it was waning, so we weren't sure. Certainly, in my freshman and sophomore year, we weren't sure what was going to be happening. But, by the time I was a senior, I think we knew we were safe in general -- or close to safe, if you will. Because this is '76 by then.

Markoff: One of the things I read -- I guess it's not correct -- said you wrote your thesis about charisma and Bob Dylan.

Lewin: Well, I did two independent studies. Yeah, somebody-- I think maybe Walter Isaacson [INAUDIBLE] He asked that question. And I did two independent studies. And I never met with Walter face-to-face, so we never… and he never followed up to check anything, so what do I know.?

Markoff: It will be history forever.

Lewin: Yeah, it was written, therefore it is. So I did two pieces of work in my junior year, which was the way the university worked. And one was classical charismatic leadership theory: Bob Dylan, the 1960s. And the transition of basically his musicality -- his choice from folk, to folk rock, to rock, et cetera -- and how his following grew, and the gathering grew, and all the competitive issues that were going on in terms of creating followings at the time. Because everybody was worried about The Beach Boys, if you will. And then they were worried about The Rolling Stones, and The Beatles, and Dylan, and all the rest. And I liked his poetry. I wasn't sure that I really appreciated his tone and delivery, but I liked his poetry a lot.

Markoff: And you were listening to his music.

Lewin: I listened to a lot of his music, and I had an adviser who, in the end, was the most influential teacher that I had. Wilson was my adviser for my thesis, but this guy named Manfred Halpern -- not Morton, who was the defense strategies guy -- but Manfred Halpern was a guy who was trained… really

[INAUDIBLE] a Jungian psychologist who worked in the State Department on Iranian affairs under Marcuse, et cetera. So he was a very interesting sort of "politics is relationships between or among people"-type. And he was extremely open to my interest and looking at movements and people, which had been tied to the other side, which was sort of street politics and electoral politics -- so, sort of, Dylan as a motivator. So they sort of went hand in hand a little bit.

And the reason why I ended up taking the Human Rights Party of Ann Arbor, Michigan forward for my thesis is because I got a better grade on it on my independent work in my junior year and figured I had a better chance of getting out of school with my thesis.

Markoff: But it was in this context of street politics, electoral politics, political science… Did you run across Bill Domhoff's work, power structures in local…?

Lewin: It doesn't ring a bell.

Markoff: OK, so more traditional… so, did you read Marcuse?

Lewin: Yeah, bits -- yeah, and there's a lot of theory in the Princeton department-- Sheldon Wolin, a lot of those folks are theorists. And, for me, some of it was 20th century American political history, if I would look at sort of the whole genre that I cared about -- the office of the presidency, how it was affected by the person who took the office -- was elected to the office-- how they shaped it. So, people politics, how people use their power, and how followings occur, and what it took to get people engaged and motivated to drive change-- changes in structure-- which is what I was interested in – Kuhn's *The Structure of Scientific Revolutions* had a major impact on my thinking. So, in many ways, sort of organizational dynamics, but really market centric. How do you reach people and then build followings, basically? And how do you drive change with that?

Markoff: And, at school during those four years, you had study, you had athletic competition. What else?

Lewin: I worked. Those are really the only-- and I played, but we won't talk about that. I worked in the cafeteria and ran a catering agency at the end of the day. Three other people and myself -- two women and another guy -- set up sort of an institutionalized student catering agency. The university was very big on entrepreneurship and creating, whether a student beer mug agency or, you know, the hoagie man selling submarine sandwiches around campus.

And so we created a catering agency and catered all of the primary events that needed to be delivered purposely without fail. Because students would sign up and volunteer for the corporate giving luncheon and then not show, and there'd be nobody there to serve the food, or set up the tables, or pour the booze if it's an evening thing -- those kinds of things. And so we set it up and sort of institutionalized an approach, and were able to -- whenever you worked a meal, you ate for free, so that mattered to me -- and made ends meet in terms of income.

And then, starting in my freshman year all the way through graduation, I worked the reunion period -- Princeton's got a very active alumni community, I think maybe second to Notre Dame in terms of being rabid, but certainly, in terms of fundraising, they may be at the top of the list. And catering the reunion function, which is a three- or four-day big extravaganza by class, was… so I organized everything that wasn't hot, literally everything from tables and chairs, to the clips that would hold the plastic tablecloths on, to the forks, and spoons, and paper plates, and butter, and rolls, and salad, and everything that wasn't hot I organized with one other person, staged it so that we could run it up the elevator and out the back door on a 15 minute cycle to hit every one of those things in an organized way. So driving logistics and flow -- and that, you know, I'd make $500 to $600 for three or four days work, which was a huge amount of money, which I could then I apply to…

Markoff: Did the Institute for Advanced Studies come on your radar at all?

Lewin: Yeah, mostly the woods-- wandering in the woods-- because the Institute was right around the corner. I had one professor friend, Gerhard Fankhauser, who was a biologist, if I recall. He was a professor emeritus, and he'd come over with Einstein, actually, and worked at the Institute in doing some things and was a professor at the University. And he was a great old gentleman who, every day, came to the pool. We had a small little warm-up pool beside the competition pool that we trained in. And he would come down for his daily bath, if you will, as he used to say. It was in his late 80s maybe 90-- I don't know. He was an old, old guy. And he'd come down.

Just like many of the professors, he'd be friends of the different athletic teams. And so he would always have two or three of us at a time over for dinner-- he's an old retired guy-- and get to know him. And he would tell us stories about the people who were at the Institute, about Einstein, whom he knew well. And we actually got to play physically with some of the little games that Einstein used to dwell on while he was playing and thinking. There was one in particular that was the… it was an uphill spiral to kind of a center hole, and there were little ball bearings where you would kind of… multiple ball bearings where you'd kind of have to wind them up this spiral cone. And so we'd get to sign in this little book registry, and flip back and look at all the people who'd been to dinner at his home, because he'd been collecting this for its entire life in town. But I went into the buildings, and went up on the spire and looked out over… it was a beautiful campus.

Markoff: And how broad… Were you forced to be broad beyond the social sciences? Did you get into the sciences?

Lewin: No, that was a benefit for me, frankly, because, showing up at Princeton, it was really clear that there's a difference between being reasonably good at math and being a mathematician, which I am not. And so there were no hard core… there were science requirements, and I took geology. Some of the guys that invented the whole field of plate tectonics -- or discovered, or sort of processed the theory of plate movement and things like that. Ken Deffeyes and Judson maybe -- Sheldon Judson-- some of these guys… so geology was fascinating. We'd do a lot of field stuff as well, so the field trips were really interesting, going up to Delaware Water Gap and sort of looking at geologic movement. And I loved the labs, the experimentation, and those kinds of things. But I didn't have any hard core math or science beyond that. So I had fulfilled those requirements.

The deal was you owed the university 30 courses. That was the deal. So three years of two semesters and four courses each, and then in your senior year you had three courses plus a thesis. And your junior year was intense, because you were concentrating in a department, and you had to do two independent studies, et cetera. So you kind of got a year, a year and half to figure it out. And then you had to pick a path and then go crazy, and then in your senior year go deep. So you could take as many as you wanted. They didn't charge more to take other classes, so I'd sit in on lectures about black holes and all the… he just died, in fact… what's his name, from [the Hollywood movie] *A Beautiful Mind*.

Markoff: Oh, Nash.

Lewin: Nash… yeah, I mean they were wandering around the campus, and amazing lectures, and I'd sit and watch Golda Meir lecture at the Wilson School. And, I mean, the people that showed up on the campus were extraordinary. And so I would wander into those things, but I wouldn't call myself a hardcore academic in that sense. I just took advantage of what I could when I wasn't working and when I wasn't training.

Markoff: And tell me something. How well did you do?

Lewin: I was mostly sprint freestyle. You end up specializing a little bit. That's what the university… that's what the team wanted and needed. And I was good at it. I was reasonably well rounded. And so, the best I did was to be in the finals in the eastern seaboard championship, which we won as a team all four years that I was there. I was captain of the team -- an undefeated team -- my last year. And my sophomore year I swam at nationals, the NCAAs Division One, so serious swimming. That was in California -- first time I visited California, in 1974, I looked up and said, why didn't anybody tell me about this place?

Markoff: Was it in northern California?

Lewin: Long Beach, but it was whatever it was -- late March, early April, or whatever -- it was beautiful. So I was good, but my best allowed me to qualify for nationals. And people who win at nationals can do that at a workout. But, you know, it's small amounts that separate in sprint races, so mostly 100 or 50 yard sprints, which are 20 and 40 second races, sort of like 220 and 440 in track.

Markoff: Yeah, so is that really what sort of pulled you west? Why did you, after graduating… you came west right away, is that right?

Lewin: I did. I thought, briefly, that I wanted to go to law school and sort of talked myself out of it within minutes, frankly, mostly because I felt like I had learned enough about learning and how to learn that I kind of knew I could do that. And I wasn't sure that that's what I wanted to do. And, if I stayed on that path, I would have had to have figured out how to pay for it and all those things as well. I was on my own at the time. I thought a little bit about health oriented things. So I thought a little bit about chiropractic and those things very, very briefly. So I was just thinking about what to do.

But the long story short, in terms of coming to California, I lost a bet with my sister's husband's brother at the time- - so my brother-in-law's brother. He was living in Palo Alto, building a house in Los Altos Hills on the side of a hill. And he was a car salesman. And he had sort of parlayed his position up to being the general manager and sort of co-owner of a dealership in Palo Alto that they had sold that summer, or that spring, right before I graduated. So he had cashed in. He was 32, and he had been smart enough to buy real estate in Palo Alto, and take seconds on those homes, and buy more homes. So he owned 26 houses in Palo Alto in 1976. And heaven forbid you own 26 homes in downtown Palo Alto today.

So anyway, it just was one of those things where I was with family in the southern tier of western New York. So my sister's father-in-law was hosting us. He had a little ranch down there and some horses. And we were in an old country bar playing bar pool and drinking beer, and I drank a little bit too much and started to bet, and shouldn't have, and lost. And so, in order to get even, he kept offering me double or nothing to get even. And pretty soon I was down-- I had a negative net worth for sure, but I was down about half of my liquid currency.

And he said, you know, we could play again. And I said, I'm done, man. By then I was shot. And he just said, I'll tell you what. I bought an antique stove, a little nickel plated stove about three foot tall. And he said, if you get it to California, and you come with it -- come to Palo Alto -- we're even. So I put in on top of my car a couple weeks later.

Markoff: What year?

Lewin: This is in 1976 in late August. And so I drove to Palo Alto across country with a friend, and stopped along the way, and visited a few friends, et cetera. It took about a couple, three weeks. And so I arrived Palo Alto in the late summer of 1976. And the house that he was building was on the side of a hill overlooking the research park right off of Arastradero right around the corner from Rosotti's and all that stuff.

And so the house on top of that hill-- he was building a pole house on the side of the hill-- was co-owned by two people, one Peggy Karp, who had been working on the mnemonic stuff for DNS, from MITRE out here at Stanford with Larry Roberts and those folks. And the other one was a guy named Cordell Green, who runs the Kestrel Institute, which does a lot sort of software programmability, algorithmic research work, et cetera. It was a big old manor house, and so I met a whole collection of people of various backgrounds and interests who…

Markoff: Just because they were neighbors?

Lewin: Literally, I was, because I was sleeping in this house that wasn't… you know, it had a roof on it, but it wasn't finished. He was building this house. And so I was a college student. I was just sleeping there on a sleeping bag. And on the top of the hill there was a driveway that went by the house, and the driveway went down to the pool house. And so people were driving by every day to go to this big house at the top of the hill. And there were eight or nine unrelated adults living there who… the owners of the house didn't live there, because they had broken up. And so they were just renting it out to eight or nine people who are very interesting people. And, about 8 o'clock every night, the dinner gathering would begin. And by 10 o'clock people were eating, and by whatever o'clock people were leaving or not. And it was every night, and so I met a whole collection of incredibly interesting people who were doing amazing things in Silicon Valley.

Markoff: And this is right after you graduated.

Lewin: That's exactly right.

Markoff: OK, and at that point, I saw somewhere that you were thinking about teaching high school.

Lewin: Well, I had a teaching credential that was part of …in my junior year or so, Princeton instituted a Teacher Preparation and Placement program. There was a woman who was on a swimming team that I was friends with. She said, you know, you should really come down and meet with these folks, because she knew me and said you'd like it. So I did.

So I did a student teaching practicum, which was a 10-week thing, while I was in my senior year. And I did a little independent research about sort of mind-body learning. And so I taught little kids, like two, three year olds -- mostly three years old -- how to swim. And I wrote up a whole thing about kinetic learning, because I'd learned enough about my learning styles, et cetera.

