Computer History Museum

Oral History of Avadis Tevanian, part 2

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Hsu: All right. Today is April 17th, 2017. I am Hansen Hsu.

Markoff: I'm John Markoff.

Brock: David Brock.

Tevanian: Avie Tevanian.

Markoff: Avie Tevanian. Great. So this is the Apple chapter, if you will, and could we start, I'd like to start by asking what your role was in that transition period. Are there things that you remember about— that really sort of jump out at you—about the process of going to, you know, NeXT, becoming part of Apple?

Tevanian: So you talking about literally the transition right after the acquisition was done?

Markoff: Well, even bef—

Tevanian: Even before.

Markoff: You know, like, the first things you remember about that process of the acquisition and becoming part of it?

Tevanian: Okay. Yeah. So I guess maybe I'll start with the process to get acquired, which started—I think it was just before Thanksgiving, around that timeframe of 1996, and we had been watching in the press about how Apple was talking to Be about potentially buying the company to get their OS because they needed a new OS at the time, and, you know, to be honest, at NeXT, our focus was more against competition from companies like Sun than from Apple. More in the workstation space, and so we really, weren't really paying too much attention to Apple, but we had, while we're still supporting NEXTSTEP, of course, and OpenStep, we had become increasingly focused on WebObjects and so Apple was not at all in that space.

Markoff: Right.

Tevanian: But when, I remember, when I saw some of those articles, I talked to Steve Jobs and said, you know, "If they're going to buy an OS, I mean, we've got the best one. It's pretty clear," and so he made

some calls into Gil, Gil Amelio, and in parallel some of our marketing folks were making calls into Apple as well at various different levels and very quickly we had meetings set up to do technical evaluation, technical diligence, things like that, and in basically under a month we had a signed deal to be acquired.

Markoff: Wow.

Tevanian: Right after being acquired—right after signing the deal to be acquired—so now we're looking at late December, couple days before Christmas, '96, as that quarter is coming to a close for Apple, they had to pre-announce a major loss, and that kind of took us by surprise. We certainly didn't see that coming, just because we weren't watching the company at all. We knew the company was struggling, but we didn't know that it was that bad off.

Markoff: Yeah.

Tevanian: But the deal went through. We actually started doing a little bit of integration in January. Very little, because you can't really do the integration until the deal's closed, which was in February, I think February 6th or 7th of '97, but I remember, you know, some of the initial interactions were helping Gil to prepare a Macworld speech in early January, an ill-fated Macworld speech.

Markoff: Oh, my God.

Hsu: <laughs>

Tevanian: Went on for like three hours.

Markoff: The longest <laughs> tech speech I've ever heard. <laughs>

Tevanian: All of us.

<laughter>

Tevanian: It was amazing to watch it, and I say that in a not good way, for people just reading the transcript.

Markoff: Were you in the audience or were you back?

Tevanian: I was in the audience.

Markoff: Yeah.

Tevanian: And our role—well, we had two roles. One role was ahead of time, to help prepare Gil and his team for those parts of the keynote that would focus on the NeXT acquisition, and that was only one small part of it. They had many, many other things to announce.

Markoff: Yeah.

Tevanian: And then our other role was, Steve Jobs did 10, 15 minutes of his own after Gil talked about the merger coming up, and Steve's part, of course, was very good.

<laughter>

Tevanian: I think it's widely acknowledged that that was the case. So that was one part of it. That was sort of the first thing, the real tangible thing that I remember. Another tangible thing that I remember was, I started meeting with some folks who would either become my direct reports inside of Apple or were sort of key people at Apple that I would really need to get to know and work with closely, if you will—beyond who were coming over from the NeXT team.

Markoff: Yeah.

Tevanian: And, you know, that was a pretty eye-opening experience for me because I got to see firsthand some of the things that were causing Apple to be in the state that it was in.

Markoff: Yeah. So let me go backwards and then go forwards, because talk a little bit about the management team at that juncture on the NeXT side. Were you part of a small group of people who were making strategic decisions at NeXT?

Tevanian: Yes. So, you know, that's an interesting question in that I don't think a lot is really understood about what was going on then. So I was part of the NeXT executive team for many, many years, either informally or formally, almost from when I started back in '88. But when we're looking in '96, you know, the company had gone through some pretty big transitions, first getting out of the hardware business, huge transition, and then transitioning toward—similar with the hardware business, around that same time frame, running the software on multiple platforms. Obviously if there's no hardware, there's got to be software. But also then transitioning or adding, if you will, the WebObjects business, which would've—I

think would've been very, very huge at the time, and so we had a small management team. I ran Engineering. There was only Software Engineering at the time. Was all of engineering. We had a CFO. We had someone running sales. Think we had someone running marketing. It was a somewhat traditional but small management team, but something interesting was going on, which was as we transitioned out of hardware and as we transitioned more toward selling a web solution on the server side, it was a more, it was an *even* more enterprise sale than it was before and Steve was getting fairly uninterested in that and he was getting tired of it and he had Pixar going on on the side and so what we were going to do, in fact, had we gone public, and this is in the draft S1 [document, which Avie donated to the Museum], we were going to form an Office of the President, which would've been me, I believe, Mitch Mandich, who was our sales guy, and I believe Dominique Trempont, who was our CFO, and Steve—I think he—probably would've been part of that. He still would've been CEO and Chairman, but what we were really trying to do was also to take some of the load off him, so—and frankly, you know, enterprise sales wasn't his expertise, so that was fine and the rest of us, we were all fully engaged and able to take the business forward, so that's kind of what it looked like inside.

Markoff: And then was there a distinct board and were there interesting board members that you remember that were involved in that decision, that were separate from the management?

Tevanian: So the Office of the President—you mean the Office of the President decision or the--

Markoff: I'm sorry, the merger.

Tevanian: The merger?

Markoff: The merger decision.

Tevanian: So I'm pretty sure Ross Perot was still on the board. I'm pretty sure Canon had a representative, because they had--

Markoff: Invested.

Tevanian: --done a 60 million dollar loan, and if there was any other board members, I don't remember. Obviously Steve was a board member.

Markoff: Yeah, yeah.

Tevanian: There may have been another. I don't remember.

Markoff: But it didn't show up as a separate decision-making—the key decisions were made at the management group level.

Tevanian: The key decisions were made at the management group level. The decision to sell was me and Steve and a couple of others, and that was a no-brainer, because we had a fair price, a good price, is what I thought. You know, similar to what it would've been going public with full liquidity at the time, and putting our technology and people into a company that we thought could really magnify it.

Markoff: Yeah. This was taking, I mean, as I recall, I mean, Steve was coming back as kind of—initially he wasn't there as CEO, right? It was—he was like a friend of the company almost.

Tevanian: So now you're talking Apple.

Markoff: Apple.

Tevanian: So when we got to Apple, we all got jobs at Apple but Steve didn't.

Markoff: Didn't. Yeah.

Tevanian: And that was all by design.

Markoff: Yeah.

Tevanian: He didn't want one and, I mean, what job is he going to have, right? I mean, I guess they could've given him the CEO job then. He wouldn't have taken it.

Markoff: Yeah.

Tevanian: [At] least I don't think he would have, but that wasn't what the deal was and so, you know, they knew, Apple knew, that—and to Gil's credit, Gil knew that he needed Steve to help. You know, Gil's criticized for a lot of things about what he did with Apple. Rightly so, but the one thing he got right was knowing that Steve was going to be a positive, and so Steve basically signed on as an informal advisor.

Markoff: Yeah, yeah, and do you remember at Steve's memorial Larry Ellison told that, what I thought was a really sweet story about them talking about how to, you know, how to go back to Apple, and Larry had a very sort of cutthroat, you know, Steve could make billions of dollars. I don't quite remember the

story, but it was Larry wanted to make money off of it, Steve wanted to do it because it was the right thing to do? Am I telling it right?

Tevanian: Well, no. Sort of.

<laughter>

Tevanian: The essence of the story, and the true source of course should be Larry.

Markoff: Yeah.

Tevanian: But the essence of the story, which I've heard from Larry at that point and in other cases, is that obviously Larry wanted to make a lot of money turning Apple around.

Markoff: That <inaudible> Larry wanted to make money. Yeah.

Tevanian: And he wanted to help his friend Steve, and Steve really wanted Apple to be successful because it was his baby, and so Larry's sort of idea was he would fund the takeover and install Steve as CEO.

Markoff: Yeah, that's <inaudible>, yeah.

Tevanian: And then together they would make it successful again, and Steve, according to Larry, Steve didn't really want to do it in a hostile way. He didn't think that was going to work. He didn't think that was going to be good, and he was still dealing with NeXT and dealing with Pixar, so that was a non-starter. Now, Steve never mentioned that to me, so I don't know to what extent it's been embellished or how it's changed as it's been repeated many times.

Markoff: Yeah. Yeah. Did you—oh, go ahead.

Hsu: I was interested in asking about the bake-off that you had with Be. Talk a little bit about that?

Tevanian: The bake-off. So there was allegedly a bake-off. I only saw one side of that or one part of that.

Hsu: <laughs>

Tevanian: But I've been told by people who were in the room that there was indeed a bake-of, and so as we were nearing the end of 1996, we'd done a bunch of discussions with the company and they decided they wanted to do a bake-off, Be versus NeXT, so we both went in at separate times, staged [so] we wouldn't meet each other there, to the Garden Court Hotel in Palo Alto, and I don't know if we went first or they went first. I'm not even sure. They may have gone first, but I don't remember. So Steve and I had an hour, hour and a half or so, to present our case to the management team, and we had the benefit of a product that was in the market, that worked great, that had been around for many years, and Be didn't, and so I remember Steve did his general sort of sales pitch on the company and the product and everything we've got invested in it and everything it could do, and we did just an incredibly dazzling demo. I remember we had productivity apps, we had games, we had QuickTime movies, four of them on the screen, 3D models, all going at the same time. Literally on the screen. This was back in 1996. Now, today that's nothing, but we're talking over 20 years ago. That was a huge deal, and the management team, I mean, these guys were Apple. I mean, why couldn't they do that themselves is probably what they're asking themselves, right? And so we just had this great presentation and demo that uh—and again, I wasn't in the room when Be presented, but I think they thought that they just had the deal done and there was only so much they could show anyway. Their product wasn't nearly as mature, their technology wasn't nearly as good, and so that happened. When we finished, Steve and I left the Garden Court Hotel. We went for one of our, you know, signature Steve Jobs walks around Palo Alto, and as we're walking around one of the blocks, we happened to see someone who was in that meeting from the management team who said, "You guys won easily, no problem. You have nothing to worry about."

<laughter>

Markoff: Interesting.

Tevanian: So that's how that happened.

Markoff: Was Nagel in the meeting too? Was he still around at that point or was Nagel gone? He was head of software.

Tevanian: I don't think he was there. I don't think he was there.

Markoff: Interesting. That must be significant if he wasn't there because wasn't he head of software? Maybe he was gone by that time.

Tevanian: So when I was there—excuse me. Just prior—the last real head of software that I knew of was Ike Nassi.

Markoff: Oh, Ike. Yeah.

Tevanian: And I think Ike had just left.

Markoff: Yeah.

Tevanian: And so they may have replaced him, but I don't—if there was someone that was there--

Markoff: Yeah.

Tevanian: --it's just—there was really no one there.

Markoff: Ellen Hancock, the woman who'd come from IBM, did she show up on your radar at all?

Tevanian: Ellen was in this meeting. I remember she was in the meeting. Ellen was the de facto person in charge of software. She was in charge of all of technology, I believe, all of products. So she was that de facto person.

Markoff: Yeah. At that point, you were more than a colleague of Steve, weren't you? You were, you guys were friends, I mean, talk a little bit about your relationship with Steve at that point. Wasn't it closer than being a business-only relationship?

