Steve Jobs Bio

The Unauthorized Autobiography

J.T. Owens

Steve Jobs Bio

The Unauthorized Autobiography

By J.T. Owens

Smashwords Edition

Contents

- IBM
- Lisa
- Scully
- Macintosh
- Society
- LaserWriter
- Ousted
- New Venture
- Pixar
- Adoption
- NeXT
- Education
- NeXTStep
- Microsoft
- Rotten Apple
- Toy Story
- Place in History
- Selling NeXT
- Get Back
- Rebuilding
- MicroDeal
- Think Different

- Apple Core
- Getting Better
- SillyWood
- Internet
- iMac
- Wealth
- OS X
- Digital Hub
- Leadership
- Apple Retail
- Innovation
- iPod
- Marketing
- iTunes Store
- Management
- New Campus
- Personal Life
- 5th Avenue
- Design
- PixNey
- iPhone
- Apple DNA

- iPad

- Post PC

- Life Lessons

- One last thing…

*** Here’s to the dreamers of dreams ***

Childhood

I was born in San Francisco, California, USA, planet Earth, February 24, 1955. I was adopted at birth. My biological mother was a young, unwed graduate student, and she decided to put me up for adoption.

I had a pretty normal childhood. I grew up in Silicon Valley, my parents moved from San Francisco to Mountain View when I was five. It was nice growing up there. I mean the air was very clean; it was a little like being out in the country. I grew up fairly middle-class, lower middle-class. It was the suburbs, on a block with lots of kids. It was like most suburbs in the U.S. It was really the most wonderful place in the world to grow up.

I was very lucky. My father, Paul, was a pretty remarkable man. He joined the coast guard in World War II and ferried troops around the world for General Patton; and I think he was always getting into trouble and getting busted down to Private I think is the lowest rank. He was a machinist by trade and worked very hard. He was kind of a genius with his hands.

He had a workbench out in his garage where, when I was about five or six, he sectioned off a little piece of it and said, "Steve, this is your workbench now." And he gave me some of his smaller tools and showed me how to use a hammer and saw and how to build things. It really was very good for me. He spent a lot of time with me . . . teaching me how to build things, how to take things apart, put things back together.

He could fix anything and make it work, and he could take any mechanical thing apart and get it back together. If we needed a cabinet, he would build it. I thought my dad's sense of design was pretty good, and he even cared about the look of the parts you couldn't see. He loved doing things right. When he built our fence, he gave me a hammer so I could work with him, and he said, "You got to make the back of the fence that nobody will see just as good looking as the front of the fence. Even though nobody will see it, you will know, and that will show that you're dedicated to making something perfect, for you to sleep well at night, the aesthetic, the quality, has to be carried all the way through."

He was not an educated man, but I always thought he was pretty damn smart. He didn't read much, but he could do a lot. My father's father was an alcoholic and whipped him with a belt, but I'm not sure if I ever got spanked.

One of our neighbors across the road was a real estate agent, he wasn't that bright, but he seemed to be making a fortune. So my dad thought, 'I can do that.'

He worked so hard, I remember. He took these night classes, passed the license test, and got into real estate. Then the bottom fell out of the market. You had to suck up to people to sell real estate, and he wasn't good at that and it wasn't in his nature. I admired him for that. I try to be as good a father to my children as my father was to me.

We had an Eichler home, Joseph Eichler did a great thing, his houses were smart and cheap and good. They brought clean design and simple taste to lower income people. They had awesome little features, like radiant heating in the floors. You put carpet on them, and we had nice toasty floors when we were kids.

I can go into a lot of details about my youth, but I don't know that anybody would really care about that too much. I remember the late 50's and early 60's. I grew up at a time where we were all well-educated in public schools, a time of peace and stability until the Vietnam War got going in the late sixties. It was a very interesting time in the United States. America was sort of at its pinnacle of post World War II prosperity and everything had been fairly straight and narrow from haircuts to culture in every way, and it was just starting to broaden into the 60's where things were going to start expanding out in new directions. Everything was still very successful, very young. America seemed young and naive in many ways to me, from my memories at that time.