And then, when I was doing the student teaching work in New Jersey, I created a course for the state of New Jersey on women in society. It was a little 10 week course that I'd stolen from all the different chapters of research-- stuff that I've done at Princeton about women in society in different eras, from Greeks and Romans to Victorian error, et cetera. And sort of did a little packaged 10 week thing. So I had a choice to do that. I never seriously was able to consider teaching, although I did while I was meandering around for a couple of months before I got my first job. I was working as a fry cook, because I knew how to work in a kitchen from my catering thing. I did a few things like that for four or five months. And I did some substitute teaching. So I researched that. But, in the end the day, I had loans, and cost of living, and all that. I couldn't afford to consider that, so I wrote it off very quickly.

Markoff: But being near that home, and being in those dinners, would you consider that be a window into Silicon Valley? Was that the kind of…?

Lewin: Yeah, absolutely. It was everything from I mean, they were all older than I was, but not much. Probably 30 was the oldest. I was 21-22. One guy was a medical student, going to be a doctor at Stanford, and a woman who was a teacher. Another young woman was doing design work for Watkins Johnson for guided missile infrastructure. There were lawyers working on intellectual property issues and law issues. Peggy was working on ARPANET stuff. A professor, a guy named Tom Cover who was a statistician at Stanford, he was there all the time. He was seeing Peggy at the time. He was one of the original card counters that got bounced out of Las Vegas, et cetera. So a lot of high-end math and stat folks. And so the dinner conversations were about what they were doing. And so I was sort of soaking a lot of that in and seeing what was going on.

Markoff: And, at that precise time, the term Silicon Valley had been coined. The semiconductor industry was up and running, but it wasn't quite yet clear the sort of transformative effect the Valley was going to have on the world.

Lewin: I would agree with that. I would agree with that. I mean, I had many classmates that were out here either in business school, or like Eric Schmidt was at Berkeley working with Bill Joy and those guys. And a few years later I realized what those guys were doing. When I ended up years later at Apple, they were putting IP into…

Markoff: Eric was at Princeton with you?

Lewin: Yeah, we were the same class.

Markoff: Did you guys know each other?

Lewin: Oh, not really. He worked on the other side of the street, which was the engineering quad. But yes, I mean, it's a small enough place-- 4,000 students, residential campus that you knew everyone, but he wasn't a social friend.

Markoff: And so what led to Sony? What led to your first job?

Lewin: My first job -- another serendipity move -- one of my college roommates moved to the Bay Area after graduation. His family moved out here while he was a student, so he'd never really lived here. And he was a geologist, and he went off to do some field work. And I moved out here before he showed up that summer. And he wanted to work at IBM, and was interviewing, and couldn't get a job, and it wasn't happening.

So he ended up taking this job working for Sony Business Recording Systems in Cupertino. And soon thereafter -- weeks, a month or so -- he ran into a friend in San Francisco we knew -- I knew him as well, it turns out-- who was working at IBM. He said, I can get you a job. It will take a little bit of time. And so a couple weeks later he gets an interview at IBM, and he gets the job offer. And he tells me I should come to work with him that day, because he was going to deliver the bad news and offer the good news. And the bad news was he was going to quit, and the good news was he had a friend who was a lot like him, fresh out of college who could walk and talk. And, if he'd been hired for the job initially, maybe I would be appropriate. And so I got the job kind of on the spot.

Markoff: Just walking in with…

Lewin: Walking in with a friend who quit.

Markoff: And it was enterprise sales, basically.

Lewin: Yeah, I mean, door-to-door sales, frankly, selling to businesses. And, in those days, standard cassette was a new invention, and the idea of a one-pound tape recorder was not even on the horizon. The smallest handheld tape recorder was a four or five pound thing that Sony had.

Markoff: I had a Sony recorder in my first days as a reporter, which were less than four or five pounds.

Lewin: Yeah, but if you wanted to run it on a battery, and you wanted a handheld machine, it was the first. Before the Walkman came out, there was a Sony business machine that had a dual track, [it] had stereo. And the reason why is so that you could hit a button and leave a mark on the second track so that, when the transcriptionist was rewinding the tape, it would stop. And there would be a counter on the – right? Because you had this little capstan drive that could pinch the tape and run it at a constant speed so that you could use the counter to know where you were on this linear medium, right? Before that, it was reel-to-reel, and the tape would stretch, and you wouldn't know where you were, if you will.

So anyways, the first one-pound handheld recorder was the Walkman. And it came out first in business form. I have one at home. And I won a Walkman for the sales contest. But those were $350-$400 machines. And you were basically selling them, on the institutional level, to police, medical records

[offices], courtroom recording systems, where you'd use multiple tracks, and different microphones. And Sony had all these teeny little interesting microphone technologies, and those kinds of things. So this is in '77, 78. And then the microcassettes came out thereafter. There were minis and micros. Micros have the capstan drive. The mini everybody else had. Sony had patents on it, so people didn't get into it for a little while. And then they licensed it, and there were others. So it was the beginning of…

Markoff: As a sales rep, were you a national sales rep?

Lewin: No, I had a physical territory. We had a region and it was… my office was responsible for South San Francisco to Monterey. And so my territory was bounded by Lawrence Expressway, and then 17, which is, whatever, 880 is now. So I had this physical territory that was centered in Cupertino, and then, within a year or less of taking the job, the guy that was running the office left and went to Intel. And so I became the sales manager. So then I had territory from South San Francisco to Monterey, and I did all the system stuff.

Markoff: Was that a quick rise?

Lewin: Yeah, I'd say it was unusual. But, then again, what are you going to do? Alan went off to work at Intel, and he was a teacher originally by training. And he went to work in designing all of the training for the 'copy exactly' build-out of factories. So, as Intel was moving forward on wanting to build new fabs, he was codifying all the processes and building the curricula to train people to do exactly what was done in the primary factory as they spread out and built tertiary efforts and things like that.

Markoff: Did you get much of the Japanese Sony culture, or was it a particular Silicon Valley flavor?

Lewin: Well, more of the Japanese stuff. The philosophy was, in training and presenting -- we had these video cameras -- we'd train, watch ourselves. These cameras were big monster things, and so you'd learn how to give a presentation, and demonstrate the tape recorders, and all that kind of stuff.

You know, the basic premise was, at the end of the day, why do people pay more money for Sony products? [That] was the fundamental thing, because we were about 15% more expensive than buying from Lainer. Lanier put their name on third party manufactured stuff. Olympus or somebody else built it. But Sony was selling the brand. And the push was to make the point that you spend more on this because it's a Sony-- period, because it's a Sony. People said, well this costs more money. Well, it's a Sony. And they go-- yeah, I guess you're right.

Markoff: That first part of your job, when you were sort of making your way around… you were in the Silicon Valley heartland, right?

Lewin: Truly-- I mean, I was calling on Tandem when they were 10 people. I was calling on Tymshare when they were, like, in the beginning. Rolm was, you know, in the beginning. You can go down a list of… Applied Materials. I mean, I called on Jim Morgan. His name was on the folder. Ron Conway, a sort of famous Silicon Valley angel, was at Altos Computing. He was the head of sales. So yeah, I mean, it was truly… Memorex existed.

Intel was a teeny little company. I sold to them, because, if you look at the heart of basically what was Santa Clara, you had Intel, you had Memorex, you had Applied Materials, you had Versatech, National Semi, AMD, [Advanced Microwave]. You had Four Phase Systems. Four Phase-- people forget about them. That was a $400M company selling systems to the Social Security Administration. It could have been the first real microcomputer in many ways. So all of those companies were here, and literally I was going door to door…

Markoff: So the tools of your trade. Do you remember the Thomas Maps? Did you use [them]? How did you get to where you were going?

Lewin: Yeah, exactly. I had those little books, and you'd move it around. I sold to the Burger King guys who were opening up the Burger Kings in the Bay Area. It's like, well, what do you guys do here? It's like, well we're trying to figure out where to put the Burger Kings. You should just go to where the McDonald's are and don't tell anybody. So yeah, it was like, yeah, I sold to everybody-- law firms, headhunters. I mean, some of the guys that I called on that were headhunters are in the venture business today.[INAUDIBLE].

Markoff: What was the compensation model when you were first starting?

Lewin: Oh, it was fascinating. We would get 15% of the gross of the transaction, 18% of the transaction if you sold a maintenance contract with it, which meant the gross was higher, right? And so, I mean, you're selling handheld tape recorders to people with a transcribing machine that's sort of a $1,000 transaction into a little office, and you sell it with maintenance and you're making $200.

Frankly, because it was the way I was at the time-- maybe still today-- the first month that I worked, they paid $600. And you got zero commission, because you were in training. And the second month was like $550, and you were selling, and you got like 5%, or whatever it was. The third month was $500 and 10 [percent], and the fourth month was whatever four figure -- whatever the math, dropping $50. And then it was you could take a draw, or you went straight commission. And I just went straight commission. And so I was straight commission for four years.

Markoff: And where did you live during that period?

Lewin: In that period I bought a house in Palo Alto.

Markoff: You bought a house in Palo Alto with your first job. Think about that.

Lewin: Yeah, I know. I know. $78,500-- I bought it with my buddy that had gotten me the job at Sony. But I lived in a studio under a house up in Palo Alto Hills off of Alexis Drive looking out over the Valley. I had a nice view over the Valley. And it was a little studio apartment affixed to a garage on the side of a house that was on the side of a hill. So I rented that first, and then I rented another house briefly that I was introduced to by a friend where someone had died, and the house was in probate, and all that kind of stuff. But then I bought a house, 79-ish, in Palo Alto.

Markoff: South Palo Alto? Where in the city?

Lewin: Yeah, South Palo Alto, right on West Charleston-- so not far from Barron Park, right next to Recording for the Blind, if you knew where that was. I know you know where it was. And the house is still there in the same shape that I left it. It's about a 630 square foot little cottage. I know the exact dimensions of all the rooms. There were no hallways. And that's where I met my wife and started a family.

Markoff: But you also had this… the job gave you a very broad view of the real working Silicon Valley.

Lewin: Absolutely, I mean I saw everything from what was going on-- I mean, almost all these little blossoming companies that were. The beginning of the microcomputer phenomenon.   Apple-- maybe of note, when I left-- well, I went to work-- I think it was April 7, 1977-- for Sony, and I think it was April 15 or so of 1977 that the Apple II was showed off at the West Coast Computer Faire. Steve and Steve had rented the office space. I was in building C. I think they were in building B. But it was 30 feet from their office to my office. So Apple rented 600 square feet right next door to my office.

Markoff: What do you remember from those guys then? Did you meet them then?

Lewin: Oh yeah, I met them. In fact, this weekend I saw Chris Espinosa. We talked for about two hours. We were sitting downtown, and he and his wife and kids walking by and Chris was skateboarding in and out of the… he's still there, you know?

Markoff: I just saw him, yeah.

Lewin: And it's amazing. And so, yeah, they were exactly what you read about. I mean Woz was wandering around, and Steve was stinky with holes in the jeans, and brash, and walking in my office, and looking at the Sony collateral, and saying "can I have these?" You know? It's like, sure, take a copy. It's like looking at the paper that the stuff was printed on.

Markoff: Did you have any interest in their products as a tool for you early on? Did it seem like something that would make you a more efficient salesman?

Lewin: I would say no. I mean, at the end of the day, I was calling on the addresses, the complexes, so no. I was taken by the pace of what was going on. I really liked Tandem as a company in the culture. So Jimmy Treybig and his whole crew was amazing, the people there. But what they were doing seemed so far removed from my skill at the time.

And so, in the end, I knew a fair amount of what was going on with word processing, and a word processor would have been helpful to me, because I was doing follow-up letters, and a lot of that kind of stuff. So it was more of those kinds of tools that were frankly what I was interested in. And Sony was heading off towards word processing and office automation with products, as everyone was at the time. Lots of companies were going after this notion of a word processor, which were these $10,000 to $30,000 machines that would, again, automate dictating, and writing letters and proposals, and things like that.

Markoff: Did John Draper show up in that office? Draper worked for them for a while, did you see the crazy culture of early, early Apple?

Lewin: No. Markkula was there, sure-- Sherry Livingston, who was the first administrative person – and some of those folks-- Pat-- what was Pat's last name (Sharp)? I can see her. She ended up with us in the Mac group as well.

Markoff: And who was the Marxist who was the engineer, the end line engineer? I'm blanking on his name, too.

Lewin: Rod?

Markoff: Yeah, Rod.

Lewin: Rod Holt was there, yeah he was. I'm

Markoff: He lived in the city during that period.

Lewin: I think so. He would show up now and then.

Markoff: Did Regis ever come around then?

Lewin: No, I met Regis later on. I just had lunch with him a bit ago. It's so nice to… he's still sharp as a tack. It's unbelievable.

Markoff: Did you take this disk drive product line-- did that come into the recording line?