Tevanian: Yes. So in '96-'97—trying to turn back the clock in my head and get the dates right. So when I joined NeXT in '88, we quickly became good friends. We would hang out together every once in a while, we'd go to dinner a lot, things like that. We were both of the—we always liked to work all the time and so we could always—we'd be outside of work but we'd still be, like, talking about work and that was just great, and so by the time this happened, he had married Laurene, I had married my wife, we both had kids by then. From a friendship perspective we had started to drift apart a little bit because we were more--

Markoff: Family.

Tevanian: --with our families than with our friends, if you will. But we were still close for sure.

Markoff: Yeah, yeah. Were you the best man at his wedding?

Tevanian: He had no best man, but I was at his wedding.

Markoff: Okay. Which was at—in Yosemite at--

Tevanian: Yosemite Valley--

Markoff: --the wonderful lodge.

Hsu: Ahwahnee.

Markoff: The Ahwahnee.

Tevanian: The Ahwahnee.

Markoff: Yeah, yeah.

Tevanian: Yes.

Markoff: Yeah.

Tevanian: That was quite an event.

Markoff: Yeah.

<laughter>

Markoff: Yeah. So what can you say about—I mean, so what's always striking is sort of the outside image of Steve Jobs versus the Steve Jobs I know through the people I know who worked for him.

Tevanian: Okay.

Markoff: Which is, it doesn't connect often. I mean, you know, people on the outside sort of say he could be harsh and a tyrant and all of that and yet very few people left, over a long period of time and the people who walked away from Steve Jobs are, you know, they're just not—so there must be some disconnect. I mean, and I just wondered if, I mean, if you're aware of the, sort of the, of that kind of outside versus inside image?

Tevanian: Yeah. And maybe if we just back up a second. You asked if I was the best man in his wedding. I wasn't, but maybe what you're thinking is I put together his bachelor party.

<laughter>

Tevanian: That's what it was. Which is normally something the best man would do, but, you know, someone had to do it, so I stepped up and did it.

Markoff: Yeah.

Tevanian: Anyway, so you kind of asked a couple questions about him there, and I think, you know, one thing I'll say is I explicitly asked him one day, "So what's it like being famous?" and you've got this persona of who you are, what people think you are, versus who you really are and they aren't necessarily the same, and his answer to me was very quick and very straightforward and not like he had to think about it at all. He kind of knew his answer. "Well, that public Steve Jobs is kind of like a brother. He's just some other person. He's not me. He looks like me. He sounds like me, but I'm a different person. My private person's a different person." It was just a different person. So he kind of dealt with it that way just, you know, "That's the public view of who I am and that's a role that I take on. It's like an actor, but a brother, very close."

Markoff: Yeah.

Tevanian: And then the other part of your question is, you know, people—he was hard to work for, known to be hard to work for, yet people seemed to stick around. Yes and no. Certainly he was hard to work for much of the time, but he was also great to work for much of the time. If you—you needed to earn his respect. If you earned his respect in some form, and there are multiple ways to do that and multiple forms it could take, then he would generally be fair with you. He might be harsh but he would generally be fair, and because he had respect for you, you felt as though you could still work with him even though you're getting criticized and what it usually meant is that you had thick enough skin that you were someone who could work for him and know that maybe if he's berating you today he's not going to do that tomorrow, because he'll change his mind. But the net of that was that people who couldn't do that didn't last long and so they would go away but you'd kind of never really hear about it just because it would just be one meeting and they're gone. Okay?

Markoff: Right, yeah. <laughs>

Tevanian: And for them to even say they worked for him would almost be a lie, and many people—the interesting [thing] that I find is you find all these people who say they worked for him but never really did. They were like maybe in a meeting with him one time, okay, and suddenly that's elevated to, "I worked with Steve Jobs."

Markoff: <laughs> Yeah.

Tevanian: And there are hundreds, if not thousands of people, in the Valley and beyond, that now say that, which is, you know.

Markoff: Yeah.

Tevanian: If someone says they worked for Steve Jobs, I—like say, I don't even know who that person is—they probably didn't. Okay? And that's usually the case, as opposed to the opposite where they really did work for him and worked with him on a substantial basis.

Markoff: People have told me that he would often reject ideas, but if you were forceful and stuck with your idea and didn't sort of back off, he would ultimately adopt things that would, you know, he would internalize them and it'd become his ideas at a certain point.

Tevanian: Absolutely true.

<laughter>

Tevanian: And, I mean, not always, but it was possible, and the strategy was to get him to adopt your idea, right, because then he would go out and sell it, and you know, one day, black could be the most important color in the world and then the next year—and anyone who thought white was was an idiot—but then the next year it could be the opposite, white is it, and anyone who thinks black is it is just wrong.

<laughter>

Tevanian: Okay. And it's not because the trend changed, it's because they're just wrong, and so I don't want to say most of the time, but frequently he would push back on things just to see what was going to

happen, right? So if you present an idea to him and he says he doesn't like it, then what he's really saying is, "Well, I don't really know if I like your idea or not. Defend it." Okay?

Markoff: Yeah, yeah.

Tevanian: And if you could then defend it, and it might take a while, okay, if you can defend it, then he'll go for it, and I have a great example of this. Which I won't be afraid [for you] to ask about it, because it's a great example.

<laughter>

Tevanian: And it's something that I didn't even remember or even realize until he mentioned it in a press report many, many years ago. So when we were doing the early versions of Mac OS X, one of the differences between Mac OS X and the prior Mac OSs, 8 and 9, was that Mac OS X had inherently built into it authentication. There were quote, "users," right, whereas the Mac, the old Mac, was just, it was your computer, right? There was no "who you were" or anything like that. You didn't log into it or anything, and as we were trying to figure out what Mac OS X should end up being and reconciling it with the past and not being too disruptive to users while adding in a lot of new technology, Steve really kept pushing back on this notion that you had to login to your computer. He thought that was just wrong. You should never have to do that. It's your computer. It's on your desk. When you turn it on, it should be right there at your desktop and you're the owner, and so if you think about when we're having these discussions, this is '97, '98, '99, okay? Very early on before people thought about security and computers very much, and we'd have this discussion once a week for many months, and he would keep complaining and I would keep saying, "Nah, we need it. We need it." But at the time I could never really articulate a good reason why we had to have it, because no one was talking about security. We had it because we had a UNIX heritage and UNIX systems had this. But deep in my bones I felt it was the right thing to do and at some point, after many, many months of arguing this, I said, "Steve, I can't give you a really good reason why we must keep this other than I believe in my bones we must have this," and he said, "Okay. Just make it easy to use." Okay?

<laughter>

Tevanian: Which we did, and now when you, if you turn on auto login, your Mac logs in automatically. Right? It just works. I mean, your phones have the concept of users in them but you never see it. Okay. And so as time goes on, we ship the product. Few more years go on. What happens? Windows starts getting targeted by viruses. For the simple reason that you can download and install software by just accidentally clicking on a link and nothing ever pops up to stop it, whereas on the Mac, when you downloaded and clicked the link that was going to do something that would require any kind of privilege at all it prompted you for your username and password, and that was one of the reasons the Mac was

spared so many years from getting these, and he realized many years after this decision that trusting my gut feel—and I couldn't articulate that reason then because that wasn't an issue, right, but it turned out to be one of these really smart things that we did that he agreed with because he had a certain amount of respect for me and because he knew that if I felt really strongly about this, even in this case where I couldn't articulate the reason, he had to go with it.

Markoff: Interesting. That's interesting.

Tevanian: And so, you know, that's just kind of how he operated. But, you know, you really had to keep pushing on him to do that, to get him to finally agree. That was not easy.

Markoff: <laughs> Yeah. So that culture that you guys came into, I mean, it wasn't—Gil Amelio was a creature of the semiconductor industry, and he had sort of cobbled that on top of the Apple culture. I remember when I interviewed Steve early on, he described the first time he saw Gil's executive dining room at Apple and he told me about the silver and how shocked he was at the silver and how that had gone away. How hard, I mean, what were the cultural things like when you first came into the, you know, into Apple?

Tevanian: There was definitely those things you talk about. You know, food was plated into a really fancy dish and things like that. Not that, I mean, that might happen if I were to go to a board meeting and there was lunch being served. If I was getting lunch on my own I'd go to the cafeteria and get it, like most people. There was definitely some of those things, and to me, you know, my prior career had only been in a small company, startup, NeXT, right, or academic situation where you don't get any of that stuff, and I just thought, "Well, whatever." I mean, whatever, who cares, right? I mean, I'm here to build products, right, and if they want their dinner or lunch served on a nice piece of china, great, who cares, right? It's a big company. We got lots of money. I guess in the grand scheme of things it doesn't matter, but I don't know that that was really a cultural thing that hurt the company from a product perspective. I think instead, the—I don't know if it's a cultural thing or a management issue. What really hurt the company was it had gotten very successful on a product that was paying all the bills and completely lost focus and had a bunch of truly smart people who were off pursuing their own things without any cohesive strategy and no leadership really figuring out, "Well, what do we do? What's important to do?" And, you know, every decision could be second-guessed and cause massive debate and decisions would not be made, or even worse, you could have two really smart people completely working against each other, and that's really what the problem was.

Markoff: And when you came in, I've forgotten now. Were Taligent and Kaleida completely gone already by that time, or were there still sort of vestiges of that? Did you have to sort of, you know, carve that away?

Tevanian: Those were not things I had to carve away. They may have still been around in some minor form, but it was—they were not issues. They were not issues.

Markoff: <Inaudible>. Yeah.

Tevanian: All the issues that I had to deal with were, you know, 90-plus percent internal issues.

Markoff: Building a new software design culture at the company?

Tevanian: It was—the issues were at multiple levels, so there was the sort of management of people level and then there was the strategy level, and the management of people level was one of—well, there was also operations. The management of the people issue was we had a lot of smart people, who as I just mentioned, really weren't working on the same team. They were working for their own interests, and they all thought what they were doing was the right thing, and they needed someone to step in and say fundamentally, "Well, this is what we're doing. The decision's been made. Either you—I don't care if you agree or disagree with the decision, but this is what we're working on, and if you agree with it, great, work on it. If you don't agree with it, then just say you don't agree with it, but that you're going to support it and work on it, or leave the company," and that process caused lot of people to leave the company because they could not get on board with the decisions that were being made and they suddenly realized that their side projects or their efforts to derail these decisions were not going to be successful, and so they left. Or they were fired or whatever. Some combination thereof.

Markoff: Was Apple Labs still around? Was that one of the things that was--

Tevanian: It was called, I believe, Apple Research [actually it was called Advanced Technology Group], and we shut it down.

Markoff: Yeah.

Tevanian: Not because we didn't like research, but because from an operational perspective, we had to have all hands on deck working on the products that we thought were important, and so we could no longer afford to fund it and we could no longer take the risk, if you will, that they'd be going off in directions that didn't match what the company was going to do. Especially when they're spending money. The fact was they were spending money. We needed to spend that money on the things that needed to get done. Remember, we're losing a lot of money at this point in time. We don't have a lot of luxuries to do things like basic research.

Markoff: Yeah.

Hsu: I remember, one of those technical debates was over the executable format for OS X that was this Mach-O versus PEF format. I remember [it] being oddly acrimonious at the time over something that seems kind of trivial or not so important in the long run.