I remember John Kennedy being assassinated. I remember the exact moment that I heard he had been shot. I was walking across the grass at my schoolyard going home at about three in the afternoon when somebody yelled that the President had been shot and killed. I must have been about seven or eight years old, I guess, and I knew exactly what it meant. I also remember very much the Cuban Missile Crisis. I probably didn't sleep for three or four nights because I was afraid that if I went to sleep I wouldn't wake up. I guess I was seven years old at the time and I understood exactly what was going on. I think everybody did. It was really a terror that I will never forget, and it probably never really left. I think that everyone felt it at that time.

School

School was pretty hard for me at the beginning. My mother taught me how to read before I went to school, so when I got there I really just wanted to do two things. I wanted to read books because I loved reading books and I wanted to go outside and chase butterflies. You know, do the things that five year olds like to do.

I encountered authority of a different kind than I had ever encountered before, and I did not like it. They really almost got me. They came close to really beating any curiosity out of me. Both of my parents knew the school was at fault for trying to make me memorize stupid stuff rather than stimulating me.

I was pretty bored in school, and I turned into a little terror. You should have seen us in third grade, I had a good buddy, Rick Farentino, and the only way we had fun was to create mischief. We'd get into all sorts of trouble. Like we made little posters announcing 'Bring Your Pet to School Day.' It was crazy, with dogs chasing cats all over, and the teachers were beside themselves. We basically destroyed our teacher. We would let snakes loose in the classroom and explode bombs. One time we set off an explosive under the chair of our teacher, Mrs. Thurman. We gave her a nervous twitch.

I remember there was a big bike rack where everybody put their bikes, maybe a hundred bikes in this rack, and we traded everybody our lock combinations for theirs on an individual basis. Then we went outside and switched all of the locks, and nobody could get their bikes. It took them until late that night to straighten things out. We got kicked out of school a lot.

Things changed in the fourth grade, though. They were going to put Rick Farentino and I into the same fourth grade class, and the principal said at the last minute: "No, bad idea. Separate them." So this teacher named Imogene Hill, who is one of the saints in my life, said, "I'll take one of them." She taught the advanced fourth grade class and thank God I was the random one that got put in the class.

She got hip to my whole situation in about a month. After school one day she said, "Steven, I'll tell you what. I'll make you a deal. I have this math workbook and if you take it home and finish it on your own without any help and you bring it back to me, and you get it 80% right, I will give you five dollars and this" and she pulled out one of these lollipops that seemed as big as the world, and she held it out in front of me. And I looked at her like, "Are you crazy lady?"

Nobody's ever done this before and of course I did it. I handed it back within two days. She basically bribed me back into learning with candy and money, and what was really remarkable was before very long I had such a respect for her that it sort of re-ignited my desire to learn. I just wanted to learn and to please her. In my class, it was just me she cared about. She saw something in me.

I know that if I hadn't encountered two or three individuals that spent extra time with me, I'm sure I would have been in jail. I'm 100% sure that if it hadn't been for Mrs. Hill in fourth grade and a few others, maybe even especially her, I would have absolutely ended up in jail.

She got me kits for making cameras. I ground my own lens and made a camera. It was really quite wonderful. She kindled a passion in me for learning things. I think I probably learned more academically in that one year than I learned in my life.

It created problems though because when I got out of fourth grade they tested me, and I scored at the high school sophomore level. They decided to put me in high school, but my parents very wisely wouldn’t let them. They said "He can skip one grade but that's all." Thank God. That was plenty enough.

I got bullied in seventh grade and I told my parents, I insisted they put me in a different school. When they resisted, I told them I would just quit going to school if I had to go back to Crittenden. So they researched where the best schools were and scraped together every dime and bought a house for $21,000 in a nicer district.