Lewin: Yeah, so sort of the inevitable connection that I had with Apple came about with Sony introducing a three-and-a-half inch floppy disk. And I think it was pretty much the same day that they launched the three-and-a-half inch floppy and this little thing called a Typecorder, which was a small portable keyboard with a single line display and a microcassette so that you could actually… reporters could actually type and record keystrokes digitally, et cetera. So it was really kind of breakthrough categorical products that Sony was coming out with.

And I got a phone call. Apple had moved to Bandley Drive, which was right around the corner, 200 yards away, 300 yards away. And I got a call from Steve saying I want to see three-and-a-half inch floppy material. So I said, you know, end of day I can come by. I had other stuff to do. So I went by at the end of the day and had the materials in hand.

Markoff: This is '81, now?

Lewin: Apple went public in December of '80, so this was, yeah, probably like really early '81. And I think they might have already gone public when he called. And so I went over to sit with him and talk about these products. And I had all the specs, all the core material. And it was all marked advance information, because I had gotten it a week or two before. And he wanted to copy it. And I was a salesman, so I said let me check on that, and I'll give you a call back, because this is advance information.

So, probably the next day, I reached back out. And it was Pat…And I went over with the same materials and was sitting with him, and Pat went out to make copies of it. And the good news for me was that the copy machine in Bandley One was broken. And so she had to leave the building and go somewhere else. So I ended up… she probably got distracted… I probably had 20 or 30 minutes with Steve. And we started talking, and that's when he recruited me.

Markoff: And had you seen evolution already from the early, early Steve to the Steve who had gone public already? What was your sense?

Lewin: Well his tone was by far the same. I mean, in the sense of his energy, and enthusiasm, and focus-- I mean, he was maniacally focused always.

Markoff: You had already studied charisma formally, and did any of that come into play?-

Lewin: I could definitely see his behavior, for sure. I had interviewed, but declined a job, at this computer vision company which was a GE Calma joint venture. These are three quarter million dollar machines that would do CAD/CAM stuff. And I was interested in graphics and visualization. Quite so, I was taken by what by then, having seen what I'd seen in these various companies, graphics had just seemed so natural to me.

And I didn't know what was going on at PARC, but, when I was talking with Steve, and he started quizzing me about various things -- distribution and different kinds of things -- and then he just said, did you ever think about working for us? And I just said, I love what you're doing here, but I don't know that much about computers. It's like a little bit of the Colombo. And he goes, we got lots of people who know lots about computers. He's like, we need some help on distribution and how we market the stuff, because he was quizzing me on a lot of the marketing and distribution issues. And Sony obviously was an appealing brand image for him.

And so he took my card and ended up -- with hindsight, I'd find out -- gave it to someone, a guy named Joe Roebuck. And Joe was running market development for the company-- reporting into the head of sales, but it was really a marketing group working with market-centric activity. So I got a call Joe maybe a month later, and he just said hey, I got your card from our chairman, because he was chairman at the time, I think. And I figure it's a pretty good reference, so when can you come over?

So I went over and sat down with Joe, and we hit it off immediately. We were from the same hometown, ironically, the same neighborhood, pretty much. He was maybe 10 or 12 years older than I was, but he'd been a VP at Honeywell, and he'd come into Apple to do these things. Long story short there was he just said, I don't have anything today, but just check in once a month because you're coming to work here. And so I said OK, sure. So I did. I checked in with Joe maybe two months later. He just said OK, come on in. We got something. And then I interviewed with Trip Hawkins, Joe, Gene Carter who ran Sales, and one other guy, Barry Smith.

Markoff: So this was like mid '81 by this time?

Lewin: Yeah, spring '81, and I think it's May or June when I started.

Markoff: And when you first met Steve when he was interested in that drive, did he tip his hand at all about the kind of machine that they might use it for?

Lewin: Well yeah, fair question. He asked me a few questions. You know, it was like-- well, do you know anything about…? And, when I said something about, I don't know that much about computers, he goes, well, what's your familiarity? And I said, well, I did this thing with GE, as I said I'm interested in graphics, and this. I said, but you know, and I know how word processors work, and there's microprocessors in some of the Sony products. So, I mean, I knew enough.

But he suggested then that now, you know how sort of keyboards and everything work. And I went, yeah. And he goes, well, we got a better way. That was his reaction, " we got a better way." He goes, "there's not 10-15 people in the world that know how to do what we're doing." We got a better way, which, again, hindsight-- after my first day at Apple, meeting with Larry Tesler, having been on the other side of a one way mirror playing with Lisa in the drawing program-- I understood.

Markoff: And Mac was still not Steve's project at that point, or--

Lewin: I don't even know if it was in existence then, but it certainly wasn't his project. Jef Raskin--

Markoff: Was probably doing something.

Lewin: He was probably planning on doing something, but I don't know that the Mac project existed then. Lisa was in nascent form. They were still working with Intel processors. They hadn't gone to the 68000 at the time. Right after I started, within 90 days or so, they made a switch to the 68000 family, and the infamous LUCY OEM machine was beginning, which was a development environment with raw hardware running Smalltalk on the LISA machine architecture. And LUCY was going to be the OEM machine for Compugraphics and others. And Lisa was going to be the Microsoft Office… or the Apple [equivalent] product in that era.

Markoff: And your first job, what was your responsibility?

Lewin: I was in charge of market development for the Personal Office Systems division. So POSD was the Lisa division, and I was directly reporting to Joe. And he had industry segments. He had education, and business, and training, and whatever. He had three or four industries they were going after. And I was a staff person to Joe, and I sat in on Trip Hawkins's staff. Trip was running marketing for POSD, who was reporting to John Couch, who was doing all the engineering division. He was the general manager. And Wayne Rosing was doing the engineering side of Lisa under John.

Markoff: So you were there almost… let's see, Lisa came into the world in '83?

Lewin: Correct.

Markoff: Yeah, so it was two to three years…

Lewin: Yeah, exactly. I had two plus years of solid play in the lab, play with Smalltalk. I mean, I got my hands-on master's in reading all the basic research about windowing systems, and mice, and all the SRI papers, and the Stanford work, and the CMU stuff, this was all that stuff I was reading and living with, and then getting tutorials from people inside of the engineering organization. Larry [Tesler] and I became really good friends then. He was very helpful to me [and] a lot of other people. And what I was working on was setting up a preview program so that the soon-to-be direct sales force that Apple was hiring could bring in Fortune 500 types to preview the Lisa system.

Markoff: And, just for you personally, making the switch from being a sales guy to developing a market for a new product, was it kind of a challenge, in moving from Sony to Apple? I envision sales guys as being under real high pressure all the time. Did it feel like you were decompressing and getting in… you talked about playing.

Lewin: Well I was learning a ton, and so that was the fascinating thing. But yes, I mean, frankly I took a significant cut in my income, because I was making a lot of money selling the stuff for Sony by then. A lot of money, I mean, it was, whatever, $80,000 or something like that. But I was making $40,000 going and working at Apple.

Markoff: Was it just the excitement or the potential? What--

Lewin: Well, I had started a family by then. I had a son. I felt like working for Apple would have immense long term potential. And there was a certain amount of stability relative to sort of straight commission. I felt like it was going to be the place. I mean, microprocessors were going to manifest themselves in a human way. Systems were going to be built that people could engage with.

I was so blown away, effectively on my first day, when I left the orientation program where I wrote a little basic program, like everybody had to do as you came in the door at Apple, to going into a dark room with one way mirrors and playing with Lisa draw, this drawing program, with Larry and others watching me. Because there weren't too many people that they could bring in to experiment with like that. And then learning how these systems came together… so I felt like I was in this learning mode.

And so, yeah, in terms of decompressing, it was more that I was just devouring my brain. Frankly, I remember talking with my wife about this. It's like I was exhausted, because I was learning multiple new languages at the same time. Whether we were working with Oracle, and there was going to be SQL queries against an Oracle database-- and these were early, early days-- LISP, Smalltalk, you know? And I was playing with these things. So my brain was like processing…

Markoff: You were right at this juncture where the first personal computer was already sort of seen. But the scope it was going to have, and the impact on society, was just becoming apparent.

Lewin: I don't even think we had a clue about the scale. There was sort of this notion of this vision that one person, one computer, right? But to what end? And we all were given a loan-to-own machine. So, you walk in the door -- if you were an employee 12 months later -- you own it. So everybody got an Apple II. I had an Apple II at home. But, again, the usefulness of these machines was -- it was very limited. I mean, it was Fred Gibbons, you know? It was little file programs to store. You know, it was like more work than it was worth.

There were little worlds and environments within which you could see that people were going to program amazing things. And you could sense the scale of how things were moving. And then especially spending couple of years with the engineers who were working on the Lisa -- I mean, we're going to put a megabyte of memory in this machine, you know? It was going to run at a million instructions per second, you know? And there was going to be a hard drive that was going to be five megabytes for $3,500. I mean, for less than $10,000, you too can have a machine that does all those things.

Remember, in parallel, Dave Liddle and crew were doing all that Xerox Star work. John Shoch and all that stuff was going on. And Xerox was making their way, sort of kind of, but not really, into the commercial use of graphically-based networked systems. And so there was a huge belief around the stack of office automation, so databases, and drawing programs, and word processors-- everybody was building a vertical stack, right? IBM had theirs, their System One, or whatever it was. Wang was trying to do what they were trying to do. So Apple was clearly going to be the breakout company that was going to democratize this stuff. So that was the excitement.

Markoff: Was Wozniak gone?

Lewin: He was around, but not active.

Markoff: He'd had his plane accident?

Lewin: I don't know that he'd had a plane… he was off doing the US Festival stuff for sure.

Markoff: Yeah, so the plane accident had already happened.

Lewin: Yeah, right.

Markoff: So what was it like to work for Trip Hawkins?

Lewin: I like Trip actually a lot. And I learned a lot from him. He was a very pragmatic and sort of logical thinker, and sort of game theorist kind of thinking. And he ran, I thought, sort of an effective sort of staff meeting, and was a very good sort of conceptual marketer as well. So I got along quite well with him. And I remember, when I interviewed with him, he asked me about a book -- like, 'what books had you read in college, or something that had stuck with you that you learned a lesson from?' I just said it was Essence of Decision. It was Graham Allison's book about the Cuban Missile crisis. And he'd studied with Graham Allison. It was a total coincidence. We sort of started talking about those things. And so I liked that.

Barry Smith worked for Trip, and he was very patient and is a very clear thinker. He helped me a lot by giving me… I took an hour or two of his time every week, and he sort of gave me some hands on tutorial stuff. He'd worked at Intel, et cetera, so he knew systems-level stuff. I don't know if he was an engineer, but he had the aptitude of an engineer. And so he helped on-ramp me to a lot of things so that I could be smarter when I would go into the lab with the engineers and not waste their time.

Markoff: But this was all directed at building a way to preview these machines that were two years out. And you wanted to sell them effectively into a market that didn't really exist yet. You wanted to create a market.

Lewin: That's right, and to build out the methodology by which we would use the dealer network in a direct sales organization to actually pre-sell and then do the delivery through the dealer network, was the way things were going. Because you have to remember, at the time it was against the law to ship a microcomputer through the mail.

Markoff: What? I didn't know that.

Lewin: It was a Consumer Protection Act fraud issue-- we'll have to go back to that. So yeah, there were all these issues. Apple originally sold through distributors, right? We'd sell to the distributor; the distributor would push them out. And then Apple bought out the distributors about the same time that I came in, and put in place manufacturers reps who had exclusive territories. There were like 16 territories in the US.

And then the reps would sell to the dealers. The distributors sold to the dealers. And, when the distributors were selling to the dealers, there was a lot of issue around -- I think it was like 42nd Street Photo, or whatever, in New York -- shipping things around, and then people buying a microcomputer and thinking that it was going to bake bread for them, right? So there were concerns about that. There were lawsuits. We have to look up the facts somewhere, but this is what's in my mind.

So, with the manufacturer's reps, they sold directly to the dealers. And the dealers couldn't mail order. And so we'd be tracking serial numbers for guys that were mail ordering around and stuff. So that was very complicated. So the thing that was going on with the introduction of Lisa was the building out of a direct sales channel, people from Xerox, and IBM, and other companies that knew how to sell computers directly. And they were going to set up these national account programs by which you'd go to a big bank, and sell them the contract to the equipment and then have the dealers deliver the products and do the training.

And so, even in education -- so let's just say the margin was 35% or whatever. We'd sell education on a state contract that the rep would sell to the state at a 40% discount. The dealer was only getting 35%, or 38%, or whatever it was. And so the dealer couldn't bid on it, right? But the dealer would bid on providing the service, and we would give them margin, a service training and orientation fee on top of that. So we made less money on education, but we had these blanket-buy systems. So it was kind of channel dynamics that were very serious. And so I was deep into the channel dynamics and doing some of the math on that stuff.

Markoff: And then, I've forgotten how Lisa was actually introduced. Was it a Cupertino event? Do you remember?

Lewin: That's a good question. I still have the posters. If you remember, there were posters of Lisa. I got two of them. It's fascinating, because we commissioned art …

Markoff: Was it introduced like the Mac? Did Steve stand up?