Tevanian: So I don't remember that specific technical back-and-forth, if you will, to be generous, but there were many like that, and generally, you know, I would like to believe that every decision we made was the right one for the right reasons, so good technology, you know, the right technology, good fit with customers, standards-based, or if not, whatever's appropriate for what it is, all those kinds of things. But we definitely had a lot of passion inside the company for different things and the hardest thing was there were many times where we picked the technologies that were—it was NeXT versus Apple, if you will. Okay. And the NeXT technology was picked, instead of the Apple technology, and it was usually because the NeXT technology could be shown to be demonstrably superior in a number of ways, but people didn't want to believe that was the reason because they just thought the Apple side was losing. That was not the case. And, you know, there were probably a couple cases where—here's the issue. A lot of times when these decisions were made it meant there would need to be some kind of transition with customers or developers, because the technology was changing and that caused angst for people advocating keeping things the way that Apple had done it before, and—one, to give a great example of this: networking. The networking standard for Apple at the time was AppleTalk, and AppleTalk was just wonderful networking for a LAN, and there are ways to make it work beyond the LAN, but it was kind of tricky. It was designed for a LAN, and in a LAN it worked great. It was way better than TCP/IP. But, the rest of the world has standardized on TCP/IP and it was obvious to me and some others who weren't totally immersed with the Apple way for many years, that TCP/IP was going to win all the battles. It was already winning the battles, and at the time Apple had an AppleTalk team working on AppleTalk, and their IP stack was outsourced, and so I said, "This doesn't make any sense. Networking is a key part of the product," and, "Oh, by the way, there's a standard networking stack that's open-source that's been in use for many years, and even if the standard isn't fully implemented in certain implementations, this one we know is interoperable because it's the same one everybody else uses, so we're just going to use this."

<laughter>

Tevanian: Now, it just so happens to be that's what NeXT was already using, so people look at that as a NeXT versus Apple decision when it is we are going to standardize on the networking of the future using the most standard and, oh, by the way, free software, and we're going to integrate that in. Well, I got no end of complaints about that. They got—in fact, people went around me all the way to Steve saying, "We're going to tank the company if we do this," and including the people who are selling us the stack, the software stack from the outside. They were making money off Apple, and so I just sat down and I laid it out and said, "This is the standard of the future, number one, and number two, this is the standard implementation, number three, it's free and open source. People will keep working on it. This is [a] no-

brainer decision. End of discussion." But it took an effort to get there and so the good news of that was once, you know, usually I could just make these decisions myself. If there was still unrest in the masses, and in this case there was a little bit, then once I got Steve bought in, then it was end of discussion and I could usually get him to buy in on that. But there's a flip-side of this, which is that engineers—and again, good engineers would come to me and they would say, "but you can't do this. Our customers know and love AppleTalk. They just plug in a new computer and it just works and that doesn't work with TCP/IP. It works with AppleTalk," and they're—plug in a printer. It just works. I said, "Great. So your job is to now make TCP/IP do this."

<laughter>

Tevanian: And now, lo and behold, here we are today, 20 years later, using TCP/IP. Everybody just plugs in their computer or their printers and devices and everything and it just works and that's because we got motivated to fix a few problems and fill in a few gaps with TCP/IP that didn't allow it to do that before, and so the other point I made with them was, "What you're advocating is a solution that is going to keep three percent of the addressable market happy." That was the existing customer base. Maybe it's five percent. "You're going to keep three to five percent of the potential customer base happy." I'm like, "Look. I want to keep those people happy but I want to have a way to go get the other 95 percent, and we can't get the other 95 percent with something like AppleTalk. They're just never going to buy it," okay, and, you know, we never got the other 95 percent, but you look today and Apple's doing pretty well even with computers, and there were some people, they just couldn't get their head around this way of thinking and they either quit or were fired, and then the people that could, they said, "You know what? There's a few things wrong with TCP/IP today, but we know how to fix that, and we can work with the IETF and change the standards and evolve it and do a few things with DHCP and other standards and fill in here and fill in there and make some DNS changes and we can make this all work." And, it does.

Markoff: Yeah. Go ahead.

Hsu: So clearly embracing open standards and even incorporating open source was a big change in Apple's strategy. What motivated that? Was that something because of your, you know, because of NeXT, NeXT was already doing that, was that just sort of a natural…

Tevanian: Yeah, embracing open standards and we even published some of our low-level source code at the time. That was a huge change for Apple, in the history of Apple. Never been done. It was something that Steve wasn't all that jazzed about, but the basic argument there was we've got certain layers of software that have, in the real world now, traditionally become open source in the sort of important demographics of users, developers, for example, and there's not really any down side to open-sourcing some of these things. And in the case of implementing standards, there's lots of up sides. There's no need to have a closed network when you can now interoperate with everyone else, especially when you're not the majority player, and so it was a big change and it was not—it wasn't a no-brainer decision

but it wasn't a hard decision to make either, and remember, we always have the flexibility to control where we interoperated and where we didn't interoperate and what we open sourced, what we didn't open source. We could control all those things ourselves.

Markoff: This may not have been in your portfolio, but one thing I saw in those first years, from the outside as a reporter, is that Apple started as a more open company. I remember maybe twice coming down and interviewing you, and after the first two or three year—I mean it was you and Phil [Schiller] and Jony and I can't remember, one other person. We just sat down. Steve wasn't there, and I was there as a New York Times reporter. I did a profile of Jony Ive very early, and then the company gradually became a company that spoke with one voice, and was that a strategy you were aware of or did you, I mean, what'd it look like from your side?

Tevanian: So I hadn't thought about that very much. That's an interesting point you raise. What I would say is that right after the merger closed, while Gil was still CEO, it was typical for many, many people to talk publicly. In fact, I remember, that summer I went to Paris to keynote Apple Expo Paris. I don't remember exactly why I did it. I think maybe because Gil had done so poorly in January, they wanted someone else to do it. They sent me and so that was not really an issue. Apple had lots of people out there in the press. If I were to speculate now, I would say that maybe you're talking about a time where Steve is not really the CEO. He's interim CEO.

Markoff: Yeah. I'm not sure. That could've been.

Tevanian: And so he's probably interim CEO, and so he really does need other people to step up and talk, and so that's going to be the people you just mentioned, of course.

Markoff: Yeah. It might've been that iCEO period

Tevanian: And then when he comes in to be CEO, then the lockdown starts to happen.

Markoff: Yeah, yeah. And it was, I mean, I mean, I understood it. It wasn't, you know, wasn't in my interest as a reporter, but I absolutely, I could see it working--

Tevanian: Right.

Markoff: From Steve's point of view. He's building, you know, a singular, you know, very clear picture of what Apple was, is what you got as a result.

Tevanian: Yes.

Markoff: So I'm interested in that—still in the transition period. Who were the sort of, on the software side, the key players from NeXT and the people who came in and took important roles? Who stands out in your mind?

Tevanian: So the key players from NeXT. So at the time, it would've been Bertrand Serlet, who was my right-hand man, basically. Bertrand… Bertrand basically took over what became Mac OS X, and turned that into the product while I divided my time into some other areas like the classic Mac OS, QuickTime and other software projects, and so he was probably the key manager I had coming over from NeXT and then his key person would've been Scott Forstall, and so you see that natural chain of who ended up taking over software over the years, and Scott was sort of the right-hand man for a lot of what was the AppKit at the time, some of the built-in applications, things like that. They were sort of the key people that we brought over up front initially.

Markoff: Was there ever any question about, as the merger happened, about that role that you took as Senior VP of Software or was that part of the deal? I mean, did that happen simultaneously?

Tevanian: So the day the deal closed I had a signed offer letter as Senior VP of Software Engineering, so that part of it was, there was no question. What I think was more in question was, "Well, what are the actual responsibilities and how does this work in this huge organization?" Which we kind of worked out. There was, you know, Ellen Hancock was still very much in the thought process of what strategy was and things like that, and still sort of had Gil's ear on strategic decisions, which was causing a little bit of trouble to get things done, but we worked through that.

Markoff: Yeah. And what was it like to work for Gil? You spent some time working for Gil Amelio.

Tevanian: Yeah. So working for Gil was interesting.

Markoff: <laughs>

Tevanian: I mean, I found him to be a very nice person. You know, I found him to really want to hear what I thought about everything. He was sort of, if you will, trying to be a sponge, trying to learn, because I was operating in areas he just didn't understand. He seemed somewhat frustrated that everybody was always critical of everything he was doing, rightly or wrongly, and so he gave me sort of free reign to do whatever I thought was right. He really, you know, when there were decisions where other people might be saying something that contradicted what I was saying, he really listened to me and his gut was to go with me and I think that was in part because he'd just done the acquisition, he trusted me, but also

because Steve was telling him, "Trust this guy. Listen to what this guy's saying. What he says makes a lot of sense," and so that was very helpful. So, you know, the negatives you hear about Gil I didn't directly experience myself because I was doing my thing that was independent, I didn't need his help to do what I wanted to do, other than to not get in my way.

Markoff: Yeah. Hm.

Markoff: And what do you remember about the events that led to Steve becoming iCEO?

Tevanian: Okay. So the events to becoming iCEO. Let me see if I remember the events correctly. Okay. So we close the acquisition in February. Gil is still CEO. Steve is now advisor, and Steve is not happy with Gil, clearly. He doesn't come out publicly and say that, but in the background you can tell that's the case, and the first thing that happens is shortly after the deal closes, probably in the March time frame, there is a sale of 1.5 million shares of Apple stock at 13 and a quarter, which is the lowest tick ever since.

<laughter>

Tevanian: Okay. That is the bottom price since 1996. This is pre-split like 28 times. So it's equivalent of 50 cents a share, right, something like that, and no one knows who did it. Okay. Because these things weren't publicly disclosed, but I know, and the world knows, that as part of the acquisition, Steve got 1.5 million shares of stock and they were restricted stock, but he'd asked for the restrictions to be taken off so they could be tradable, and most people thought that he was the one that did it, and I asked him point-blank, "Was that your sale?" and he wouldn't tell me point-blank, but he led me to believe that it was him.

<laughter>

Tevanian: And so that was his public statement, that he was not happy with Gil and the company, because it was widely reported at the time or theorized it was probably him. [You] probably remember that.

Markoff: Yeah.

Tevanian: And so, you know, that was sort of Steve's way of making sure that everybody knew that Gil shouldn't be the CEO, and he did other things behind the scenes and there was plenty of material for the board to come to the conclusion that Gil should not be CEO. So the board made that decision, I believe, in July, because I think Fred Anderson made the phone call to Gil on the Fourth of July saying that he'd

been fired, and funny aside, which I've heard from Fred, so I believe it to be true, is right after calling Gil he called Ellen Hancock, who was also being fired, to tell her she was being fired and she first said, he first said to Ellen, I think, something to this order, "Gil is no longer CEO," and she thought he was calling her to make her CEO.

<laughter>

Tevanian: But she was also being fired.

Markoff: Fired. Oh, poor Ellen.

Tevanian: So that was sort of, you know, that next step where Fred takes over as acting CEO. The board had a confidence in him and Steve had confidence in him, and Steve was having enough conversations with the board. The board wanted Steve to come in and be CEO but he wouldn't do it.

Markoff: Had Pixar gone public at this point? Where was…

Tevanian: Oh, I don't think Pixar went public, was it, until—might've been '96 before that.

Markoff: Yeah.

Tevanian: Or I don't remember. It was around that time frame. It might've just gone public.

Markoff: His head was pretty much in Pixar at that point, I remember, wasn't it?

Tevanian: Well, he never spent that much time at Pixar overall. It was never more than a day a week, even when he was the busiest there, but I think that he was sort of thinking about it a lot. But he was thinking about Apple a lot too. Trust me. He was thinking about Apple a lot, and he was working on these things behind the scenes. So it was, you know, at that time, we have no CEO, Ellen's gone. It's a lot easier for me and Jon Rubinstein to kind of get done what we think needs to be done. Fred is going to let us do whatever we think is right, and Steve is sort of there kind of talking with us, making sure things are kind of going, but he's not day-to-day. But, you know, you can only go so long without a CEO and finally the board somehow convinced him to become interim CEO. I don't know exactly what happened, but I think it's just this notion that because he could be interim CEO, it was kind of like a call option on the job.

Tevanian: And so if he saw the path to success, he would take the job. If he worked on it for a few months and said, "This is just not going to work," then he didn't have to get himself into it and fail at it. But, I mean, he dug right in, and he started making some big decisions that we were all supportive of and used his name essentially to get behind what was going to go on, things that were very unpopular.

Markoff: Yeah.