I went to Homestead High, It was designed by a famous prison architect. They wanted to make it indestructible.

Electronics

There wasn’t such a thing as the silicon business back in the early '60s when I was between the ages of 5 and 10. There was electronics. Silicon, as a distinct item from the whole of electronics, didn’t really occur until the '70s.

Silicon Valley for the most part at that time was still orchards--apricot orchards and prune orchards--and it was really paradise. I remember the air being crystal clear, where you could see from one end of the valley to the other. But it was beginning to boom because of military investment.

A guy who lived close by taught me how to be a good organic gardener and to compost. He grew everything to perfection. I never had better food in my life. That’s when I began to appreciate organic fruits and vegetables.

My father used to get me things I could take apart and put back together, and one of the things that he touched upon was electronics. He did not have a deep understanding of it himself but he'd encountered it a lot in automobiles and other things he would fix. He showed me the rudiments of electronics and I got very interested in that. I wasn’t that into fixing cars. But I was eager to hang out with my dad.

My college fund came from my dad paying $50 for a Ford Falcon or some other beat-up car that didn’t run, working on it for a few weeks, and selling it for $250 – and not telling the IRS. Every weekend, there’d be a junkyard trip. We’d be looking for a generator, a carburetor, all sorts of components. He was a good bargainer, because he knew better than the guys at the counter what the parts should cost.

Most of the dads in the neighborhood did really neat stuff, like photovoltaics and batteries and radar. I grew up in awe of that stuff and asking people about it.

Mountain View was right in the heart of Silicon Valley so there were engineers kinda all around. You had all of these military companies on the cutting edge. It was mysterious and high-tech and made living here very exciting. The guy next door to my parents place was doing some of the foundation research on solar cells.

There was a man who moved in down the street, maybe about six or seven houses down the block who was new in the neighborhood with his wife. What he did to get to know the kids in the block was rather a strange thing: he put out a carbon microphone and a battery and a speaker on his driveway where you could talk into the microphone and your voice would be amplified by the speaker.

Kind of strange thing when you move into a neighborhood but that's what he did. I of course started messing around with this. I was always taught that you needed an amplifier to amplify the voice in a microphone for it to come out in a speaker. My father taught me that. So I raced home, and I told my dad he was wrong. ‘No, it needs an amplifier, it can work without an amplifier. There’s some trick’ he said, I kept saying no to my dad, telling him he had to see it, and finally he actually walked down with me and saw it. And he said, ‘Well I’ll be a bat out of hell’.

I got to know this man, whose name was Larry Lang. He was my model of what an HP engineer was supposed to be: a big ham radio operator, hard-core electronics guy. He was great. He spent a lot of time with me, teaching me stuff.

He used to build Heathkits. Heathkits were really great. Heathkits were these products that you would buy in kit form. You actually paid more money for them than if you just went and bought the finished product if it was available. These Heathkits would come with these detailed manuals about how to put this thing together and all the parts would be laid out in a certain way and color coded. You'd actually build this thing yourself. I would say that this gave one several things. It gave one a understanding of what was inside a finished product, and how it worked because it would include a theory of operation. But maybe even more importantly it gave one the sense that one could build the things that one saw around oneself in the universe. These things were not mysteries anymore. I mean you looked at a television set you would think, "I haven't built one of those but I could. There's one of those in the Heathkit catalog and I've built two other Heathkits so I could build that." Things became much more clear that they were the results of human creation not these magical things that just appeared in one's environment that one had no knowledge of their interiors. It gave a tremendous level of self-confidence, that through exploration and learning one could understand seemingly very complex things in one's environment.

I was very lucky, because when I was a kid both my dad and the Heathkits made me believe I could build anything. My childhood was very fortunate in that way.