Lewin: No, it wasn't as big a fanfare, but it was -- boy, you know, things took lead time. You remember the magazines? Four to six months embargo, because it took 90 days to go to press, and print the paper, and ship the magazines from wherever, all that stuff. So there was an event, but it wasn't fanfare in the sense… I don't recall.

Markoff: But I remember there was a tremendous amount of excitement around [Lisa]?

Lewin: Huge amount of excitement.

Markoff: So something created the excitement.

Lewin: Yes, and I can't remember what it was. But it wasn't a Flint Center big shindig.

Markoff: I remember seeing a Lisa at downtown [Palo Alto's] University Avenue Businessland. I think that might have been the first place I saw, or at least got my hands on a Lisa.

Lewin: Sure, sure. I can't remember the event either. It's totally blank. I don't know.

Markoff: Maybe it was in New York. Did it get launched in New York? Is that why I didn't get to it?

Lewin: Yeah? Probably. I don't recall being there, or I would remember, because I have a pretty good memory for most of those moments.

Markoff: But what I did see is apparently you set up a demo environment. Or did you create it?

Lewin: That's right, I built a room-- a sneak preview program. It was called the Sneak Preview Program. And I built a room -- $250,000 to build a room. And there were three bays that had curtains that were behind where the guests would sit. And it was a long conference table, and I would stand up, and wear a suit, coat, and tie. I was good at wearing a suit. And I ran the day, and there were about 80 of these events over the course of about a nine or ten month period. So we were running a fair number of them every month.

Markoff: All before the intro?

Lewin: All before the intro. It had to be the CEO. They were all pretty much US companies, but big banks, insurance companies, Fortune 500 companies -- had to be the CEO. And everybody else had to be an officer of the company, up to six. And so usually it was the CFO, sometimes the head of marketing, maybe if they had a CIO -- like maybe Max Hopper, but there were a very few number of CIOs in the day.

But these six folks could come. And we had a full day preview program where we would unveil things. And we would talk about it. And then there would be an unveiling process. So we were talking -- because we were working, again, with Oracle for corporate databases. SQL was a big deal, and all that. And we talked about the programming languages. And they all want Fortran, and we didn't have Fortran. It's gonna be Pascal. We didn't have any coders in Pascal…

And then we would have an unveiling, and they would turn their chairs around. And there were these, again, three bays. So it would basically be one person at a time, but they'd kind of share. And we had the Lisa tutorial, which was a 20-minute walk-through to learn how to use a mouse and navigate and move around. And they got their hands on a machine. And that happened before lunch, and then we would eat, and then we had more things. And then we did a tour of the factory after lunch, which was a cart<???>. And one person was going to build the machine. It was very artisanal, you know -- sort of a guild-oriented kind of thing. And we were going to scale up manufacturing in that manner. And we had the big rack of machines, and running the cycles for the MTBF (mean-time between failures) stuff. It was quite amazing.

Markoff: And was that an effective way to introduce people to the Lisa-- looking back on it?

Lewin: Looking back on it, I think it was, frankly. I think the idea that no one would escape without putting their hands on the equipment… and it was a collaborative approach. It was my program, but there were other people who helped, and obviously had lots of input in how we would do this, because we'd been doing a lot of training and tutorial work, and this one-way way glass, watching people and seeing how they use the systems. It was Ellen Nold and her team, Greg Stikeleather and those guys, that were building all of that stuff. Ellen was a Stanford English PhD type who was doing cross engineering and all kinds of… she was married to Mark… goes by Bob Cringely these days … Mark Stevens.

Markoff: Oh yea h-- oh my, I do remember

Lewin: Also known as Robert Cringely.

Markoff: Yeah, Cringely-- yes, of course. Oh, interesting-- yeah, so he was-- was Steve in the mix at all?

Lewin: Not directly. Steve found his way back in, if you will, on one of the sneak previews which we did with Mary Kay Cosmetics. And the reason why is because Mary Kay had been the first -- I believe one of the earliest, if not the first -- customers [of the] Xerox Star. And Richard Rogers, I think his name was, who was the CEO -- and I think he was the son of Mary Kay, or whatever -- but, I mean, a well-run and interesting company with I don't remember how many thousand Mary Kay ladies out there, if you will. And they had bought into this notion of graphical interface, ease of use, and, to some extent, networks.

The premise they had was that they wanted to use a Mac for their field agents, where they could all input, and then--

Markoff: Do you mean Lisa?

Lewin: No, they wanted to use Mac. So Steve, by then had-- yeah, I misspoke. Steve had taken over. Raskin was gone. Steve had taken over the Mac thing … Texaco towers across the way. After every one of these previews, I wrote a management report, two to four pages, whatever, but a concise summary of what we experienced with each of these customers. Of course, the salesperson had to be party to the whole process, so they'd bring in a briefing about the account, and then I'd summarize it and roll it up. And that went to the exec staff. And so Steve got all those reports in a big binder of those things.

And, when Mary Kay was coming in, and the background showed that they were a Star customer, and that they had a vision -- and Mac was rumored by then. There were general discussions about it. And this was in, whatever, '82 probably. And so anyway, Steve stuck his nose into the Mary Kay meeting. And it was soon thereafter that he came at me and said, hey, you need to come to work for us over here. So like 10 of us there…

Markoff: Sculley was there by then?

Lewin: No, because I was already in the Mac group before John came. John came in '83?

Markoff: Yeah, '83.

Lewin: Yeah, now this was '82 that I-- summer-ish--

Markoff: Wow, you moved very quickly. I see, so at Lisa you didn't do education-specific stuff.

Lewin: No, I did-- the answer is no I didn't, but yes I did. What I did with Lisa was, in my sojourn to learn things, and where all this came from, and who the logical market would be-- because the company was going to go sell to the Fortune 500 with Lisa. And I'd done all this work learning for myself where I had discovered that the university research community were the ones who actually wanted these machines. And so I had brought folks from Stanford, folks from Carnegie Mellon, folks from Brown in on my own time, had them sign non-disclosures and see the Lisa on my one-on-one time. So I got the feedback from them about what they wanted, because they were interested in the infamous '3M' machine.

Markoff: I was going to ask you -- the 3M consortium existed already?

Lewin: It was in process, and so I'm like, no, this is my world. This is what I wanted to do. And so I went forward to a meeting with Markkula, Steve, Wayne Rosing, and Floyd Kvamme -- because Floyd said we need to invest in Carnegie Mellon, in this Center-- the IDC, Information Development Center, whatever it was going to be called.

They wanted $20 million. We were $100 million in sales at the time, on our way to three hundred and some million in sales, whatever it was. The numbers were small. And they wanted $20 million from us to have the center. And I actually wrote it up, and I got the audience, and we talked about it. And everybody in the room-- Steve, Wayne, Floyd-- they all said we should do this, but we can't afford it.

I mean, they knew, but I was carrying that energy into the system then. So that's, again, later on, what motivated Steve to… so I wasn't doing anything in the market, but I was living with those people in terms of learning. I've come to conclude that the smart people are really in the market, and you should just spend a lot of time with them. And so that was a real learning experience for me.

Markoff: But in that period in '82, it's a year before Lisa has happened. You've built this system. Steve comes and takes you away. In terms of the corporate politics of Apple, what kind of a decision was that to…?

Lewin: Well there were three things that were available to me. One was that, and the other one was the selling organization wanted me, because I had set up and knew how to communicate all of this stuff. And then the Division (POSD). I could have gone into the Division. And so there were sort of three tugs at that. Personally, the company was growing like crazy, right? By then, we're $300 million on our way to almost $600 million, on our way about $900 million, and on our way to $1.2 billion when I left-- or $1.3 billion, or whatever it was.

And so there were more opportunities available running-- it's like, scoop one up. They were everywhere. And so the compelling conversation was really with Joanna Hoffman. I mean, Steve called me up and said you should do this. But then Joanna came over to see me, and we walked around and started talking about what was going on. And no one had seen, because it was a very well guarded secret, the whole Mac thing, even inside of Apple. And so no one really had seen what was going on. And so they invited me into, you know Texaco Towers, and I sort of looked in. And I said to myself two things in terms of the market that I was really keen on, which was driving this into the university community. And it was approachable. It was like I could get my arms around this thing. And it was like I could grow with that

thing, whereas Lisa corporate systems, connecting [to] the mainframes, terminal emulation-- that to me was daunting. And I learned it a little bit, but this thing was cute, man. It was really…

Markoff: And questions in two directions-- had Trip left? Was that one of the things that made it easier? Would Trip have tried to hold onto you…?

Lewin: No, I mean, I-- he might have already been gone, I think.

Markoff: I think he left really early.

Lewin: I think he went off to start Electronic Arts. I think that he was gone, and he took the other guys, Hugh, or a couple of the other folks. Yeah, I think he might have been gone. But there was no pressure that I recall. It was an easy choice.

Markoff: Easy choice… and then, what do you remember about the event where you were shown the Mac?

Lewin: Well Burrell [Smith] and Andy [Herzfeld] were in there, and I remember them vividly -- Capps, Steve Capps. Joanna sort of showed me around. Coincident with all of that, Mike Murray, Mike Boich, and Barbara Koalkin all…

Markoff: So the heart of the team was very much in place.

Lewin: Yeah, it was so-- so, all within that period of like a couple of weeks to a month, because Joanna was like the first person in, and then I think Mike Murray. And then he recruited Boich. And then Barbara came soon thereafter -- Koalkin. She was sort of the key product manager. And she hired John Rizzo who did hardware. She hired Bud Colligan, Alain Rossmann, who eventually married Joanna, you know, they married.

So, the pitch was we care about education. You care about education. We care about it. The Lisa folks aren't going to do that. You should come here and do that. So I was really following my passion, and, to your question, sort of the research and energy that I had. My enthusiasm was around that market, what they would do with these computers. And I was taken by the people that I'd met -- Andy van Dam, and Bob Sproull and the guys from Stanford.

Markoff: Who was at Berkeley? There was a guy at Berkeley who was an important player in this and I don't remember his name. They were part of the 3M--

Lewin: Oh, the consortia? Ray Neff, maybe? Yeah, I mean there was Peter Lyman later on-- Peter was at USC at the time, but he ended up at Berkeley. Michael Carter was at Stanford.

Markoff: Had that guy at Reed already come who ultimately--

Lewin: Oh, Richard? I hired Richard, yeah. No, no-- I hired Richard. Richard worked for me Crandall. I convinced Steve to hire Richard. He wouldn't do it. The same with-- like, Norm Meyrowitz was from Brown, Norm came out.

Markoff: So your charter when you came to the Mac group was to build an educational market for this computer, is that the right…?

Lewin: Yeah, basically the idea was -- it was Joanna's idea originally, I believe-- to build the consortia with… go to the university. It was a woman named Carolyn Autry-Hunley who was affiliated with-- she was hanging out at Michigan. I think she was at University of Michigan -- Doug van Houweling and all those folks were up there. And Carolyn was a consultant to Joanna. And they had sort of grossed up an idea of selling Macs to students. So the idea existed, and the approach I didn't think would work.

When I was taken over there by Joanna to see the machine and to listen-- Carolyn was there as a consultant … to listen to what was going on. Because they were selling me to come do this. And so I spent the couple hours, or whatever it was -- a half a day. And then Steve, like he did, called me up, because it was definitely phone time back then. "So, what did you think?" And I just said, interesting, but there's three things. And I think you've heard me say this story. It's like, first I get to undo everything you've done, because I don't think it'll work. It's got to be my way. Second thing is, you help me, but only when I ask, because I knew enough. And I said the third thing is I'm going to have to go crazy on airplanes to pull off at scale what you want to do. And I got a young family, so you're just going to have to make sure you pay me when it's over. And so, those were my three conditions. And he said OK.

Markoff: And so how quickly did you say yes after he…?

Lewin: Yeah, I said yes, and I said OK. And so I made my way over.

Markoff: And you joined in '82.

Lewin: Yeah.

Markoff: Much earlier than I realized. And so then you spent another two years building…

Lewin: Yeah, and then things slipped, right?

Markoff: Oh, so A2 was supposed to come--

Lewin: Oh yeah, remember? It was going to be like tomorrow. We were like six months away, or whatever it was. Right, so I had lined up a dozen institutions to sort of buy in, and then things slipped. And I looked at this, and I looked at Steve, I said, so what do you want to do? And he goes, two dozen. And I said, OK man. So I went and I got 24. And I made it the Apple University Consortium. And I had a sort of a coordinator helper Debbie Bress, and myself and Mike Boich was my helper when necessary. And that meant talking to the computer science folks, because Mike was definitely better at that. When they'd say what's the operating system like, he would roll his eyes and say, well, from your point of view, there really isn't an operating system in here. So here's some routines you can call. So then he'd go down that path. And I learned. So Mike travelled with me as needed.