Hsu: Like, what kinds of decisions?

Tevanian: Oh.

<laughter>

Tevanian: Like canceling the sabbatical program. Right. After a certain number of years, everyone was entitled to a six-week sabbatical and remember there was this e-mail that he forwarded to all of us, he'd received—no. There's an e-mail that went around to the whole—he had sent an e-mail to the whole company saying, outlining, a few things that were going to change. The sabbatical was one of them. There were four or five other things and then someone had forged another e-mail and sent it to the whole company that was sort of a parody of this.

<laughter>

Tevanian: Saying, "You must now work 24-by-7," or… It was just, it was just horrible. It was horrible.

Markoff: Remember the Park Different controversy?

Tevanian: Yeah.

Markoff: Was that around that?

Tevanian: Well, that was sort of an ongoing joke. Right. There was not one controversy; it was an ongoing joke.

Markoff: Joke. Okay. Yeah.

Tevanian: And there are plenty of pictures to document that.

<laughter>

Tevanian: There are many stories of Steve Jobs and vehicular violations.

<laughter>

Markoff: At what point, at what juncture, did the Microsoft investment happen? That was…

Tevanian: That was that summer.

Markoff: Yeah, it was right--

Tevanian: That was—it was just before Macworld Boston, whenever that was. The deal was done the night before. Literally. Because it was announced the next day, remember, with the video of Bill Gates?

Markoff: And the front page picture in The New York Times with the little Steve and--

Tevanian: Yeah. Right. Exactly. Exactly.

Markoff: --the Big Brother Bill. <laughs>

Tevanian: Big Brother Bill. That's right. So there's no time to rehearse to make sure it's going to look right. It was just, that's the way it was.

Markoff: <laughs> Yeah.

Tevanian: So that might've even been that July, mid-year.

Markoff: Yeah. I think it was. Yeah. And were you involved in that discussion?

Tevanian: Yes.

Markoff: Yeah.

Tevanian: I was. Because, you know, we had discussions related to—it was a big deal. It was—Microsoft was investing, patent cross-license.

Markoff: Just happened, yeah.

Tevanian: And we agreed to make IE the default browser on the Mac.

Markoff: That's right. Yeah.

Tevanian: Those were the sort of three big things.

Markoff: Yeah. Yeah. But it was--

Tevanian: Which later turned into an antitrust lawsuit.

<laughter>

Markoff: Yeah. Did you get—did you have to testify? You did have to testify.

Tevanian: I was a witness, yeah.

Markoff: Yeah, that's right. Yeah, yeah. Yeah, <inaudible>.

Tevanian: I was the second witness for the government.

Markoff: That's right. That's right. Okay. Oh, and had you worked with—sort of what was your working relationship with Jon Rubinstein like? And when did you guys first start?

Tevanian: So Jon and I started working together at NeXT. Would've been when he joined NeXT. I don't remember what it was. It—probably '90-ish, '91-ish. And Jon stayed there until we got out of the

hardware business, went off and did Firepower, and then in that period of time between signing the deal for the acquisition in December and it closing in February, we called up Jon and we had lunch with him in Redwood City. We said, "Jon, we want you to come join us. Avie's going to run Software and you run Hardware," and he agreed to do it and so we were sort of the hardware/software team, and we worked together all the way through. We both resigned on—I think he resigned, his last day was like March 31st of 2006. Mine was April 1st of 2006.

Markoff: Ah, very close.

Tevanian: We didn't work closely enough to get them exactly the same day.

<laughter>

Tevanian: But so we worked together very closely for all those years and, you know, Jon and I had a wonderful yet strenuous relationship, because we had to work together, yet we often had competing goals, and so while his goal was to get a new hardware product out every 9 to 12 months, whatever the cycle was, and have the software for it, my goal was to not worry about the hardware schedule, just get the features right for the next release, and so we were always locking heads. We'd fight a lot about things and priorities and who's working on what, and… But we always figured it out and, you know, we didn't miss our dates in any way that anyone knew at least.

<laughter>

Tevanian: And, you know, we shipped—by working together our team shipped great products. So we always knew we had that common goal of our teams working together to ship great products, but behind the scenes we had to fight a lot and kind of keep our teams working together.

Markoff: Yeah. When was it that you knew that—do you roughly remember when you knew that the turnaround had worked? Was it around the pillow iMac or was it around hardware, was it around software? What was the sort of sense, you know? Steve's return? What?

Tevanian: When did I know the turnaround worked? I don't think I ever knew that.

<laughter>

Brock: Hmm.

Markoff: Really.

Tevanian: I mean, look. It was obvious once the iPhone started going off the charts, okay, but even developing the iPhone it wasn't clear that the turnaround had sort of worked. I mean, we were obviously making money and being successful. You know, we'd been selling a lot of iPods and we'd been selling more Macs, but still small in the grand scheme of things, right, and the business is a tough business. It's a hit-based business, right, and so you got to keep the hits coming, and it's a competitive business, and, you know, I guess maybe we felt—things probably didn't feel as dire once we were getting some traction with the iMac, and once we had Mac OS X out there and customers were really starting to use it. Those are probably two, you know, hardware and software events that really told us we didn't have to worry about—there was no existential problem, okay? But frankly, we were still described in the press as the beleaguered Cupertino company.

<laughter>

Tevanian: But… So I guess the interesting question would be to go back and pull out all the press articles and find out when beleaguered was taken off the name, right?

Markoff: Yeah, yeah. I never fell into that camp. You remember, Walt Mossberg killed you off. Remember the obituary on the front cover of the--

Tevanian: Did Walt do that? I don't remember.

Markoff: Yes, yeah. Walt wrote an obituary for Apple and--

Tevanian: Well, it was the Merc[ury News] that was always the worst. Right?

Markoff: Yeah. Well, that was—yeah.

Tevanian: And there was—so I'll take your word that there was the Walt one. I'm going to go look that up when I'm done here.

<laughter>

Tevanian: There was obviously Michael Dell saying, "Just give the money back to the shareholders."

Markoff: Yeah, yeah, yes.

Tevanian: Right. These are obviously low points.

Markoff: Yes. <laughs>

Tevanian: And--

Brock: I remember that.

Tevanian: So, you know, I mean, when 9/11 happened we took a big hit as did most of the economy. Right?

Markoff: Economy. Yeah, and the Valley. The Valley in parti--

Tevanian: Yeah, the whole Valley did.

Markoff: Yeah, yeah, yeah.

Tevanian: And we were somewhat tenuous anyway. We weren't the strongest company in the Valley and so at that point it's like, "Whoa, what's going on here?" right, and we felt pretty good. I remember we did a small buy-back at the time, just to show confidence and almost out of patriotism. But we were shaken a little bit by what happened after that. You know, there was a time when the [Power Mac G4] Cube came out, which was not a hit at all, and you kind of wonder. So there was never one point in time, even with the iPod. I mean, the iPod started out relatively slow and it built up over time and it did okay. Then it had a big bump-up when we released the Windows version and, you know, brought more people in to look at Macs and stuff, but these were all slow things.

Markoff: Yeah. So there was a moment probably where I gained my most, greatest, respect for Steve as a strategist and it was an interesting sense. He telegraphed to me this switch to Intel a year before it happened as, like, this chess match in the computer industry and I didn't get it until you guys made the switch and it was about videogames going to the PowerPC architecture and PCs going to the Intel architecture and we had a conversation like a year before where that was all in his head and he knew he was going there and he said something to me. When I looked back he had sort of told me it was going to happen, and do you remember the strategy component of that?

Tevanian: Well, so him telling you a year in advance is only a surprise in that you're a member of the press and he would tell you something that's coming. Right.

Markoff: But he didn't really. It was looking backwards. I didn't—he didn't actually tell me. He said something that in retrospect I remembered, that it was obvious to him a year before that it was going that direction.

Tevanian: That's because we already had it working.

Markoff: Yeah, yeah.

Tevanian: So one of the things about being in tech, right, is when a product is announced it was already working well before that and so the people who were already working on it knew that it's coming. Now, he may not have known the exact date but as far as I was concerned, we were working on that product the day I started at Apple in '97, and we had software running on all the Macs throughout all those years.

Markoff: Yeah. And was that about options at that point, to give you flexibility or what, I mean, in terms of that strategic relationship and all of that, you know, IBM ultimately couldn't deliver—was it 10 gigahertz processor that they promised?

Tevanian: Yeah. I don't remember which processor it was, but for me, having our software running on an Intel processor at some point in time was inevitable, and so it always was about options and how we would execute those options, and so I didn't know if, like at NeXT we got out of the hardware business, Apple would have to get out of the hardware business, as a really radical change, right, in which case we'd have software to OEM to different people, or we'd be in the hardware business, maybe building premium computers, which Apple's always been great at, with someone else just doing a super-low-cost computer, right, which would probably be based on an Intel processor. There are a whole number of—or what eventually happened, which is just switch the heart of the Mac to an Intel processor when the other vendors couldn't compete on whatever axis mattered, and so to me, it was inevitable and so I viewed my job as running Software to—I knew that at some point in time Steve was going to say, "I need this product." Okay. And I knew, starting from scratch, it was a three- to five-year effort, because of everything involved, okay. To port an entire OS and do emulation and everything else, and so I knew I had to have it ready so that when it was time to pull the trigger we could get it out in 9 to 12 months, which is what we ended up doing.

Markoff: Yeah, yeah, that's really remarkable. The end of Newton and then the roots of what became the iPhone. What did it look like from the inside?

Tevanian: Okay. So the end of Newton, that was one of those straightforward decisions where only a handful of people second-guessed it. People in the Newton division, you know, interesting technology, no market traction after a long time, spending a lot of money on it. We got to focus, okay. Wasn't clear where the blame was going to be here. So that was relatively straightforward, relatively easy, although it did take a while to get that to happen, and that was in part because Newton was off in a separate division, neither Jon nor I owned that. If either one of us had owned that it would've been gone instantly, but it was kind of off on some side with other management. They were just kind of keeping it alive. Longer to kill off, like printers and other things that were just hanging around that needed to be killed off at the time. The iPhone was interesting in that I remember the first time I thought we would seriously think of doing an iPhone someday was when we introduced a feature in Mac OS X called, I think it was the Dashboard feature. That is the feature where you press one of the keys in the keyboard and it brings up a bunch of widgets on your screen.

Markoff: I remember that, yeah.

Tevanian: So there was a weather widget, a stock widget, and you could add other widgets. There's all kinds of—little calculator widget. Quickly bring them up, use them, throw them away, and I remember I looked at that and I said to myself, and I—the team—the first time our UI team showed this to us, I remember saying, "Oh, my God. Someday we're going to build a phone and that's going to be the user interface. It's going to be these little widgets," and oh, by the way, you take out your iPhone today and it still has that very same stock widget and very same weather widget.

<laughter>

Tevanian: Written the exact same way, using little JavaScript stuff, and so that was probably, God, got to be early 2000s, and along with that, and I forget the ordering of these things, we had done some experiments with tablets using multi-touch, and so our lead guy, doing a lot of our user interface stuff, had built this prototype where, using multi-touch, you could, with multiple fingers, drag a map and zoom in and spin it around and all this kind of stuff and we thought that was totally cool, and so the hardware guys built some prototype tablets, a few dozen of them maybe, that did a few of these things, and I went in my office and I'm sure Jon did and Steve. We all used them, but this was just when we were getting Wi-Fi out there, so it must've been early 2000s when the iBook came out with Wi-Fi. I don't think we had Wi-Fi in this. It might've, but I don't—it probably did have Wi-Fi but that was it, so this product was only useful in a couple places where you could get Wi-Fi. You couldn't get Wi-Fi very many places, right?