Computers

I ran into my first computer when I was about 10 or 11. We had a local NASA center nearby, the NASA Ames Research Center. I didn't see the computer, I saw a terminal and it was theoretically connected to a big computer somewhere on the other end of the wire. I fell in love with it.

No one had ever seen a computer, to an extent that they had seen them in movies, where they were these big boxes and for some reason they fixated on the tape drives as being the icon of what the computer was, or flashing lights somehow. So nobody had ever seen one, they were very mysterious, very powerful things that did something in the background. To see one and actually get to use one was a real privilege back then.

I got to use a timesharing terminal, it's hard to remember how primitive it was, there was no such thing as a computer with a graphics video display, it was literally a printer, it was a teletype printer with a keyboard on it. So you would keyboard these commands in and then you would wait for a while and the thing would go tk.tk..tk..tk..tk.., and it would tell you something out. But even with that it was still remarkable, especially for a 10-year-old that you could write a program, in Basic let’s say or Fortran, and actually this machine would sort of take your idea, and it would sort of execute your idea and give you back some results. And if they were the results that you predicted, your program really worked it was an incredibly thrilling experience.

I became very captivated by a computer, and a computer to me was still a little mysterious, cause it was at the other end of this wire, and I had never really seen the actual computer itself. And then I got tours of computers after that and saw the insides.

The first desktop computer I ever saw was at Hewlett-Packard. They used to invite maybe ten of us down every Tuesday night and give us lectures and let us work with a computer, and meet some of the researchers and stuff. I was maybe 12 the first time. I remember the night. They showed us one of their new desktop computers, which was really the first desktop computer ever made. It was called the Hewlett-Packard 9100A, and it was about as big as a suitcase, but it actually had a small Cathode ray tube display on it, and it was completely self-contained there was no wire going off behind the curtain somewhere. I got a chance to play with one of those maybe in 1968 or 69.

And I fell in love with it. You could program it in Basic and APL. I would just get a ride up to the Hewlett-Packard Palo Alto research labs, and just hang around for hours and spent every spare moment I had trying to write programs for it. I was so fascinated by this. And so I was probably fairly lucky.

So my introduction to computers very rapidly moved from a terminal to within maybe twelve months or so, actually seeing one of the first, probably the first desktop computer ever...ever really produced. I wanted one badly. I just thought they were neat. I just wanted to mess around with one.

What is a Computer?

Computers are actually pretty simple, it's just a simple machine but a different type of machine.

The gears, the pistons have been replaced with electrons. The problem with computers is that you can't get your hands on the actual things that are moving around, you can't see them, so they tend to be very intimidating because in a very small space there's billions of electrons running around, and we can't really get a hold on exactly what they look like.

They are exceptionally simple, but they are really fast. Computers are very adaptive machines. We can move the electrons around differently to different places depending upon the current state of affairs, the result of the last time we moved the electrons around.

Let’s say we’re sitting on a bench in a cafe. Let’s assume that you understood only the most rudimentary of directions and you asked how to find the rest room.

I would have to describe it to you in very specific and precise instructions. I might say, “Scoot sideways two meters off the bench. Stand erect. Lift left foot. Bend left knee until it is horizontal. Extend left foot and shift weight 30 centimeters forward …” and on and on. If you could interpret all those instructions 100 times faster than any other person in this cafe, you would appear to be a magician: You could run over and grab a milk shake and bring it back and set it on the table and snap your fingers, and I’d think you made the milk shake appear, because it was so fast relative to my perception. That’s exactly what a computer does. The raw instructions that we have to feed these little microprocessors are the most trivial of instructions.—”Go fetch a number, add it to this number, put the result there, perceive if it’s greater than this other number” it’s the most mundane thing you could ever imagine—but executes them at a rate of, let’s say, 1,000,000 per second. At 1,000,000 per second, the results appear to be magic.

Now what we do is we take these very very simple instructions and by building a collection of these things build a higher level of instructions. So instead of saying: “turn right, left foot ..right foot..left foot..right foot.. extend hand grab

milk shake” I can say : “could you go get a milk shake or could you pour a cup of coffee”.