Markoff: From the consortium side -- the thing you were building -- what was their commitment as a school?

Lewin: So the premise was a three-year commitment during which time they would purchase $2 million worth of product, either institutionally or flow through to students. And each one had a different approach to how they would flow through the computers to students, either through a foundation, or a bookstore effort, or a nonprofit entity, or what have you. They all had their own approaches. Some were public, some were private, depending upon how they would work.

And they would encourage -- it was a two page agreement -- encourage faculty to develop curricula and share it. And we would help facilitate the sharing. That was it basically, so no penalty for lack of delivery, if you will, or purchase -- no downside. Because they all said, you know, we can't promise any of these things. And I said that's OK. We just need your moral commitment that you'll help us do these things.

Drexel University had been the first one to sign up to something that I actually had to undo, because Steve had promised them, in a meeting before I got there, that they would get a copy of a word processor and a spreadsheet, because Apple actually had distribution right to Multiplan and Word from Microsoft to the Mac. That was part of the deal.

And I had to undo that deal with Microsoft. And then I had to buy a lot of Word and Multiplan to give to Drexel. And Sculley had to sign off on that PO, because it was way over Steve's head. And John looked

at me and said I need to talk to the person that negotiated this deal. I said, "You work for him." So that was funny. But it was a lot of fun.

Markoff: And, you know, the Mac period has been so heavily chronicled. What stands out about that period to you? What was it like to be a member of the Mac team in that period before the period that was longer than you thought it was going to be?

Lewin: Well, it was a fascinating period of time, obviously, for everyone who was involved. We were all within the range of 12 months on either side of zero. We were all the same age. I mean, really, there were few… there were no adults around.

Markoff: Did Bill Duvall show up on your radar at all?

Lewin: Yeah, definitely, and all the C work. But he was on the outside. He was building the C Compiler. So Bill and his wife Ann, I think--

Markoff: Who died recently, I don't know if you knew that.--

Lewin: Oh, I did not know that. No, I worked with them. I worked with Andy Singer and those guys on THINK Pascal. And that was the key crux of getting it. Really, the finger in the dyke -- the thing that broke loose -- was getting Andrew and THINK Pascal adopted by Cornell for instruction. Because they had the largest introductory computer science class of any of the schools that we were working with. And when they said we're going to throw away what we built, because they were building their own environments, right? It was Conway, or some of the other folks at Cornell that had done all this cool stuff. And they said they were going to go with THINK and use the interpretive Pascal with the little finger that pointed and showed where the code executed. It was really cool.

I was traveling a lot to be everywhere I needed to be to make all that happen -- all these institutions, flying around. And so, in lots of ways, I would drop in and out. I was involved, obviously, in all the retreats, and the meetings, and those kinds of things. So my antenna was always tied to… as the term 'evangelism' was applied by that team, I think probably the first instance in the computer industry talking about technical evangelism. I was the opportunist. We got to put whatever we wanted on our cards, so I said OK, what are the opportunities? OK, we're going to go evangelize this stuff. How are we going to go and take it into market?

So, great experiences with people in the market, great learning experiences-- I remember doing things like, with guys from Dartmouth, I showed up on the campus with Mike Boich and went to Kiewit, the computation center. I'd already had Bill Arms This is a good story, actually. Bill had come out. He was running the computer center at Dartmouth. And he'd come to campus. He was visiting Stanford, and he'd come to Apple's campus.

And so I left him in the room with a Mac in the case, the little green canvas case. And I said I'm going to go get some drinks and go to the john. What do you want to drink? Why don't you take that out and set it up, and I'll be back in a little while. And he said OK. So I left the room, and he unzipped it and turned it on, set it up, and he was playing when I got back. He'd never seen a Mac before or anything like that. So I got to play all those kinds of fun tricks on people and then watch their experience, and play that out, and then use those kinds of things.

But later on, when we went to the campus -- and this was for the deep due diligence, if you will -- the first question out of one guy's mouth in the computer center was… he looked at the back of the machine. We took it, and he just said 'Does this thing come apart?' I said, yeah. And he goes, can I take it apart? And I said, if you got the right screwdriver, feel free. So he left the room and came back in with a little hex nut screwdriver or whatever it was. And we were, like, ripping this thing apart. We got the disk drive hanging out the side, because it's not an integrated drive by then. This is in '82, I think.

So he looks inside. And Mike (Boich) and I are sitting there, and he goes, is that an RS-422 chip? And we went, yeah. And so he's-- wait a minute. He left the room. A couple minutes later he came back in with the manual for the RS-422 chip. And he's like looking at the manual. And he's in the corner with someone else. And then they go whisper at Bill Arms And then Bill looks at me and he goes, uh, we got to go for a walk. And I said OK. So I leave Mike with the engineers. And Bill grabs me. We go to the provost's office, and Ag (Agnar) Pytte, who ended up being the head of Case Western. He was the provost at Dartmouth.

And so we went for a walk around the green on the campus. And Bill starts talking to me, and he said, well, we're going to tell IBM, who want to give us PC Juniors, and tell Digital, who want to give us DEC Rainbows, to take their gifts and go home. And we recognize you can't give us these computers, because you're just a small company. But can you give us a lab, because we've got this grant from the Sloan Foundation. We want to build application software that would be useful for the liberal arts, a sort of quantitative application for the liberal arts from the Sloan Foundation. Because they were at Dartmouth College, right?

And meanwhile, this is the home of John Kemeny and the BASIC programming language, the place where they invented time-sharing on these Honeywell mainframes, and all this other kind of stuff. And I had learned enough from Floyd Kvamme, and others that I'd met along the way, to sort of ask questions of people who buy from you about why they buy, because they'll tell you the truth, right? So I just said, well, why would you do that?

And they said it's very straightforward. And the provost is with us, and he said we're going to make sure that every student has one of these. If they don't have the money, we'll build it into financial aid. They're telling me these things. Why would you -- well it's an intelligent graphics terminal that we can put on our network. At which point I said, but there's no networking built into this machine. And they said that's OK. You have a high speed serial chip. We will write our own networking.

And I went, and how will you -- and they said, through the telephone infrastructure. Because it's like the academic year. So literally, they did that. And so at Stanford they had to get it into LOTS (Low Overhead Timesharing System), into the time-sharing system, bridges and routers—Cisco is born-- getting Macs into the networks, all that stuff. So we saw some amazing things emerge…

Markoff: Did that lead to… because Steve was already telling us about networking when he showed off the Mac in late '83. He was…

Lewin: We learned that from Dartmouth. And we didn't have AppleTalk, because remember, when Steve got fired, it's partly because AppleTalk didn't work. It was one of the things that John pulled the [plug on], right? I mean, Gurshan Sidhu was close, but it wasn't there. So no, in fact the whole-- I talked to Bill Krause a little while ago, maybe a year or a year and a half ago over dinner. And he was telling this story about how Steve was telling him and Bob Metcalfe that, you know, you're never going to sell this Ethernet stuff until you fix the way people plug these things in. Because they had these connectors.

So Steve did his Steve thing and got up and walked over, and went over -- and 'it's got to be like this.' And he pulls the RJ-11 jack out of the wall on the phone. It's got be like this. And I just looked at Bill, and I just said, well let me tell you where he got that. Because it was from my trip to Dartmouth where they just said we'll use the phone line.

Markoff: I've heard it alleged that, when Steve went to [Xerox] PARC on those two visits, that he sort of missed the networking component. He took away more about user interface and not enough about networking — was that true?

Lewin: Absolutely, I think. In fact, the fantasy that emerged at NeXT -- which is a fast forward-- around the market positioning, which is coincident pretty much with me quitting at NeXT, was Steve's -- as is always the case, the dramatic board meeting with Ross Perot and others where… basically, the IBM PC

was blue, right? So we had blue, red, and green. And so blue was IBM, and that was all about Lotus 1-2-3 and spreadsheets.

And that's what made the PC. And red was Apple, and that was all about desktop publishing. And that's what that was going to be. We were going to leapfrog them all, and we were green. And we were going to be interpersonal computing. So, spreadsheets made the PC, DTP the Mac and Interpersonal computing would be NeXT. And the vision was, because, in National Small Programs Week, we'd written the voice file attachment for the Brian [?], whoever it was-- you'd remember Brian. He was from Xerox who wrote the little--

Markoff: Oh yeah.

Lewin: But Brian wrote this little program where we could attach voice clips – we called it 'lip service,' basically, and send voice around. So the whole idea was this radical new thing to Steve that people actually were using networks. And we were going to position ourselves as interpersonal computing, when a NeXT machine could only talk to a NeXT machine. I look at it and go-- no, this is like a good idea in the shower, but a bad idea in the market – only our machines can talk to our machines, really?

Markoff: When was that meeting?

Lewin: Oh, this was '87 or '88. Right? I mean, still, we didn't have networking extensions on Windows, right? So it wasn't like PCs were everywhere networked, because Windows 3..1 wasn't out. But, in general, the idea of electronic mail was pretty mature. I mean, you mean you were living in The Well…

Markoff: Modem-based, still.

Lewin: Modem-based, but yeah.

Markoff: So how did your relationship with Steve evolve? I mean, I saw a couple of references in the stuff I read that referred to you guys as brothers. Would you use that term?

Lewin: I would say there was some sense -- I don't have a brother. Steve doesn't have a brother. And I would say, in many respects, some of our early time together where we travelled a lot together one on one -- we were just two of us traveling together -- we had a brotherly-like relationship in some respects. And I did, at several points in time, with the armchair analysis capability that I have about human motives, because I'm not an engineer.

So I must be better at people than I am at electrons. I think in some respects he looked at me a little bit like that at times, and I certainly -- for a few years at Apple around the Mac, well, I was traveling more. But then, at NeXT in particular, for almost five years we were together almost seven days a week.

Markoff: You had a family. He--

Lewin: Did not.

Markoff: But you socialized some. Or you--

Lewin: Yeah, he would come to our house, knew my kids pretty well. He'd -- Christmas day -- so yeah, we had a relationship. Even, ironically, later on, when his mother died-- I knew his father Paul pretty well. Paul was around a lot at NeXT especially, and Lisa was in and out. So I got to know Lisa as well, but Paul I got to know. And when Clara, I think -- when his mother died, Paul remarried.

And he remarried the mother of my next door neighbor across the street. So literally across the street-- Steve's new stepmom, if you will, was across the street. So he would end up, every once in awhile, there. He was alone a lot in that period. He and Tina had their ups and downs, and so he would come by a lot.

He really was taken by our kids. He really, truly, I think loved kids. And so we did spend a fair amount of time.

Markoff: And you got him into swimming, as I recall.

Lewin: Well he swam in high school, or so he said. I don't know. He wanted to race me once.

Markoff: Did you race?

Lewin: We did race. I told him that I initially wasn't interested in racing unless he was willing to put up a percentage of his net worth against a percentage of my net worth. But we did race. I gave him a little bit of a handicap and toyed with him a little bit.

Markoff: Just dialing backwards to the Mac introduction, the highs of the Mac introduction, and the sort of impact it had on the world, and what it looked like from inside…

Lewin: Well it was a phenomenal time -- stressful in particular for the -- I witnessed it really from afar, not so stressful for me personally as much as what Andy, and Capps, and Bruce Horn, and others who were kind of living in a conference room for the last couple of months almost who put things together. And us getting in a limo to go to the airport and do the rollout work with the dealers and everything, and literally them running out and handing us a floppy, or a tape, whatever the hell it was to- - it's like, OK, here's this new build. So yeah, I'm sure it fit on a floppy, because the OS came with every app. So yeah, it was a floppy for sure. So the rollout activity was extraordinarily energizing.

And my world, I was then carrying it forward into the universities, right? So part of it was getting enough inventory to go beyond the dealer network and directly get to the universities. And, because we did the introduction in January, and things sort of frittered along for a while, I was really looking at summer deliveries for fall-- for the academic year. And we actually saved-- we, our little program-- there's a few people in the field that helped me, but it was really my program at corporate [that] saved the company's ass on inventory penalty costs, because the dealer network topped out at about four units a month per dealer. And the factory was running. And I think we had about 20,000 units in inventory at launch. And maybe the build rate was about that per month-- about 20,000 a month. But it took a bunch of months to get to that point. But then the ramp was going up.

And they kept building. And the dealers would only take replenishing their initial shipment, and so all that inventory that got built I took and put into the universities. And so we shipped 50,000 computers in the university community like that. And then that gave us time, seeing where the dealers were, knowing that it was going to be a burst into the academic year, for the big orders where they were hard orders, like Drexel with 3,000. And Dartmouth wanted a couple… 3,000, whatever the numbers were, et cetera.