<laughter>

Tevanian: Wi-Fi was still unusual. No one had it at home and there was no [cellular] data networks that were useful, so we thought, "Hey, this tablet's kind of interesting, except that it's not useful," and this was

back when other people were trying to ship tablets and finding there was no market for it for the reasons I just described. There's no connectivity to anything. So we shelved all that. So we shelved that and we kept going on the widget stuff, we kept improving that, and then at some point it just started to make sense that you could, in the form factor of a phone, have enough processing power in a multi-touch display and add the software to it and have it actually work.

Markoff: Yeah.

Tevanian: Now, when we started working on this, I don't know, 2004, 2005, whatever it was, somewhere in there, no one really knew where it was going to go. It was just, was another iPod-like project. "We're going to try it; we're going to see what happens."

Markoff: Yeah. Were you around for the debate about—you know, at that point the BlackBerry had, RIM had sort of, you know, that was becoming—I think it was out there in the world—this notion of this chiclet keyboard. I heard that there was an internal debate about whether you would have a virtual keyboard or whether you would actually have a physical— As a matter of fact, I heard that Phil Schiller was on the wrong side of that debate, that he was committed to keeping a keyboard in the—were you in those debates?

Tevanian: So there was not much of a debate. I mean, there's always debate about everything and let's just say the extent to which there was such a debate, it didn't matter because the decision had been made. There was going to be no keyboard.

<laughter>

Tevanian: And so you can keep talking about it until you're blue in the face and I don't know if Phil did or didn't. I honestly don't remember, but, you know, the advantages of no keyboard and a complete display were obvious and it was one of those Steve Jobs, you know, there's going to be no rescue boat. It's going to—this is it. You're going to, we're going to, you know, everything's going to be bet on this. It's make or break it. It's either going to work or not, because once you put the keyboard on you're going to make decisions that are not good decisions, okay.

Markoff: <laughs> Yeah.

Tevanian: It's like going back to the TCP/IP thing. Well, this is what we're going to do. Make it work really well. Okay. And if it doesn't work really well, well, you screwed up, and so there was no serious decision to be made. The decision's been made.

Markoff: Yeah.

Hsu: What was your role during that whole period?

Tevanian: So by the time the serious work got going on the iPhone I was mostly on the way out, so my role was mostly, I would say, almost—I don't <inaudible>—my role was heavily to make sure the software strategy was right, and we had—that was a project Scott Forstall took on himself to pretty much own and, at least from the software perspective, to make happen, and my goal was just to make sure the software was going in the right direction and then let Scott and the team deal with it all.

Markoff: Yeah. And then the kind of—what's the right way to describe it? Was there always tension between Tony Fadell and Scott Forstall? Was that an, always a contentious relationship?

Tevanian: Gee, I don't know if I should answer that question.

Markoff: <laughs> It's okay. Don't. <laughs>

Tevanian: Yeah. I probably shouldn't—I mean, look—

Markoff: Yeah.

Tevanian: Tony and Scott are both great guys who have—it's like me and Jon. We would argue a lot but at the end of the day we'd come to terms and make the right decision to get things done, and let's just leave it at that.

Markoff: Yeah. We didn't ask about—so the Rhapsody to Mac OS [X] transition. Could you talk a little bit about that? How did it evolve over time?

Tevanian: Yeah. So, I mean, you know, the Rhapsody to Mac OS [X] transition was largely marketing thing, right? I mean, that's about, we can go from Mac OS 8, which was just coming out when we all joined Apple, to Mac OS 9 and then Mac OS X. It was a great marketing story where we're just completely upgrading all the technology in a way that is as seamless as possible to users. There were multiple layers of compatibility built into it and so instead of just, you know, telling customers something completely different, it's just transit—like with the hardware, one day a Mac had a PowerPC. The next day it had an Intel, right? But it was still a Mac.

Markoff: Yeah.

Hsu: I remember the key difference from the way that Rhapsody had been pitched initially to the rebranding as OS X was the availability of Carbon, and initially he had tried to sell Rhapsody being completely based on the NeXT APIs or the Yellow Box, as you'd called it, and seemed like there was a lot of developer push-back and then Carbon, Carbon was announced the next year. What was the process like of getting, of, you know, of getting Carbon up and how critical was Carbon to the success of OS X?

Tevanian: Yes. So the issue was to release a new OS you have to have a way for developers to bring their apps forward, and we had what was called the Blue Box, which could run a traditional Mac OS app just in an emulation mode, if you will, but that really wasn't good enough to letting Mac apps take full advantage of the new OS, and when we talked to a lot of the big ones, Adobe, Microsoft and others, it was clear they had good reasons why they couldn't just switch over to the new APIs. It was a lot of work, and so with them we basically agreed to build an emulation layer called Carbon, which was a large part of the Mac Toolbox running on quote, unquote, "Rhapsody," if you will, giving them the way to link against new API to get most of the advantages of the new OS. Now, we were able to pull this off in part because, little known secret is, if you go back in time and think about QuickTime, QuickTime was a Mac application which also ran on Windows, and the way they ran it on Windows was like porting a reasonably large portion of the Mac toolkit over to Windows. So they had made a reasonably large portion of it portable, and so we started with some of that and added a lot to it to really make it more complete and came up with the whole Carbon layer as well.

Markoff: I'd forgotten this, but there was this idea of OpenStep, Yellow Box for Windows but that never really—what became of that, do you remember?

Tevanian: Yeah. So that would've been continuing the OpenStep for Windows product that NeXT had.

Markoff: Had. Yeah.

Tevanian: And never became that important, never became strategic to the company.

Markoff: Yeah.

Tevanian: So it wasn't pursued.

Markoff: And turning, going from Mach to Darwin, how challenging was that?

Tevanian: Well, Mach to Darwin is no change.

Markoff: So just--

Tevanian: Darwin is--

Markoff: It was Mach.

Tevanian: --the Mach kernel that we used, open-sourced.

Markoff: Okay.

Tevanian: So, you know, we obviously, over the years, made many, many changes to it and added the UNIX layer, the FreeBSD UNIX layer into that, that's what Darwin was.

Markoff: Okay. Yeah.

Hsu: Was it difficult to open source it or…

Tevanian: I assume you mean from a sort of philosophy or philosophical perspective. It wasn't that hard, because large parts of it, you know, both Mach and UNIX came from open-source environments to start with, so it was very natural to do that.

Markoff: Yeah, yeah.

Hsu: And I remember, you know, when OS X shipped, Carbon and Cocoa were, the message was, that these were both peer frameworks. They were both considered native and they would, for the foreseeable future, both be going forward. Obviously in the long run, that wasn't going to be the case, but at that point in time, like, where did you see the sort of arc for how long Carbon would be continued to be supported?

Tevanian: Everything you said is completely correct. Carbon and Cocoa were both peers, if you will. There was, at least in the early days, there was no plan to sunset Carbon any time soon, and yet we wanted to make sure that people transitioned so you didn't really see new features coming out on Carbon whereas you did on Cocoa, and you saw efforts to get—we kept pushing developers into Cocoa because there were many advantages to doing that, and, you know, I don't know if there was even a specific

actual phase outdate for Carbon, to be honest. I don't remember one. Maybe there was, but it's not like we were actively trying to get rid of it.

Hsu: Right. I think it was when OS X went full 64-bit and the—Cocoa went 64-bit and Carbon wasn't and there was a big brouhaha over that.

Tevanian: That's possible. Yeah, that's possible.

Hsu: Uh-huh. From your perspective, what was Cocoa's big advantage over Carbon? Why was it the way to go?

Tevanian: Well, I mean, that's a complex question with a—well, it's a—that's a question with a complex answer, and maybe the most succinct answer is just to say, when you wrote an app in Cocoa, you were almost always guaranteed to have all your features work correctly and consistently with the rest of the system. With Carbon you weren't, because with Cocoa you would do a very high-level call and everything would just work. You would get a complete text editor without writing any code and that text editor had the same feature in every single app. With Carbon, all those things had to be built from scratch. They were always all different. So it really contributed to consistency.

Markoff: Yeah. Right. I remember at some point, I don't remember what year, Bud Tribble coming to Berkeley. We were both speaking, and he gave a talk and I remember I was just so stunned that he at one point said, you know, something like 50 percent of the lines of code in Mac OS [X] are actually open source. He was talking about the BSD component. Fifty percent is what sticks in my mind, but it was such a, you know, since to the outside world, who knew, you know? It was hidden, but it was all there, and I was just wondering, just the question is, the attitude that Apple had toward open source when you were running the show. What—

Tevanian: The attitude was definitely mixed. You know, the company's history had always been to be closed, with some good reasons, and so, you know, we just, we just became pragmatic about it and in those areas where it made sense to be open source and you could clearly see benefits with minimal risks, we would do it, and in other areas, wouldn't even talk about it. Why bother talking about it? Just wasn't worth it.

Brock: May I ask a question?

Markoff: Yeah, yeah, definitely.

Brock: I would be interested to hear you describe those, let's just say, the first five years that you were at Apple. What is a day like for you? You know, you're tackling some really big engineering projects, and I'm just interested to hear, describe, like, how you, the role you played in making them happen. You know, were you in meetings all day? Were you walking around? If you could give us some of what it was like to be there and doing that.

Tevanian: It seems like most of my days would either be—I've got—we didn't have online calendars, so I'd have my notecard with my list of meetings for the day and they'd be all backed up nine to five, just because there were so many meetings we had to do. Or I'd be traveling somewhere for a customer visit or conference or who knows what. So then in the evenings it would be dinner and then e-mails after dinner, whatever. So it was just, it was a very busy time. Now, that having been said, I would have to say that the time was spent in really useful ways making important decisions, whether it was an executive team meeting, we're deciding on the strategy of the company, or reviewing user interface, which could be a three- to four-hour meeting that's just all back and forth. It's, I mean, you barely think of it as a meeting. You're just meeting with your colleagues, reviewing their work, giving them feedback, stuff like that. Really high impact kind of interactions, and it would be, you know, there was obviously the management, the direct management part of it, you know, meeting all your reports, one-on-ones and figuring out status and challenging them to do really well, all those things. But I think if you step up a level it was sort of this combination of this, "Man, we're in this position where we can do something really important. Okay. We can really change what people do in their—what people have in their daily lives through technology," and yet this difficulty of making it work. You know, again, "the beleaguered company in Cupertino."

<laughter>

Tevanian: Right. About to go out of business, yet that's what the outside view is. Inside it's like, "Working on this really cool stuff that's better than anything else out there and it's going to make so many people so happy," right, and so there are these two competing things and it was almost like a daily grind where you'd have, "Oh, my God. This is so great. This is going to be so cool when people get to use it," versus, "We're about to go out of business."

<laughter>

Tevanian: And this was a daily occurrence for all those years. <laughs>

Markoff: Yeah. Yeah.

Markoff: Go ahead. Yeah.

Hsu: I guess, you know, related to this, you know, during those first couple of years, you were still having to make sure that the classic Mac OS, OS 8 and OS 9, there was still work going on then to keep that going. At what point did you decide, "Okay. We can stop working on OS 9 and put all our eggs behind OS X"?

Tevanian: The strategy with OS 8 and then OS 9 was to incrementally improve it as long as we needed to, which meant until we could get sufficient traction with Mac OS X, that we didn't need it anymore, and we didn't know how long that was going to take, so we had a whole team devoted just to doing that, and what happened was just something very natural where when I first got there, we staffed that team up very heavily. Lot of people working on that. It was what was paying the bills, and as the years went on, we would just gradually transition people off that team onto the OS X team, and I don't remember when we turned the lights off on Mac OS 9, to be honest. I can't remember when the last release was. In fact, it may have been because we switched to Intel processors, to be honest. Obviously wasn't going to run on Intel processors but there may have been maintenance releases on most Macs right up until then, just because we could but we had a team dedicated to making that work and we, that team knew, that over time they could transition onto the OS X team in a meaningful way.

Markoff: Yeah, mm-hm. Refresh me on the arc of WebObjects and did WebObjects come over for a while or did it go immediately?