We’re dealing with computers in higher and higher levels of abstraction but ultimately these levels of abstraction can get translated down in these stupid instructions that run really fast.

I remember reading an article when I was about twelve years old. I think it might have been Scientific American, where they measured the efficiency of locomotion for all these species on planet earth. How many kilocalories did they expend to get from point A to point B? And the condor won, came in at the top of the list, surpassed everything else. And humans came in about a third of the way down the list, which was not such a great showing for the crown of creation. But somebody there had the imagination to test the efficiency of a human riding a bicycle. A human riding a bicycle blew away the condor all the way off the top of the list. And it made a really big impression on me that we humans are tool builders. And that we can fashion tools that amplify these inherent abilities that we have to spectacular magnitudes. And so for me, a computer has always been the equivalent of a bicycle for our minds.

Something that takes us far beyond our inherent abilities.

I think we've come only a very short distance, but already we've seen enormous changes. I think that's nothing compared to what's coming in the next hundred years.

I believe with every bone in my body that of all the inventions of humans, the computer is going to rank near if not at the top as history unfolds and we look back. It is the most incredible tool we’ve ever seen. It can be a writing tool, a communications center, a super-calculator, a planner, a filer and an artistic instrument all in one, just by being given new instructions, or software, to work from. There are no other tools that have the power and versatility of a computer. We have no idea how far it’s going to go.

Computers make our lives easier.

They do work for us in fractions of a second that would take us hours. They increase the quality of life, some of that by simply automating drudgery and some of that by broadening our possibilities. As things progress, they’ll be doing more and more for us. Besides that, you are giving people a tool that encourages

them to be creative. Remember, computers are tools. Tools help us do our work better.

Silicon Valley

If you had to say what the seminal bud was of Silicon Valley, it was Stanford University's Fred Terman encouraging Bill Hewlett and Dave Packard and the Varian Brothers not to go back east but to stay here. That was the germ. Then before World War Two, these two Stanford graduates Hewlett and Packard created a very innovative electronics company called Hewlett-Packard. Their main achievement was that they built a company. Nobody remembers their first frequency-counter, their first audio oscillator, their first this or that. And they sell so many products now that no one person really symbolizes the company.

But what did symbolize Hewlett-Packard is a revolutionary attitude toward people, a belief that people should be treated fairly, that the differentiation between labor and management should go away.

Hewlett and Packard started what became the Valley.

Then the transistor was invented in 1948 by Bell Telephone Laboratories. One of the three co-inventors of the transistor, William Shockley, decided to return to his home town of Palo Alto to start a little company called Shockley Labs or something. He brought with him about a dozen of the best and brightest physicists and chemists of his day. In a way it was very lucky that he turned out to be a terrible manager and businessman, because several of these people defected, headed by Bob Noyce who raised money from a big company out east called Fairchild Camera and Instrument to start Fairchild Semi Conductor.

Fairchild was the second seminal company in the Valley after Hewlett Packard, and was the launching pad for every semi conductor company in the whole semi conductor industry, which build the Valley. Little by little, people started breaking off and forming competitive companies, like those flowers or weeds that scatter seeds in hundreds of directions when you blow on them.

The people who built Silicon Valley were engineers. They learned business, they learned a lot of different things, but they had a real belief that humans, if they worked hard with other creative, smart people, could solve most of humankind's problems. I believe that very much.

The valley was destined to become a technological metropolis and there are pluses and minuses to that. It's very sad in a way because this valley was

probably the closest thing to the Garden of Eden at one point in time. No more.

Because now there are too many square miles of concrete and asphalt.

The Valley is positioned strategically between two great universities, Berkeley and Stanford. Two awesome universities drawing smart people from all over the world and depositing them in this clean, sunny, nice place where there's a whole bunch of other smart people and pretty good food. And at times a lot of drugs and a lot of fun things to do.