But then there was like the purchase order from University of Texas where Charlie Warlick came to me and said I want to get my place in line. And he gave me a PO for 30,000 computers. When do you want those, Charlie? As soon as you can get them to me. You know, and they took a lot of them, but they didn't take 30,000 out of the chute. Over time I'm sure they did take more than 30,000. But that period let us turn back the inventory for manufacturing RAM because the penalty clauses and the lead time, especially in those days, was immense. So we both made a lot of money. The margins were extraordinary through that program, but I also saved the company a lot in that period.

Markoff: And were you aware of Steve's relations with Sculley during that period? Was that something that was visible?

Lewin: Yeah, definitely. I mean, I was there when John interviewed. I was in a room with three or four people when John was not employed. And he came to, quote unquote, visit as the CEO of Pepsi and quote unquote, see what we were doing under the covers that no one else had seen, and all of that. It was clear that Steve was… because John was asking questions that were very different than what a CEO

of a company would have asked. He was clearly either not yet signed, or… but yeah, so I met John then. I have a good rapport with John, actually.

Markoff: And did you have contact with him on the Mac team, or was he in and involved, or was--

Lewin: No, he wasn't so involved in any of the day to day stuff. He was running the business, making ends meet, and, all things considered, Apple II's were saving the day, even though that period when we announced the Mac, and we did the test drive program, and all of that. We were driving people into the dealerships with the "test drive a Mac" program. Remember the little-- everybody got a driving glove. You probably got one somewhere.

And the manuals -- speaking of Chris Espinosa -- the little manual that sort of fluttered down versus all the heavy books from other computer makers. And all that introductory advertising-- like, come use this easy machine, test drive-- but, in fact, the dealers, they had mortgages to pay. And so when people walked in and they'd say, you know, I want to look at the Mac, they'd say well what do you want to do? And they'd say, I need to run inventory on my whatever… small business. It's like, well let me show you this. And they'd take them to an Apple II. So Apple II sales went through the roof. I think we even had difficulty making enough Apple II's at the time, because the sales went quite high.

Markoff: And the III was out there as well.

Lewin: Yeah, but that was a problem, and we were shutting it down. That pretty much was being shut down.

Markoff: A computer I always liked a lot-- it was very sad.

Lewin: It was great! In fact, Taylor Pohlman, who was working on that one -- again, I remember vividly -- he spent three or four hours with me and took me through the difference between DOS and SOS -- and it was like, oh, the sophisticated operating system, as opposed to DOS. So all those folks gave me great learning curve for what was going on under the hood and how things worked. It was a good machine, actually. It really was.

Markoff: And, when Steve was forced out, was it a shock to you?

Lewin: I'd left the Division by then.

Markoff: Oh, I didn't realize--

Lewin: I went to work for Bill Campbell in the sales organization, and I ran education -- actually in marketing, I should say. I ran the education and marketing. There was a selling arm that was different. But I ran all K-12 and Higher Ed marketing. And that was I don't know how many months after we shipped. And so, all things considered, I was dealing with the Division a lot.

But, when Steve got pushed… and John pushed pretty quickly. Because I remember, at the sales meeting that year, all the stuff they showed off at the sales meeting, there was nothing behind the curtain. I mean, all the engineers were fried, and they couldn't work. So everything that got showed off at the sales meeting was hollow, and so that's when I think John realized that there was nothing behind the curtain. And, at that point, I wasn't truly surprised that John had made that move, but then [Jean-Louis] Gassée coming in was… that was a surprise. That was definitely a surprise. And then Jean-Louis wouldn't share anything with anyone inside the company, and so that was really bizarre. That's when Steve called me, and so I was ready to quit. I mean, it was like.

Markoff: Yeah, and how did Steve approach you?

Lewin: He had called me up. It was the Tuesday after Labor Day in September. And it was just one of those Steve calls. It's like hey, Dan'l, it's Steve. How are you doing? Ah, you know, it's-- I'm OK. Yeah? What are you doing this afternoon? Go for a walk?

Markoff: Where did you walk? Do you remember where?

Lewin: I went to his house in Woodside. We went up and spent a couple hours walking around sitting, playing with Mark's dog.

Markoff: But it was so in line -- it's striking to me how much in line it was with what you had built. In some ways it was like a direct arrow from what you'd started at Mac. Was that part of the original vision?

Lewin: Yeah, absolutely. And the stuff that Rich Page was building was… Rich was very deeply engaged in paying attention to the stuff that I was bringing in, in terms of this '3M' machine. And so there was a concept of Big Mac and Fries that you may recall, which was the notion of a 17-inch display Macintosh that was a self-contained box. But it had slots so that you could [expand it] … and it would run Unix, too. It had a dual boot capability. So we were definitely on path. Rich was building something that would have been interesting to the university community.

And Wayne Rosing was off building Jonathan, which was an Apple II that would run Mac in color, and with these modular skins, and all that other kind of stuff. So Wayne and I were pretty close. And Rich and I were pretty close, because both of what they were doing was of interest to me. And so then Wayne quit and went to Sun. And then Rich was like… his stuff got canceled, because Jean-Louis blew all that stuff up, because it wasn't his. The king's dead, love live the king. I'm the new king. I'm going to build my own stuff, right? All that stuff that took a whole long time, as opposed to following those… because both Wayne and Rich were building really interesting products that I think would've done quite well in the market. But that's just my opinion.

But what Steve's point was -- you know, we really care about education. I mean, I had difficulty after Steve left and Floyd Kvamme had left. I didn't have any more air cover for what I wanted to do. And John was too shy to stand up, frankly, at that period. Because I had some one-on-one time with John, and he was uncomfortable with that. University presidents were calling and saying, because somebody was making statements about us not selling to the universities anymore. All this stuff was out there. We were doubling down on the dealers. Campbell was a dealer guy, because he came from Kodak. Michael Lorelei was from Playtex. He was a dealer guy. He was running sales. Tom Morana was a Pepsi guy. And so they were all going back to the dealer, back to the dealer.

And I was doing all the direct distribution, sort of the Dell model which Steve then re-implemented when he came back to Apple. So I'd done all the distribution work inside of Apple to go direct. So studying with the people who had worked with Porsche when they had a chance to break their distribution agreement with Volkswagen Audi and go direct.

And so I had done some work with some consultants, a guy out of Minneapolis -- I can't remember his name -- who had worked for the Schutz family, or whoever it was, to help Porsche think about what it would mean to go direct and not have the dealer network, and how they do it with affinity groups -- again, loyalty programs. How do you get your following? And so the whole idea was Porsche owners sell Porsches to other Porsche owners. And they were going to have distribution points, but little showrooms only.

And so there were ideas. And Steve had ideas about Apple stores and things like that even back then. And so that tape came back when he went to Apple. And that's all the work that I was doing. So, with NeXT, how to approach the university community? It was supposed to be a $3,000 machine-- how we were going to do our distribution, how we were going to leverage the channels and stuff that- - if we had had a $3,000 machine, and things had been architected appropriately then, and the relationships that we had in place that never materialized with IBM, the computing industry would be totally different.

Markoff: Were you involved in those discussions with Andy Heller from IBM that built that relationship? What did you think of Andy Heller?

Lewin: He's a genius, man. He is, in many ways -- fiery, and upfront, and willing to be convinced, though. I mean, he was very smart. Larry Loucks was the other guy down in Austin that was doing all their POSIX and UNIX stuff. Jack Kuehler was the notable shepherd in the whole process. He was the vice chairman at IBM.

Markoff: And, if that had come together, what would it have looked like, the NeXT relationship with…?

Lewin: Well, there was a joint logo place designed by Paul Rand, who designed the IBM logo and the NeXT logo. And Allen Krowe was the CFO at IBM, and he brought that out and showed it to us when they volunteered that they would be willing to manufacture and distribute our computer worldwide for us, and that they would put it on every employee's desk at IBM and run our infrastructure over PROFS.

And this is at a period when Windows 2.0 was on the market, and Apple was raising prices, and the ISA bus was blowing away the micro-channel, and IBM was struggling. And so there was a period of time where the industry would have been very, very different. And we were working, coincidentally, at the same time with Ed McCracken and Forest Baskett on building a board – SGI board -- that would have plugged into the NeXT backplane, and had been a little Indy machine running in NeXT housing.

Markoff: And so what kept the IBM thing from coming to fruition?

Lewin: Well I quit before it actually happened, but I do know secondhand, but pretty close-hand, because I maintained a relationship with Jack Kuehler, and Bill Lowe, and Jim Cannavino, and those guys later on -- Nick Donofrio, the last one standing at IBM in terms of that regime-- and what they had wanted to do, and why they walked away. But IBM never shipped anything that ran NeXTSTEP. And the reason was because Steve wanted to renegotiate the deal and get more money out of them. And they thought, kind of, version 2.0 would've been just them providing a little input, and then, just like customers do, getting the new versions as appropriate. And so things blew up.

Markoff: And I got the sense that, for whatever the reasons that the NeXT didn't sort of track where you guys wanted it, Steve blamed you?

Lewin: No.

Markoff: So that wasn't the… what did I read that suggested that…why did you leave?

Lewin: We had $120 million or so in the bank, and it was glaringly obvious to me that he was going to burn through all of it in about 12 to 15 months, and there would be no stopping him. The board meeting -- I quit the week after this board meeting where Perot blew up and quit. Everybody was done with him. I mean, he had 51 plus percent control of the company, and he was taking no input from anyone. You know, there was a crash course towards the pizza box, right? The lesser expensive machine -- I can tell you how that came about.

We were sitting at a retreat at Quadrus you know, 3000 Sand Hill Road. It's the Christmas holiday break – whatever -- and it's his first day back, probably took a day off. And we were sitting around, and we were all waiting for Steve to show up, right? So it's basically the founders of the company and a few other people, probably. And we were waiting, and waiting, and waiting, and Steve comes in, and he's morose. You know, things aren't going well.

Remember, we had version 0.8, version 0.9, and then version 1.0 coming, right? And that was a six-month period in which we did all those things. This is in the middle of it. And I'd agreed with Bud, who was running Software, that-- given the supportability issues, that we would only sell 2,000 computers before

we had a 1.0 version that could actually be supported, and we could train someone -- Businessland and others -- to actually provide support infrastructure.

So we're well on our way to that. People wanted to buy these machines, because they could run Unix -- Berkeley Unix, and all this other kind of stuff. And then there was a Mach kernel in there to play with, and all that -- Interface Builder, and we had bundled Sybase with every machine, so it's a real relational database core inside of every machine. You know, lots to do and explore -- we had Mathematica.

We'd been working with Stephen Wolfram, where you had digital library stuff that Michael Hawley had done. We had all of this stuff from Stanford-- the CCRMA stuff for all the music synthesizer stuff. Rob Poor and these guys had built these kits. So I mean, we had all this stuff to play with that was really, really interesting. So we could sell a lot of it.

But, when Steve came in, and he was sort of morose, and he was down, and I was sitting there, and I sort of said, 'you know, we built this company to sell a $3,000 computer. We have a $10,000 computer. Why don't we think about designing a $3,000 computer that people could use and that our market could afford to buy?' Damn, that's a good idea. Let's do that. And so Rich, and George, and Steve, and the whiteboards show up, and all of a sudden it's like, OK -- how will we skinny this thing down? How do we build it with a hard drive? Yeah, of course we had a hard drive in there, but how do we do this?

And meanwhile, Sun was taking the cake with SPARC and all the other stuff that they were doing. Because they knew, but we had a distribution model that, if we would've had a $3,000 box-- you got to realize, Sun had -- they were about $400 million, right? They had just gone public. In their annual report they had a pie chart that showed all the segments that they sold to. And there was no one segment that was more than like 16% of their sales, or something, but not even 20%, so lots of segments that they were selling to.

For the most part, they were selling their hardware to an OEM who was bundling software on top and physically delivering the hardware and the software together, whether it was Frame, or Interleaf, or these CAD machines -- all this other stuff, right? Kodak was selling their machines, AT&T -- everybody was bundling. So what we were doing is cherry picking all the software on top, getting those guys to migrate, have Businessland push the distribution out. All they would have to sell is their software.

So their cost of sales would change. They wouldn't have to carry inventory, and we could build to order with our factory. So I was going disassemble Sun's entire channel play. They would get all the IP, all the software -- because we always knew it was the software, right? But then you just push the boxes out. So, if we would have been able to play that out in a reasonable way, with a reasonably performing machine that was less money, where they could sell their software for $10,000 a copy, as opposed to having to carry inventory, and then have IBM be pushing an Intel machine which they were building into the retail channel, which is where they wanted to go? It would have been very different.

Markoff: And you just couldn't reach the price quickly enough.

Lewin: No, and then, you know it's… and that goes to all the stories, some of which I've said, about the paint job, and the cube itself was supposed to be burdened, fully finished, ready to have the board stuffed in. It was supposed to cost $50. The paint job cost $50. It was a magnesium thing pressed by… you know, it's like…

Markoff: And did you try to reason with Steve on that?