Tevanian: WebObjects became an Apple product, and Apple sold it for a while. WebObjects was used internally quite a bit at Apple to build some of the internal IT systems. I believe it was used for the first online store. Ironically it had been used for Dell's online store.

Markoff: <laughs>

Tevanian: But over time, just out of neglect probably, it never really went anywhere and just died a slow death.

Markoff: Course, strategy was elsewhere. Yeah.

Tevanian: Exactly.

Markoff: Even though there'd been so much potential if that had been NeXT's direction, you said.

Tevanian: Yeah. You know, it's one of those things that really required a startup-like company to keep investing in it, have it be super-important. It was never going to be material to Apple, so it just died off.

Markoff: When you got into the, you know, you'd been in a small company. You all of a sudden were at Apple, what did the competitive landscape look like, I guess, either through your eyes or Steve's eyes in terms of, you know, who the competitors were that mattered? You know, it had been Sun to a certain extent, maybe IBM. Those guys. All of a sudden you were in a consumer world and who were the people you cared about?

Tevanian: In a way, while things changed, it didn't change. Now, clearly Microsoft was more of the direct competitor, but we had spent a long time building a consumer OS and that's what we were still now doing, and so that wasn't that big of a change. Arguably the bigger change was operating on a different scale, because the numbers were all much bigger and ironically I was warned that I would never succeed, because the scale of Apple was much bigger than NeXT and it wouldn't be able to work, whatever. But software's one of those things that scales pretty easily and pretty well.

<laughter>

Tevanian: So that proved to not be too much of a problem, especially when you've got a good team working on things.

Markoff: Yeah. What were the internal dynamics that led you to—did Apple have to let you testify at the antitrust trial? Was that a discussion inside Apple or was that a personal decision of yours?

Tevanian: The way that came to be was I think it was Netscape that had taken the lead of the government on driving that lawsuit, and so the government was looking to build its case, so looking for other people to testify on their behalf, and obviously Apple made total sense, right, having been in the crosshairs of Microsoft for so many years. The deal to bundle IE was an interesting part of that, and so what I believe happened at the time was they were trying to get Steve Jobs to testify.

Markoff: I see.

Tevanian: And he said, "No way."

<laughter>

Tevanian: "That's not going to happen."

Tevanian: And he volunteered me.

<laughter>

Markoff: So it was… Which makes it very simple.

Tevanian: Right.

<laughter>

Tevanian: So I had to do it.

Markoff: Did you ever cross paths with—I think he was sort of your equivalent, a little bit. No. He was maybe one step below. Steve McGeady at Intel, who also testified. He was the one who--

Tevanian: Oh, yeah.

Markoff: What was his, I mean, he gave the quote to me and now I'm forgetting what his quote was. It was about bearing. Oh, cut off the oxygen supply. That was—

Tevanian: Right. I don't think I ever talked to him, and they were pretty good about not wanting witnesses to talk to each other.

Markoff: Yeah, yeah, okay. The actual event and going to Washington and stuff, do you remember anything about it in particular? Was it fun? Was it, like terrible?

Tevanian: It was an incredible experience. The, I mean, I think just testifying in any court case is probably pretty unusual, but in this case it was like over-the-top unusual, and I remember—so once it was decided that I would be the person to testify, we hired someone to represent me, and so he starts doing his work and so he meets with me and he says, "So Avie, I want to tell you," they put my name in as a witness, and so immediately Microsoft starts sending subpoenas, and he said, "I want to tell you that Microsoft has subpoenaed all your personnel records," and I'm like, "Okay. Why would they do that?" He's like, "Well, they're going to look for something to use against you," and he's like, "I've got your personal records here in the other folder," which was basically empty.

Tevanian: He's like, "Why is your folder empty?" and all that was—there was, like, a review in there from Bud [Tribble] from, like, 1989, maybe 1990. Couple of pieces of paper like that. I'm like, "Well, I don't know. That's my HR file. I don't know anything about it. I've never seen it. But yeah, I don't normally get reviews," and whatever.

<laughter>

Tevanian: So apparently this is a good thing, but that was the reality.

Markoff: And how difficult was the cross[-examination]? Do you remember anything about the cross?

Tevanian: Well, the—yeah. The—my part of testifying was actually, it turned out to be relatively straightforward, and it's because we literally spent months in preparation, so I almost had to, like, stop doing my job for a while and work with the lawyers for months on documents that are being produced, and "What does this mean, what does this mean? They're going to use this, they're going to use this," and it was, I mean roomfuls of documents to go over, and so, you know, during my—no. During the cross-examination, very early on, something interesting happened where the person that was questioning me asked me a question, very early on, and I gave a fairly long-winded answer that was not good for Microsoft. It was not good at all. It was, you know, I clearly provided more information than this guy wanted that was not good, and he immediately says to the judge, "Your Honor, may I request that the witness keep his answers to the question?" and the judge immediately said, "I think that's exactly what he did."

<laughter>

Tevanian: So at that point I felt as though I had kind of won over the judge and he started asking me questions directly, which was virtually unheard of. But I remember one of the big issues was the bundling of the browser into the OS, the embedding of it, which today nobody does, right, and Microsoft was arguing that it was absolutely required, so the judge turned to me at some point and asked me my opinions for if he thought it needed to be embedded, and we're just having this dialogue and the guy cross-examining me is like twiddling his thumbs wondering, "What's going on here?"

Markoff: <laughs> Exactly.

Tevanian: So that part went okay, but still, it was extremely stressful. You know, it was one of those things where you walk to the front of the courthouse, the Federal Courthouse in Washington, D.C. The Capitol's up on the side one way, the White House is on the other side, and you see these big scaffoldings with cameras and news crews and CNN and CNBC, and all that kind of stuff. And then, so I

fly there. I fly home for the weekend and wife's, "Oh yeah, we watched you on TV all week—all during the week." 'Cause like every 10 minutes it's the news thing.

Markoff: Yeah. <laughs>

Tevanian: So it was kind of incredible.

Markoff: That's amazing. Tell us about the transition to becoming—oh, sorry.

Hsu: I was just—I was wondering how impactful do you think your testimony was in that case?

Tevanian: There's no way to know, but given that the judge found for the government, right? So the government won its case. And given the way he personally interrogated me, and given what I could say well, you can have a browser in with the OS, but you don't have to have it built in the way they've done it. I think that was—I'm told that was pretty damaging to their case.

Markoff: Yeah.

Tevanian: But who knows for sure? I mean they're many, many other witnesses, many, many other considerations.

Markoff: Yeah. Yeah. I wanted to ask about the transition to becoming Chief Software Technology Officer and what that meant and what did it signify.

Tevanian: So that was the result of—so I think we're talking around 2004 now. And so I had been in charge directly of software for seven years and I'd been in charge of software and effectively leading software for a long time at NeXT, so nine years at NeXT, right? So that's about 16 years, in the trenches, on the line, delivering products under the microscope of Steve Jobs. And so somehow we get into discussion and it's like, you know, I've had enough of this and let's find another way for me to keep doing kind of what I do. And so we came up with this Chief Software Technology Office—Officer job, which we both thought was a great idea. It was as simple as that. It was like, I've been doing this a long time, but I don't want to leave the company. He doesn't want me to leave the company. And let's give Bertrand a shot to run this, and that's simply how it happened.

Markoff: And in response to David's question about what you did during your day, I wanted to ask two sort of follow-ons. One is did you ever find time to manage by walking around? Were you a management walking around kind of person, or was that valuable to just wander out amongst the programmers?

Tevanian: You know, I want to say yes, because walking around with the programmers, yes is—I want to say yes because it sounds like the right thing to do. But with programmers they're in their office with the door closed focused on their screen. Okay? They don't want you knocking on their office unless you got a good reason to. So what I would do instead was have a strong presence either with a communication meeting, talking with everyone, fielding questions, or in review meetings where there were lots of people, 20, 30, even 40 people reviewing a product, being part of that process, asking questions, using all the products, filing bugs for specific engineers against certain parts of the project, doing all those kinds of things, which is a form, I guess, of walking around but not literally walking around. So I was very much in the stream of consciousness of lots of people, but in a way that's a little bit perhaps unusual or non-standard.

Markoff: And then, you know, the kind of day you described where you're basically interacting and responding all day long, and even into the evening, when you became a—the software technology officer, did you actually get the time to think more than the next product release? I mean I—and what's that like, I mean to actually think more than one generation into the future?

Tevanian: Yeah, so that was a total change. The days were not booked all day solid. I didn't have any direct reports anymore to deal with and Bertrand dealt with all that. And I could just kind of go around and literally poke on things. And I'd hang around with Steve and see what products he's looking at, review things, which was sometimes good, sometimes bad. And I did think more strategically and let me step back and do things like talk to people about what the software strategy for iPhone should be, how we can do that because we had options there and a lot of other things like that. You know, be more perspective about the Intel switch, things like that.

Markoff: Yeah. Yeah. This is Hansen's question because I don't know enough about it. He says, how difficult was it to convince Steve that the iTunes Store had to be on Windows?

Tevanian: So that's actually getting the iPod on Windows.

Hsu: Oh, Okay.

Tevanian: Yeah, getting the iPod on Windows was the key thing.

Markoff: Yeah.

Hsu: And the iTunes Store as well.

Tevanian: And—yeah, they all go hand-in-hand.

Hsu: Yeah.

Tevanian: It was about putting iTunes itself on Windows which enabled iPod to work on Windows. And, you know, it just took time. It took time and it took some numbers. I give that decision's credit to Phil [Schiller]. Phil did a lot of legwork to really show what the opportunity was by moving it over to Windows. And at some point when Steve's the only person in the room saying don't do it and there's good data from marketing saying this makes a lot of sense and everybody's saying this makes a lot of sense, he gets convinced.

Markoff: Yeah.

Tevanian: But it took a while.

Markoff: So I remember being kind of crestfallen. But Steve, I remember that the iTunes product announcement, getting my 15 minutes and going in there. And Steve had clearly gone such an entertainment direction. He could see that that's where the product was going to grow. And I was still back in that camp of the computer is a bicycle for the mind and I wanted to see the next version of HyperCard, which was dead.

Tevanian: Right.

Markoff: And he obviously understood what was happening in the world. And, I don't know, do you understand that kind of dichotomy that the PC was becoming an entertainment device or computing was becoming entertainment centric?

Tevanian: Well, you're probably talking now about the whole digital hub strategy.

Markoff: Yeah.

Tevanian: Right?

Markoff: Yeah.

Tevanian: Photos, movies, music, all with computers at the center?

Markoff: Yeah.

Tevanian: Yeah. I mean that was just—that was one of the things where Steve was really good at putting together a general message or a good message to explain why we're working on what we're working on. And so why do you have FireWire? You have FireWire so you can get fast I/O to a camcorder, right? And you have to have your music somewhere to sync it. At least back then you had to sync from a computer. And you want your photos organized on your computer so it all makes sense as a nice package.

Markoff: Yeah.

Tevanian: He could've come up with something else as well. That just happens to be the one that he thought of based on the things that we were working on that all looked promising.

Markoff: Yeah.

Hsu: How much were you involved in shepherding the development of iTunes?

Tevanian: I wasn't that involved in iTunes. iTunes was done after we acquired—what was the name of the app?

Hsu: SoundJam?

Tevanian: SoundJam. Yeah, SoundJam. And so we acquired SoundJam and then that morphed itself into iTunes.

Markoff: Right. Right. What led you to decide to leave?

Tevanian: Okay. So after being the Chief Software Technology officer for little while—

Markoff: It was almost three—wasn't it three years that you—

Tevanian: It was close to three years, maybe. Yeah. So a while into that it was becoming frustrating for both me and for Steve. And it was frustrating because I was there to offer my opinions on things and that was not good for Steve because Steve wanted to offer his opinions on things. And so we'd go from review to review to review and he wanted it to be the Steve Jobs Review Show. But I had my own ideas. And sometimes we'd agree, sometimes we'd disagree, or sometimes we'd just talk about different things that

are completely complimentary. And so there was this tension. And I like to think of it in terms of Steve was never the kind of person that had a staff person working for him, just kind of doing things to help him out. There was not—he was always hands-on. He wanted to be the person that knew all the functions and the only person who knew all the functions. But if I'm now following him around a lot and I'm learning all the different functions too, he's kind of giving up a little bit. So it was kind of—it was a little bit stressful for both of us, and look, we had known each other for so long that it was just, it was kind of working. But there was that and there was this other unfortunate—mostly unfortunate thing where on the executive team I was the person that had the least responsibility by a large margin. I didn't have any day-to-day product that I was worried about. Whereas, everybody else around the table, oh my God, I got to get this thing done this week or we're going to fail, right? Or huge issues. Even in legal there were huge issues 'cause every week there was a bunch of lawsuits, right?

<laughter>

Tevanian: And so I think no one actually complained to me, but I think there was some back channel to Steve that my job was too easy, okay, for still having that kind of a role. And so for all these reasons we just kind of decided the best way to resolve this is for me to just quit, leave the company. Because then all these issues go away and I'm adding some value to him but, you know, he's going to figure these things out for himself for the most part anyway.

Markoff: Yeah.

Tevanian: Right? And so we just kind of mutually agreed that that was the best result, solved a lot of problems. And, you haven't asked, but I'll tell you. In retrospect I think it was a huge mistake for both of us. And neither one of us could have known at the time, of course, but we probably should have. And I think it was a huge mistake for both of us because well, for me, I mean I left just before the main inflection point of the company having massive success.

Markoff: Yeah.

Tevanian: Okay. And so part of me misses being there to experience that part of it, having laid all the groundwork for it. You know what I mean?

Markoff: I do.

Tevanian: And I balance that against, it was hard working there. But having a similar role like that that would've worked well like with other types of CEOs maybe, it would've been interesting, okay. So that part was wrong for me. And it was wrong for Steve because I think he really lost something by not having

me around to just bounce ideas off or get sanity checks on or whatever, whether there's things going in the market or things going on in the organization. And especially as the years went on and he became sicker and it was harder for him to do everything he wanted to do, I think, you know, I could've helped out even more.

Markoff: Yeah.

Tevanian: So I mean, like it didn't hurt the company at all. It didn't really hurt me, right?

Markoff: Yeah.

Tevanian: We were—the company's fine and I'm fine. But in retrospect I do think it was a mistake for both of us. Yet because of who we were it was just hard to make it work.

Markoff: Did you ever have a chance to have the conversation with him, that conversation with him after?

Tevanian: Never.

Markoff: Never?

Tevanian: Never. No, never.

Markoff: And when you left did you have a clear idea of what you would do after leaving?

Tevanian: When I left I assumed I was just going to retire.

Markoff: Yeah.

Tevanian: Which is basically what I did. Yeah.

Markoff: Yeah. Okay.

Tevanian: But, you know, I thought maybe there was a chance that I would take on another operating job maybe as a CEO of a midsize company that would take a chance on me as a CEO. But I also knew that it would have to be something really exciting to want to take it.

Markoff: Yeah.

Tevanian: Because there's no amount of money they could have offered me to make me want to take it, so it'd have to be something I'd really want to do and I really enjoyed and not being in the situation of those 9-to-5 meetings under the gun to ship a product all time.

Markoff: Yeah.

Tevanian: You know, people always complaining to you about who knows what.

Markoff: Yeah. Did you get a lot of offers for the kind of jobs you didn't want to do?

Tevanian: No, not really.

Markoff: Yeah.

Tevanian: No.

Markoff: Interesting, because you're—I'm surprised because you have a set of talents that is kind of unique in the Valley.

Tevanian: Well, it's probably the case that I never—lots of recruiters called and I never returned the calls.

Markoff: Okay.

<laughter>

Tevanian: So, you know--

Markoff: That answers the question. <laughs>

Tevanian: Yeah. There was probably—I mean there were definitely CT—many CTO type jobs out there where there'd be some cryptic message from a recruiter, which I would just delete.

Markoff: Yeah.

Tevanian: Many, many of those. I mean I did do some boards. I still do some boards, but that's a different kind of thing. That's a more natural thing to do. But never really—I mean there were "come be CTO of this huge company." I'm like "I have no interest in doing that at all."

Markoff: Yeah.

Brock: <laughs>

Markoff: Yeah.

Tevanian: So I don't even consider that to be an offer.

Markoff: Yeah.

Tevanian: I never got—nothing ever got to that stage.

Markoff: I'm confused on timing. Were you gone both before the stock option controversy? And were you gone before Steve got sick?

Tevanian: So I was gone before the stock option controversy, but I was there when he was sick.

Markoff: Yeah. Sorry. Okay. Yeah. And did—I mean to what extent did sometimes people cut off people when they leave. Did Steve and you keep a relationship and did it get—

Tevanian: Minimal. His general MO was that he spent his time with people who are useful to him at the time. And so I became not useful to him.

Markoff: Yeah.

Tevanian: And so, I mean if I ran into him he would be friendly.

Markoff: Yeah.

Tevanian: In fact, I think like a month later I ran into him on a beach in Hawaii. We were both vacationing with our families at the same time. And he was fine and cordial and all that. And if I were to send him an email on something he would respond.

Markoff: Yeah.

Tevanian: But he really had no need for anything that I was doing at the time and there was not really any reason for me to contact him.

Markoff: Yeah.

Tevanian: At least not all that much.

Markoff: Yeah.

Tevanian: And so we just kind of didn't keep in contact that much.

Markoff: At the end of his life when he got very sick did you guys have any contact?

Tevanian: No, not really.

Markoff: Yeah.

Tevanian: No. And I wish I had known just how sick he was like the month before, because then I would've initiated something, but I didn't.

Markoff: Yeah. And when he sort of threw Fred [Anderson] under the bus and all of that did—I mean you were—let's see, so you became a partner of Fred's after that. Is that right?

Tevanian: Yes.

Markoff: Yeah. So—

Tevanian: Yes. So at the time I didn't really know many of the facts of what had gone on. I knew some of them. Obviously, I was personally on the receiving end of some of the things and I kind of knew what had happened there and I'm just kind of reading what's in the press.

Markoff: Yeah.

Tevanian: But look, I did not like seeing what happened to Fred. But I really couldn't evaluate much of anything at the time anyway.

Markoff: Yeah. Yeah. Would you just tell us a little bit of the story of Elevation?

Tevanian: Sure.

Markoff: How did it come to happen and?

Tevanian: Yeah. So Fred Anderson is one of the founders and so I knew Fred very well, of course, having worked with him at Apple for many years very closely, we've become great friends. And they founded their fund in I think 2006 and I was an LP in the fund. And so I got to know all the other partners, Roger McNamee, Bono, Marc Bodnick and the others. And so around, then in 2009 they asked me if I wanted to join them as an investor. And I thought about it and it's like actually this is perfect because in my quote, "retirement," I'd been doing angel investing, but not a lot of it because as an engineer I can find everything wrong with every business plan instantly.

<laughter>

Tevanian: Okay, so I can find every reason not to invest in a company without thinking very hard at all. So I wouldn't invest in very many companies. And, anyway, I found it to be somewhat of a lonely thing because it was just me and I'd have to meet entrepreneurs, who didn't have offices, in coffee shops, which was kind of weird.

Markoff: Yeah.

Tevanian: I'm like oh, this is great. You guys have a big fund, you do big investments, the whole investment team, love to join you and keep investing. And so I did. And so we did.

Markoff: And did you get an area of responsibility in terms of the technologies or the industry? Or was it all—was it not that structured?

Tevanian: Totally unstructured.

Markoff: Yeah.

Tevanian: But obviously I was the technology expert and so whenever someone wondered is this likely to work, I would say yes or no or try and figure it out.

Markoff: Yeah. I've known Roger McNamee in many roles over a long period of time.

Tevanian: Oh yes.

Markoff: He must've been interesting partner to have. <laughs>

Tevanian: Yes. Yes, love Roger.

Markoff: He's a character. Interesting.

Hsu: I have a question. Did you ever consider starting a new company, a startup?

Tevanian: So I did start a startup.

<laughter>

Tevanian: Funny you should ask that. And so I started a startup, which failed because it was—it was ahead of its time. I started a company that was—this idea—the idea was to use crowdsourcing to predict the stock market. And so the idea is—the idea was if you could get lots of consumers to come to your website and to tell you what they think about various companies, then you can predict the future of stock price. So consider if, let's just use Apple as an example, if people start—basically sentiment analysis. If people are feeling good about Apple 'cause they're seeing a lot of people at Apple stores, then that's going to be a predictor of good earnings, which is a good predictor of the stock price going up.

Markoff: Yeah.

Tevanian: And so you would try to attract people to the website to get them to basically give you their sentiment, voting up, voting down, if you will, consumer type companies. And if you could collect enough data you could data mine that so it's crowdsourcing and Big Data, all the keywords in there, in a cloud-based platform, right, cloud-based platform, you could now predict the stock market. But it preceded social networking and everything else. And so just as we were starting to run out of funding Facebook started becoming interesting and this would have been a great tie into Facebook--

Markoff: Yeah.

Tevanian: —where you're now sharing your thoughts and getting other people to participate and give their thoughts and have it in a certain amount of virality to it, but we gave up on the idea and folded the company. So it was a learning experience.

Markoff: Did you come to market or did you not get?

Tevanian: We had a website that was up and running. So it was working. We never got a lot of traction.

Markoff: What was the company called?

Tevanian: It was called Piqqem.

<laughter>

Hsu: And what year was that?

Tevanian: This would have been—we probably started in 2007, and we probably closed it down in 2009 or so, something like that. Yeah, somewhere around then.

Markoff: Can you give us your thoughts about Tim Cook as the leader of Apple and sort of what your perspective on Tim is?

Tevanian: Yeah. So first of all, I consider Tim to be a friend and I think he's just a tremendous individual. I think he has really stepped up into the new role that he has as CEO. And I've seen him grow a lot from when I knew him as a COO, in terms of the kinds of things he does. I think—what else do I think? I think he's got an incredibly difficult job running this huge company and trying to—his background in operations, I think, is very useful because they have to keep the trains running on time with that kind of magnitude.

Whenever they have a new product that comes out the scale at which it comes out is enormous. And they can't afford mistakes and I think under his leadership they've done a really good job of that. I think if I were to be critical at all and I hate to be critical of Tim, again, he's a friend and I think he's doing a great job. I mean technology is not his strength, right? And so there's probably some innovation that—they're probably not keeping quite the same pace of innovation they otherwise would, but what I like to say is they're staying ahead of the competition. And that's the most important thing, is staying ahead of the bear instead of staying ahead of your friend when the bear is chasing you. Right <laughs>? So it doesn't matter how innovative they are as long as they're ahead of the competition and I think they've done a great job at doing that.

Hsu: What about your successors in leading software, Bertrand [Serlet] and Scott [Forstall] and now Craig Federighi?

Tevanian: So they're all friends of mine. We all worked together at NeXT, ironically, all very different individuals. I think they all have brought success to the job in a lot of different ways. Bertrand, of course, the techie of them all, always worried about how the tech works, less about the management parts of the job but, again, good enough to do it. I thought Scott was an incredible person, incredible engineer, incredible manager with a couple of issues that caused him to not get along with everybody all the time, and his style of management worked great working for Steve Jobs because Steve was okay with conflict and Steve would mediate conflict and kind of make sure everything was taken care of. Without Steve there, Scott's style of management was not always going to work best even though, I mean Scott very often would make the right call at the right time. It was hard to see him ever making a bad call. And I remember, I mean, I told Scott, many years before he got the job, just work on a few things here, getting along with people, don't just manage up like you do with Steve, a few things like that and you're going to have this job in a few years and he did. And some of the things I tried to get him to improve on, he didn't quite improve on enough or else I think he'd still be there and be very successful. But a great guy overall and I think he's perfectly happy doing other things now anyway. Craig, so Craig left and then came back to take the job and I think the world of Craig, as well. I think Craig has a really good balance of understanding the technology and being a good manager, maybe one of the better balances of all of them.