Lewin: Oh, of course! Of course, it was insanity. It's just… that's pathological, you know? I mean, another story -- so, when we finally concluded that it wasn't going to be the magneto-optic drive in every machine, and then your world in a backpack -- you know, whatever it was, the whole thing-- mainframe on a chip, all that stuff. We put a hard drive in every machine, and they were 400 megs, or whatever-- 360

formatted, or whatever it was. It was Maxtor, HP, and Seagate maybe. There were like three manufacturers that you could pick from.

And so the meeting where we decided which drive to pick was a staff meeting at the factory which we did once a month. And we gathered a crowd, like you do. And we listened to all three of them, and picked the one that sounded the coolest. It didn't have anything to do with whether it was the most reliable or not.

Markoff: Oh, dear.

Lewin: But they were all good, you know? So it was like… but that was the…

Markoff: The factory was impressive. I remember that factory.

Lewin: It was a beautiful factory.

Markoff: And America was still making things. So you left. Did you do stuff between NeXT and GO?

Lewin: No, there's a two week--

Markoff: Oh, it was really quickly.

Lewin: Yeah, yeah.

Markoff: And was it Jerry who brought you to GO?

Lewin: John Doerr called me. I got a message from John. I remember those little phone messages… message from John Doerr. And so I talked to John, and he said that amazing things were happening, and new interfaces, and pen computing. So John and Vinod [Khosla], he was not yet at Kleiner. He was still a private investor. And then Dave Liddell -- those three were the board. And I met with the three of them. I met with each of them -- had dinner with each of them.

Markoff: And what was your role at GO?

Lewin: Sales and marketing VP, and the belief that when I arrived was they were going to ship this thing within four months, three months.

Markoff: Had you learned by that time that--

Lewin: Oh yeah, yeah. Well that was my last big mistake. I've made plenty more since. But that was my last big mistake, was trusting the technology. I did my homework in terms of knowing that the company wouldn't fail for lack of money. So I knew that, but I really believed in the technology. And it was very naive, because the technology -- not the least of which, the communications infrastructure didn't exist that would allow a mobile device to really function well. But even the application layer really needed to be a customized, targeted, skinnied-down machine. They needed to be vertical machines, as opposed to a general purpose operating system. It just was-- they were running on a 286 when the world was 386, and I said stop the music. And there were all kinds of…

Markoff: Let's see, was Mitch involved in that?

Lewin: Yeah, Mitch was an investor, because Jerry had been the principal whatever, the CTO engineer, distinguished engineer at Lotus or whatever. So Mitch was an investor.

Markoff: And what was it like working for Jerry?

Lewin: It was like working for yourself. He was mostly working on a book or something. I couldn't quite tell. It was very quick after arriving there that… there was another guy that was hired at the same time I was to be the manufacturing guy -- Paul. He was a good guy, and he'd come out of Grid or something. He'd built small, sophisticated machines, quite capable. And so it turns out that the board was also recruiting for a COO at the same time. They didn't tell us that, but they were. And we found out about that. I didn't, Paul did in the interview loop when they said, hey, we'd like you to meet so and so who's going to be your new boss. It's like, OK, interesting. And that was good.

And they couldn't close. I can't remember. I know who we met with, but I'll save them, I guess. They would have been good. And then Vinod came to me and said he thought that Paul was poisoning the well in the interview process, because nobody would take the job. And I'm on camera, and this is the truth-- and I just said, I don't think he is, but you should go ask him. And goes, well, you know, well why isn't anybody interested in the job? And I said because you don't need a COO. I said, you need a CEO really fast, or I'm gone too. So that was the fact.

Markoff: So much more complicated-- so I didn't know that internal history, but at some point there were these interactions with Microsoft.

Lewin: Yeah, before I got there, there were a set of visits by Microsoft folks to write, quote unquote, application software for PenPoint, whatever the GO OS was called at the time. PenPoint was it in the end. And I was surprised that they had done that at that moment in time, so early. And it motivated me to push very, very hard very, very quickly on filing provisional patents and things, because no one's paying attention to the IP issues.

And, once you -- even under non-disclosures, you've got a 12-month window. And once you go public, then it's public. But there's -- I forget what the laws are, but there is a period where we had to skirmish, and write a bunch of provisionals, and get a whole bunch of patents filed, because we live in a world where intellectual property matters and getting that filing going. We also met with Sun. We met with Andy Bechtolsheim and other people at Sun. We met with a lot of people.

Markoff: And you stayed for a couple years.

Lewin: Two years.

Markoff: And did you get into the market as a product during that?

Lewin: No, I mean, I'd say at the end of the day I just had a falling out with Bill Campbell, who -- not personally, but professionally -- he wanted me to do things that I wasn't willing to do. So, when you quit the team, and he's the coach, he asks you to leave. And so he fired me, which was fine. They kept me around and on payroll for a long time, and took care of me very nicely. So I have no complaints. I was treated very, very well. I don't think things ever really shipped. I don't think there was ever really…

Markoff: I just remember the demo from Jerry. That's what I remember, is the Pen demo.

Lewin: Yeah, I mean that – EO -- remember I brought Hermann Hauser to the table, the Active Book Company, the Hobbit, CRISP chip from Bell Labs. Larry Tesler was at Apple working on Newton. Newton was supposed to be based upon the C architecture from Bell Labs, a CRISP chip which later was called the Hobbit chip, right? But that flip -- they went ARM, and then Herman came to work under EO, which Alain ran. And we flipped and went with the Hobbit chip, because AT&T put money in GO to keep GO afloat. And we got Intel to invest to keep GO afloat. And then Bill wanted me to go to Japan and raise money from the Japanese, and I said sorry.

My view at GO was -- look, I watched the Lisa movie. I wasn't really in the division. I had a part in the Mac movie, like a real part, right? I conceived of and was sort of like a producer on the NeXT game. Here I am at GO. There's nobody on the planet that's been through what I've been through. I'm telling you, Bill, that

this thing is a disaster … you don't even have a test [suite to figure out what an alpha looks like in terms of capability of this machine.

And you've got an Intel version, you've got a double byte version, and you've got a Hobbit version all under way with one engineering team that doesn't know how to test any of them. And you got an engineering team the size of $100 million software company. This is not going to work. He didn't want to hear that.

Markoff: Maybe you can't answer this, but you know there's the longest running lawsuit in history still between Microsoft and GO. You're probably deposed by both sides, I imagine. Is it an interesting situation to be in? Just say if you can't talk about this. OK, we'll move on. But It's really an interesting bit of history.

Lewin: It is.

Markoff: After GO there were a couple of start-ups.

Lewin: I did a couple little start-ups, pulled by kid's software again -- educational software, a little one called Kidsoft. The Hearst Corporation invested in it. We had the Good Housekeeping brand, but not the seal of approval, because there's legal ramifications there -- and a little bit of consulting work during that period as well. And then I ended up running a company that was mapping intellectual property.

Markoff: Was that your first CEO position?

Lewin: Yes, first time I ran a company.

Markoff: Aurigin.

Lewin: Yeah, I was with Aurigin. And there it was basically taking patent data from the primary world's patent offices -- US, European, and Japanese -- and normalizing the data in a way that you could map it against business and business strategy issues. So the whole premise was   -- it was a blossoming company for document creation and workflow for FDA approvals and all kinds of stuff. So there was real money in document creation -- Workflow, Interleaf, and those kinds of companies. We were focused on immutable documents, things that wouldn't change, were the key-- the cornerstone, the record that mattered was the patent record-- so all the prior artwork, the whole prosecution workflow issues we were going at, et cetera.

But most importantly was the visualization of the interconnections among patent assets and how they related to both your P&L as a company, and also to your cross licensing relationships or your go to market situations. So your P&L would mean you could get rid of the things that didn't matter to your current product lines and save the maintenance fees. So you could save money. If it was cross licensing, you could be in a better negotiating position, if you understood the interdependencies. Or, if it was clearing a market opportunity, like with drugs, you could use -- you know, where the patent is the product, if you will -- you could use competitive intelligence and related information from the web to track your competitor's behavior, et cetera. So it was a fascinating sort of systems level business that, in the end, was purchased by Thomson. They owned Derwent at the time. LexisNexis and Thomson were the two big…

Markoff: You were there for five years--

Lewin: Almost five years, that's right.

Markoff: And it's interesting to me as sort of the heart of the dot com era. You were sort of--

Lewin: I know. I know. I often think about that-- not often, but I have thought about it.

Markoff: But it was a real business. You were building -- it was business to business.

Lewin: Well, building a business to business, we had five different revenue streams. Some of the board members-- we had TCV, we had Battery, we had real investors. Reuters and SAP were direct investors. SAP Ventures -- you know, it was like mapping into their MRP systems and everything. And some of the people were saying give it away for free. So we were building sort of a real business. I had a falling out with the founders. They bought me out. So, in the end, I did OK.

But, in many ways, ironically, when I look back-- the historical context -- the sales team that I had at NeXT became the sales team at Netscape. So my direct report went and became the VP of sales at Netscape, pulled his whole crew from NeXT, basically, and they became the sales arm for Netscape. And then, similarly, on the marketing side, a lot of the marketing folks that I had, some at NeXT, and then some from GO, when on to Netscape. Mike Homer took over the marketing -- I had sales and marketing -- when I left there. And then a lot of the team members of the marketing organization, even Omid Kordestaniyes who went to Google in the end to be the first business guy, and he's back again now. Omid was very briefly on my team at GO as well, so we had incredibly talented people.

But I did miss that period, when I look back with hindsight. I was building sort of a B-to-B, running a company, building a P&L. I was fascinated by intellectual property and the implications thereof. And it was a lot of data visualization work. We productized some things that were spinning out of PARC that were widgets, and that we actually turned into products for them, et cetera-- so hyperbolic lenses for visualizing patent interrelationships, and data, and stuff. There's a cool book called Rembrandts in the Attic, Finding Hidden Value in Intellectual Property by Harvard Business School Press that we produced as part of the marketing effort for this company, et cetera. So it was fun.

Markoff: There was that period '97 when, if it hadn't been for Monica Lewinsky, the press would've talked about nothing but the Internet. You probably remember that. Did you feel like you were in a safe harbor? Did you feel like you were sort of out of the mainstream, or do you ever feel like you were missing something?

Lewin: I was having fun doing it. I was learning a lot, and I was fascinated by the intrigue. I didn't think the business would be a standalone, IPO-style business. I thought we would build it to sell. And frankly speaking, after all those years and doing OK, I actually thought it would just be a reasonably good payout. All things considered, that's the way I looked at it is we probably would sell it for a couple hundred million dollars maybe.

Markoff: Before going there, or maybe it was after-- at some point you also dabbled in venture capital.

Lewin: Well afterwards I spent some time thinking about what I wanted to do. I talked to friends in the venture business. It was not a good time. The bubble had burst. I got feedback from a lot of people that, given their sense of my personality and style, they didn't necessarily think that I would like being in the venture business. So I heard that from some people. I did some work with what was then SoftBank Ventures, which eventually became Mobius with Brad Feld, and Heidi Roizen, and Rex Golding.

Markoff: Wasn't Greg Galanos…?

Lewin: Greg Galanos was around. In fact, Danger was spinning up, and I met with Andy [Rubin], and frankly Andy wanted me to be the CEO or president at Danger, or work with him at Danger. I spent a bunch of time with Danger, which, in the end, Microsoft--

Markoff: Microsoft bought, yeah.

Lewin: But I got to know Andy pretty well. And so I helped them mostly with -- they were cleaning up companies that they'd financed that weren't making it, because they had to clean that stuff up. And they needed, if you will, a little bit of oversight and help with companies that were doing OK.

Markoff: So that was the kind of role that- - it sounds like what Randy Komisar did before he become a partner at Kleiner.

Lewin: A little bit like venture partner friend. Yeah, so he put me on little bit of a retainer, and then when they wanted my time -- more time -- they could buy it, and that kind of stuff. Yeah, and that was fun.

Markoff: What was interesting to me -- and then there came this moment where you called Steve Ballmer about XML, and I was trying to put that in context. The NeXT machine became the platform for--

Lewin: For the web.

Markoff: Yeah, it was the environment in which the web was created, which had a little bit of impact on the world. But was there a link there between what led you to sort of have that, what I think was pretty early, deep understanding?

Lewin: I had a feel for the general notion. I mean, some of it what was the B-to-B stuff that I did. But, in general, I have a friend at Stanford -- a professor at Stanford, Nick McKeown…

Markoff: Oh yeah, he's a really nice guy.

Lewin: He was building a company that Benchmark and Sequoia had backed. And he sold it after, I don't know, 15-16 months to PMC-Sierra for $470 million in stock. And then it quadrupled in value-- quadrupled after that, so it's almost a $2 billion transaction. But he collared his transaction, and went back to Stanford, and continued. And he and I are friends, and I like to swim, as we talked about. And Nick's a swimmer, and so we were seeing each other a bunch. And he's really close with Mendel Rosenblum and VMware. And Reed Hastings and he are really good friends as well.