Markoff: I'm trying to remember now, did you ever—Craig gets up on the stage and does demos and stuff. Did you have that role? Did you do demos, public?

Tevanian: I did do some demos. So I would do them regularly at the WWDCs. So there'd be a Steve keynote and he'd invite me up for 5, 10, 15 minutes and do a demo with him, occasionally at a MacWorld [Expo]. Over time those things kind of dwindled and Steve tended to do most of them himself. But I did do some of them, yeah.

Markoff: Those—as he perfected that I mean from—I mean it started in the early '80s but then it sort of ramped up and they became like rock concerts. I mean from my perspective it was like going to rock because it was a staged event that was—there were even like the—there were people cheered to the same things. "One more thing" became this kind of joke for a while. And they were really quite amazing.

Tevanian: Well, you guys in the press made it that way. Right?

Markoff: Yeah, I know. I know.

Tevanian: So <laughs> I mean it was a PR strategy which is, you keep things secret, you unveil it all at once in a big way, right? And then the press goes crazy over it. You get tons and tons of media exposure or you've got a couple follow-up stories to go along with it. And so it worked.

Markoff: It worked. It was really quite remarkable.

Tevanian: I will add it was also remarkable because the products were remarkable. So these weren't empty keynotes, right? I mean they were chock full of really good stuff. And no matter how staged it was if there was no beef there it wasn't going to work. There's plenty of beef.

Hsu: Was it stressful to give those keynotes?

Tevanian: Well, again, my part in them was always small and so it wasn't that stressful. Things, we generally knew things were going to work. From the engineering perspective, the most stressful part is just hoping and praying the demos work, right, because you're always showing something that's not quite done. And if he veers off script and does something that wasn't expected and it doesn't work, oh my God, that's horrible. But the shows themselves were generally well-planned, well-executed, and so they weren't stressful. My part of it was a little stressful because you're getting in front of a big crowd, but I'd done it enough that it was okay.

Markoff: You talked about that trajectory of 16 years sort of developing product, and it's a hard question, but is there something you're most proud of? I mean that really you really take pride in of all the things you worked on? I mean if you had to pick one.

Tevanian: Boy, that is a really hard question because there's no one thing per se. I guess if I had to answer what I would say is that when we—it was sort of in that year or two after we joined Apple where we just kind of set a new tone for the company, a new culture, a new way of operating the whole company that led and still leads to massive success. Because I think those fundamental things which, as

you know, Apple is now trying to teach to incoming employees, I think those are fundamental things that we put in place that are now surviving the test of time, and continuing to make the company successful. And the really great thing about it is not only has it yielded a company that's successful but it's yielded huge improvements in technology for everybody. And I mean even if you don't use an iPhone, I mean Android has copied so much of it, right, that it's like everywhere now. And so it's just mind-boggling the impact that sort of are changes in those couple of years have had, even though in those years we weren't thinking about a phone or anything that people have today.

Markoff: And you really did—I mean those—up until—you're almost there till the iPhone was introduced—that was designing the technology that made that, I would argue, made that leap to the rest of the population. I mean it was off the desktop but it hadn't gotten out where everybody in the world could use the technology. Now we're at that point.

Tevanian: That's right, with everybody connected all the time.

Hsu: What do you think is critical about that culture that you set up there at that time that persists to this day and that will carry Apple forward? What's the difference? What's the Apple difference?

Tevanian: I think what we did, which certainly made the difference then, and I think continues to make the difference now, is this focus on exemplary technology which means you get exemplary products by having exemplary people who focus on getting things done and getting things out. And you can kind of break any of those and you don't get success, right? Or you don't—if you don't have great people you don't get great technology and you don't get great products. And you can have great people and great technology, but if you don't finish them and ship them it still doesn't do any good. Right? So you kind of need all of these things and these are the things that we really instilled on everybody. And there's other things like everybody working toward the same goal and stuff like that, which really kind of ties it all together. But I think those are sort of the core things that we really instilled in everybody, which is our value here is, this isn't really a value statement per se, but our value is to create an excellent product that people can really use, which means you got to get it out there and you got to have the channels for it. For it's not just the product. It's the channel. It's the marketing, it's everything, it's a whole thing. It's the un-boxing experience so that people feel good about what they just purchased, right? And that's sort of a culture that we really put in place and held everybody toward those goals.

Hsu: How important is secrecy to that culture?

Tevanian: Secrecy is on a completely different axis <laughs>. And secrecy is about—it's probably about not allowing current products to be killed, right, Osborne effect, we don't want that obviously. And it's partly about making sure the competition doesn't see what you're doing so they somehow steal your thunder in who knows what way. And it's also about, we just talked about it a little while ago, having the

big unveil. Okay, where you've got this great thing that everybody is now seeing for the first time and every—a million people or more are live streaming it, right, 10 million. Who knows what numbers? But are live streaming to find out what's next. And secrecy gives you all of those things. Secrecy does come at a cost but generally these things far outweigh those costs.

Markoff: I'm watching—Tom Gruber came after you left but he was one of the architects of Siri and is someone I've known for a long time. And I'm watching him struggle in that framework and Apple has sort of opened the door for him to get out just a little bit. But I mean and letting him talk at TED, which is just extraordinary that somebody would let someone from Apple do that because that was something that wouldn't have happened. But he's chafed at the—that system that worked very well.

Tevanian: Well, some things require not being secret, right? And so secrecy is not one size fits all. You have to kind of go with the flow and figure out what's going on. And if you're working on Internet standards you can't be secretive by definition. So there's lot of different degrees there.

Markoff: I have a Steve question and this is something I've thought for some time and I was wondering if you could tell me if it is accurate. Steve is given credit for lots of different things. And one of the things that I haven't seen stressed as much, but I've always thought, is over a long period of time he got the timing of technologies right in some ways that I almost thought was spooky, because you can be too early or you can be too late. But he seemed to have some fifth sense for when a technology was right for mass commercialization. Am I—did you ever—did it look like that to you at all?

Tevanian: Well, so I'm not even sure the premise of your statement is correct. I mean obviously the Cube and NEXTSTEP were too early.

Markoff: I know he made mistakes <laughs>.

Tevanian: Right? So and yet—

Markoff: Optical disc—

Tevanian: I think one—yeah, I think one of our strengths which you are attributing to him, which is correct, is—like I said, we developed a prototype tablet, right, but we elected not to ship it because we just projected out who's going to use this and the answer was nobody or maybe five people when everyone else sold five tablets. Right? So I think what he was good at and what we were all good at was getting out of our tech skins and figuring out what is the world going to do with this thing. Okay, and is it ready? And maybe it's not quite ready but in a year it'll be ready because we'll make it ready. Okay? And so when we saw that we could get all the elements together for a phone it made sense. And, oh, by the

way, next came the tablet which now made sense because we had all this connectivity. Right? And so it was—I'm not sure that it's that hard. I think it's really about having the ability to, again, step out from your normal technological skin. Don't see things as an engineer or as a product person, and see things as the masses are going to see them and will they want them and can they use them. But we clearly had technologies that were before their time that we didn't ship for that reason.

Markoff: From my end, maybe just one last question, have you ever considered a memoir?

Tevanian: <laughs> I'm not a writer. I'm not a writer. I mean if someone came to me and wanted to write a book, and they just wanted to sit with me and I would tell them the story, I would probably do that and it would sell 20 copies. Right? But I can't see doing that myself.

Hsu: Have you played with Swift?

Tevanian: Just a little bit, not very much.

Hsu: What do you think of it?

Tevanian: My general impression is they have made a really important step forward. It's going to be extremely successful. They're making the right decisions with it. I think developers are falling in love with it and they're going to fall in love with it. It's a very positive thing for them to do.

Brock: I was just wondering about your recent investing with Elevation and I guess now with NextEquity.

Tevanian: NextEquity.

Brock: Yes. Just are you investing in software and where do you see the software story going in the near and far terms?

Tevanian: Okay, so let me talk about that. So NextEquity is the fund that we have right now which is in some form a successor to the Elevation fund, but it's also a little bit different. The partners are a little bit different and we don't do checks quite as big as Elevation used to do. Elevation, right, used to do checks in the hundreds of millions and we do millions. It's a much smaller fund. We're just a small number of partners, much smaller fund. And we're basically investing in anything that relates to technology. We think technology touches everything these days and it means there's an interesting technology angle to lots of different types of companies. And we look at them all and we invest in the ones that we think are good businesses. And so for us the angle is do we think this is a good business.

Markoff: Have you had any exits yet or is it really how—

Tevanian: We just started. We've not had any exits yet.

Hsu: I guess my last question is what do you think is Apple's greatest challenge right now?

Tevanian: Apple's greatest challenge is probably staying innovative given its size. They've got a huge installed base. They have to worry about keeping that installed base moving forward, which generally leans toward incremental changes that are slow. Right? That's the tendency there. But in the industry they serve you still need to have new innovations. It doesn't mean they need to be whole new product categories but they need to be basic innovations even in existing categories. And so staying innovative is probably their long-term challenge.

Markoff: So the last time that I saw Steve was a visit that I paid with Steven Levy in May of—was it 2011? It was about five months before. And one of the things he said that—he said, "If I had enough energy I'd really like to take on Detroit." And that was very striking and I've often wondered, I have no idea— because you saw they just got a license for testing a prototype. I was wondering whether Tim Cook was sort of honoring Steve's sort of spirit or his interest in starting a self-driving car company—a self-driving car project.

Tevanian: Well, I think at this point it's fair to say that Tim would be pursuing things assuming he thought they made sense to pursue. And he's on record as saying transportation is obviously a big industry, which leads people to believe that they're working on something in that space. Exactly what it is they won't say. But I mean look, when you're Apple's size, to move the needle you want to look for big industries, right, where you can really, again, move the needle and there's not a lot of them.

Markoff: Have you looked at flying cars at all? The—

Tevanian: They won't do flying cars <laughs>. I'd love to have one <laughs>.

Markoff: There are a bunch of startups around. I mean, I just made a list of 14 flying car startups.

Tevanian: Oh, wow.

Markoff: Including Airbus, sort of the largest of it. So <laughs> that's—on from my end that's great.

Brock: Is there anything that we've missed?

Markoff: Yeah, what have we—

Brock: That's always a good question <laughs>.

Tevanian: Oh, gee.

Brock: Yeah, something glaring.

Tevanian: Well, as soon as, five minutes after we're gone as I'm driving away, I'll think of something. Oh, my God, we forgot to talk about this. There's so much that happened it could never all be covered. Think we covered most of the highlights. We can always do another session if we have to.

Brock: Great.

Hsu: I guess, I don't know if this is something you'd be comfortable answering. But I was just wondering, the day that Steve passed, maybe what were your feelings and—

Tevanian: So I remember that day well because that day I was taking my daughter to a volleyball practice. And just as we were walking into the gymnasium, my iPhone started beeping with phone calls and text messages all from the press.

Brock: Oh geez.

Tevanian: And so I knew exactly what had happened. I didn't even have to look at any news or anything. I knew what had happened instantly. I mean, look, we all knew he was sick for many years, right? I knew very early on just how sick he was. And even though I hadn't met with him personally, I still talked to people who knew a good amount of what the situation was. So it was like, gee, this is really sad but it finally happened. Because in some way you all—we knew the situation was dire because of the disease, yet you always wanted to believe he would find a way to avoid the inevitable. I think he believed that, right? But it was just sort of wow, this is really sad. And then I went in and watched my daughter's volleyball practice.

Brock: Well, thank you very much.

Hsu: Thank you very much.

Tevanian: Thank you, my pleasure.

END OF THE INTERVIEW