And so, over the years, getting to know those folks, Nick was financing some of his professor friends that had IP that would either be product or just licensable assets, if you will. And so I was helping one of his friends from England -- Nick's from the UK -- who was from King's College. And that led me to wandering around Sand Hill Road to see if there was a company, or really just an algorithm, behind this capability for streaming high quality audio over GPRS networks -- so two and a half G sort of networks. And so I started doing more research around data and what was going on in movement. And it was in '97, or '98, or so that the XML stuff started to come together. And so I was starting to pay attention to that.

And, while I was playing around on the web, I ran into this Forum 2000 speech were Ballmer and Paul Moritz had come to the Valley and talked about this vision called .NET which was going to be tied to XML and setting the data free. And, if it was tied to Visual Studio, and the tools-- you know, there are good products in product groups at Microsoft over the years, and there are great ones, and the tools have always been brilliant.

And so, given that, I sent Steve an e-mail and said, if you're serious about this .NET initiative, and XML, and data interoperability, I think the venture and startup community would be interested in working with Microsoft. If you need some help, I'm going to do something next year, but I don't know when or what. It was just a two or three line mail. And he happened to be online -- it was at night -- and wrote me back right away and said this could be interesting. I'll get back to you -- done.

And, a week or two later, I got an email and said, with this admin-- or both of them-- on the mail, and all it was was -- when can you come up? Continuation of the… when can you come up? So I wrote back and said, how about next Friday? This is between Christmas and New Year's. So I went up on the Thursday night after New Year's almost 15 years ago, and we met. And then he unfolded an interview process after he and I had a couple hours of that.

Markoff: So this was 2000--

Lewin: 2001.

Markoff: 2001-- and how long had he been CEO?

Lewin: Six, eight months-- nine months.

Markoff: So he was just new into the…

Lewin: Yeah, yeah, he was doing well. And then with hindsight I learned that Bill phoned around, did his due diligence with Ann Winblad, and Heidi [Roizen], and others that he knew down here, and said would this be a smart hire for us? And obviously they thought it would be, and so I've been there ever since.

Markoff: And was the ambassador to the Silicon Valley role part of the initial game plan?

Lewin: There were basically three things that I was chartered to do. One was to -- primary to the business -- was figure out how to make it so we could do business in Silicon Valley again. And there were two pieces to that -- venture and entrepreneurs. There was a diplomacy effort underway. This is still post DOJ settlement sort of floating around. So it was -- be the ambassador, be a liaison, because people would respond. And I could be Steve's proxy, because he was new to CEO, and the company was et cetera. And then 20% time was the campus and the citizenship agenda. Attrition was quite high, as it was everywhere at all the big companies, but aggressively so at Microsoft, because Web TV, and Hotmail, and all that had just happened. And so that was my initial position.

Markoff: And what was it like being the face of Microsoft at that point in time in Silicon Valley? How much of it was an uphill battle? I mean you had among the longest relationships with the Valley, and so maybe that eased the way?

Lewin: Yeah, well I guess the best answer to that question was the one that I gave to Steve about a month into the role when I was wandering the halls in his building in Seattle, which, by the way, I never went to Seattle very often. It was sort of a once a month, maybe. So I had implicit trust and free reign across the company for sure, and had a full year to figure all that out. But my answer to Steve, and the answer to your question, was -- he's like, so, 'what's the strategy for Silicon Valley and figuring it out?' And I just said consistent behavior over time. It's like, people want-- trust is built upon consistency in basic behavior.

So I set up a very straightforward approach to starting a high level inventory of what the elites in Silicon Valley thought and felt about the company. So asking is the first question. What do you think? What do you feel? What do you see? And then set up a mechanism to be responsive. And so I was instantly -- literally instantly -- usually within an hour, but I mean constantly responding, always responding, and then triaging and saying, if yes, give us a little time. No-- if maybe, give me a little while, but I'll be in touch. And I was always the one to follow up and say we're still tracking this. I wasn't waiting for another reply.

So I just set up -- email works, right? And then I set up a small team to engage and understand where we could be helpful. And that was the fundamental thing I said. It's like, look, we're going to do what we're going to do. If we can be helpful -- if you want to know, ask. Every now and then I'm going to surface and say, here's what we're up to. I'll be proactive, but I'm always on. And so people were incredibly open to that.

I mean, in most cases, I would go to, if you will, Sand Hill Road and meet with people. But I remember pinging Mike Moritz and just saying I want to come see you guys. And he said I'll come see you. And so people-- they'd just come down and say OK, so what's going on? There's a view. There is a way to work over time.

Markoff: And did you create that-- there was a period when Steve would come down and talk to the Sand Hill Road guys. Is that something that you established?

Lewin: Yeah, Paul Moritz did, I think, the first one. And I don't know whether Steve was with him or not. But people referred to that when I did my querying. The summer -- June or so -- after I started in January was sort of the first formal one. Someone else had already organized and invited the venture folks to it. And I watched that program, at which point I just said, OK, time out. And then I sat with Steve, and I just said, look, if you're serious -- and of course he's serious, because that's what he said to me when he made me the job offer. I said, 'are you serious?' Because it happened after a day. And he just said, 'of course I'm serious. I'm the CEO. I'm calling…'

I said 'OK, OK. I said, just be careful, because, if I don't get to do what I think is right, I think it'll be worse for you than it will be for me. I'm going to do something else, but it's like-- so be serious.' And he really was, so he was very, very supportive. So, all things considered, I took over that group, and then began a process to build transparency at a summit-like level. And then we did very focused meetings on a partnership, by partnership, by partnership basis, taking a page out of the Microsoft Research book where they would produce a report for the president of the university at the end of the year and say, here are the academician's who we worked with. Here are the grants we gave. Here's the this, here's the that-- sort of a little annual report.

So I went and looked at the inventory of portfolio companies and said, who's using our technology and who's not? What are we doing to help the ones that are? And oh, by the way, what are you looking at in the future where we might be helpful, recognizing that getting people to switch wasn't a natural act. But frankly, that's what the company was doing, is sending people to the venture community to try and get startups to switch. Well, when you pick a pony as a startup, you don't stop, dismount, and remount a new pony, especially if you don't have the talent… I mean, they were all using Solaris and Oracle that was coming out the late '90s, right?

Markoff: When you started, roughly how big a presence did Microsoft have in Silicon Valley?

Lewin: Head count was maybe 1,200 to 1,400 people.

Markoff: And how has it grown over time?

Lewin: It's 2,500-ish. And we just jettisoned the TV business, sold it to Ericsson. We'd be closer to 3,000 with that, probably. And so, a combination of organic growth, significant in silicon engineering, and Xbox, et cetera, and compiler groups in other areas where it's been more willing to hire the talent where it is rather than saying move, and then some level of acquisition -- you know, Yammer, Skype, things like that.

Markoff: Is it right to think of you as a CEO but [of a] 2,000 person company? I mean, is that…?

Lewin: No, I'd call me the mayor, right? There's a bunch of departments that run their own thing. So I'm like the mayor, and that's the best way to think about it. Most of the work that those folks do rolls up into a larger organization, per se. But, you know, the mayor usually knows where the good parts of town are, and the bad parts of town are, and how to direct the police force. So, in some senses, I drive that lay of the land. I mean, I did drive significant higher level engagement in the middle six or eight years -- so the last two or three years I haven't done this -- of technical diplomacy work with the likes of Sun, and Oracle, and all of the kind of 'frenemies,' if you will.

So that game is over, though, because, if you think about Sun, and the Java stack, and Windows, and the .NET stack, and all the wars, and all that stuff -- the antitrust case settles. So that, obviously, was Steve and Brad [Smith], our general counsel, they started at the high level deciding that we're going to settle and everybody's happy. We pay Sun some money, whatever, and the deal's done. How does it work, then? So that's when I got involved.

So, at the end of the day, though, the notion that Sun was going to eventually go away -- it's a little bit like Silicon Graphics. They kind of bet on the wrong pony in the grand scheme of things. So the fact that it's owned by Oracle, then the Oracle Java stack, which was built by Sun, runs in the Microsoft Azure data

center. Blame me, right? Over time -- six, seven years of sure that, as the industry dynamics played out, that we were in a position to do business with everybody -- that's what I worked on.

Markoff: We're getting near the end, and I wanted to ask some more general questions-- you know, since your career basically spans the history of Silicon Valley in some sense -- it's changed so much in so many ways in the three-and-a-half decades that you've been involved, including geographically. I mean, Richard Florida [did] this fascinating study where he geolocated the investments. And, if you geolocate them, the center of Silicon Valley is now the foot of Portrero Hill, which is striking to me.

Lewin: Equal amount of money in both places, but it's right at the edge of San Francisco.

Markoff: Yeah, that's right. Are there big takeaways about how the Valley has evolved that strike you?

Lewin: Yeah, I mean, in the first 25 plus years, it's like these big cycles in the quote, unquote microprocessor era, if you will. And I think we've talked about this briefly in the past. The first 25, 30 years-- it's about building out the layers so that it would all work, whether it was putting IP in and all the TCP/IP stack companies going away when Microsoft bundled TCP/IP into Windows. OK, so those companies don't exist. So there's this creation of the computing architecture upon which most of what's going on right now, that's where the big money is flowing-- they're free riders on top. So there's an application layer that's riding on top.

So it's like all the infrastructure's built, and it's all interoperable, and it all plays. And everybody gets to use that naturally now. And so I think where we are now. The most interesting thing, which is where I'm doing my work now that I really find fascinating, is that it's the flow of data across boundary lines, whether it's industrial boundary lines, whether it's you -- the person -- to the health care industry, or whether it's geopolitical boundary lines between us and the Germans, or us and the Russians. So there's a new set of policies and interoperabilities, and a new ecology emerging that's not seven layers of the ISO stack to get the transport up to the application-- physical layer to the application layer.

So I think we're going to, in the next 15 years-- pick a number, but 15-10-- we're going to see-- the microprocessor will always be important, but so much of it's going to fade into the fabric of literally what we wear, the environments within which we see ourselves and are presented. And, you know, pick a term -- Satya, our new CEO, talks about ambient intelligence.

However you want to think about it, computing will come to you. You won't go to it. And so, in that sense, I think we've reached this stage where it's really fascinating to participate in it, but the thinking, the architecture, the company creation, the model of businesses and how they evolve -- it's new, it's different. It's fundamentally different than anything that I experienced in the first 30-35 years of this business. So it's fascinating, but it's very different.

Markoff: Have you gotten a HoloLens demo yet?

Lewin: I wore the HoloLens when it was a backpack and the whole thing -- so, yeah. I got invited in so that I could -- and sworn to secrecy-- so that I could have my antenna out as I'm wandering around town here. And, if there's anything anybody was doing that might be interesting to either people or companies, point them. So yeah, fascinating time -- I think this blending of basically bringing historical context, or presence, or disassembling -- so some of the demonstrations of what they're doing with medicine, and human infrastructure, and systems, and stuff -- it's going to be very powerful. And I think the approach is interesting the way we're going about it. So I'm optimistic that it's going to make good use of technology in important disciplines, in particular in health and education, I hope.

Markoff: Let me conclude by asking you to describe your current role at Microsoft, because you're probably, as opposed to many people who have given these oral histories, you're still quite active. We're not looking backwards.

Lewin: I'm describing it a little bit as I just spoke about the future. I am looking at -- we call it civic engagement, and, in particular, technology and civic engagement. And so my reporting structure's changed. I report into our general counsel, who has a particularly long view on technology and society. He's not a traditional GC [General Counsel] lawyer, if you will. Brad Smith's very, very wise on these issues.

And so he's been making investments over the last several years into the academic community to sponsor independent thinking and make sure that it sees the light of day where technology and policies will intersect in the future around personal privacy issues, civil rights issues, thinking about algorithms by definition, and doing search and profiling, they are discriminatory by nature, so what are the broader implications in society when you speak with a particular accent or street vernacular, and you interact with a computer. I mean, there will be lawsuits, right?

We live in a world of rules and regulations. So understanding those things -- so I get to pay attention to those things, and work with the domain experts, both the technologists and the academics. So that's a fascinating area to learn about the broad implications in society of technology.

Markoff: In some ways, you've come all the way back to your political science training.

Lewin: I like that part, because that's what's fun. So now it's about social and technology emerging, because the next level down from the academic work is experiments in big metropolitan areas to make cities livable. So we're working in Chicago and other big cities -- they're our first city at the moment to go aggressively big with. And then lastly, a little bit on electioning so, how do we coalesce all of our company assets on presidential election level engagement? So that's really down to micro targeting, but also sort of a civil society and the technologies that are inherent in what's going on, at least in open societies today. So it's a fascinating portfolio that -- yeah, my interest is definitely piqued, and it does take me back to my earliest interests. So I feel like I'm in the briar patch.

Markoff: Well thank you very much.

Lewin: All right, thanks John.

END OF INTERVIEW