They come here and fall in love with the area and they stay here.

There is a constant influx of new, bright human resources, a lot of human capital. Really smart people. People seem pretty bright here relative to the rest of the country. People seem pretty open-minded here relative to the rest of the country. I think its just a very unique place and its got a track record to prove it and that tends to attract more people. I give a lot of credit to the universities, probably the most credit of anything to Stanford, Berkeley and UC Cal.

There weren't many degrees offered in computer science. The world’s first degree in computer science offered by a university, which was the university of California at Berkeley, was a masters degree offered in 1968.

The people in computers were brilliant people from mathematics, physics, music, zoology, whatever. They loved it, and no one was really in it for the money.

They looked at computers as their medium of expression rather than language, rather than being a mathematician and using mathematics, rather than, you know, writing social theories. That’s how Silicon Valley evolved into the heart of the electronics industry.

Remember, the role models were Hewlett and Packard, so even though some people came out with neat products, if their company was perceived as a sweatshop or a revolving door, it was not considered much of a success. If you talked to some of the people in the computer business, they were very well grounded in the philosophical traditions of the last 100 years, and the sociological traditions of the '60s. There was something going on here, there was something that was changing the world and the Valley was the epicenter. It was probably closest to Washington during the Kennedy era or something like that.

Growing up, I got inspired by the history of the place. That made me want to be a part of it. My role models were the semiconductor guys like Robert Noyce and Andy Grove of Intel, and of course Bill Hewlett and David Packard. They were out not so much to make money as to change the world and to build companies that could keep growing and changing. These guys were all company builders, and the gestalt of Silicon Valley at that time, they made a big impression on me. They left incredible legacies.

Dave Packard, for example, left all his money to his foundation; Bob Noyce was another. I'm old enough to have been able to know these guys. I've had an opportunity to meet a few great people in my life. And they all had one characteristic in common, which is that they treat everyone the same. Whether it's the janitor or the president of the company, whether it's the president of the United States or, you know, or someone in a rural slum. They treat them exactly the same. And if a question is asked, they will directly answer that question to the best of their ability. The look in their eyes is exactly the same.

There is an entrepreneurial risk culture in the Valley that is as key a reason why Silicon Valley exists as any other reason. The primary reasons are, the entrepreneurial risk culture of which role models is a very big part, the second is the Universities Stanford and Berkley, and third, certainly for the number of companies that start, is the financial infrastructure. And fourth is the beehive effect. You've got a lot of extraordinarily talented people, and the beehive effect says it's a lot more efficient to have all those companies together.

Let me give you an example: when you want to start a company you need to hire some experienced people. You can't just hire people out of school most of the time.

So you're going to ask somebody to leave a job, or maybe they have a family, and come to your place to work. If your company is in Montana, and they move their family, and your company fails, there is not an other company in Montana that they can go to work for most likely. So they have to move again. Where as if all you have to do, is convince them to turn left instead of right down the road to go to work in the morning, they keep their same house, their kids don't have to change schools etcetera, you have a much more higher probability of recruiting them. If your company fails they can get a job in a week at some other company. That's the beehive effect. Those four things together is why I think Silicon Valley is today what it is.

When you think of the innovation that's come out of this area, The whole Bay area, Silicon Valley and the whole San Francisco Berkeley Bay area, you've got the invention of the integrated circuit, the invention of the microprocessor, the invention of semiconductor memory, certainly the invention of the hard disk drive, the invention of the floppy disk drive, the invention of the personal computer, invention of genetic engineering, the invention of object oriented technology, the invention of graphical user interfaces at PARC, followed by Apple, the invention of networking. All that happened in this bay area. Isn't that incredible?

Hewlett Packard

When I was 12 or 13 I called up Bill Hewlett, who lived in Hewlett Packard at that time. There was no such thing as an unlisted telephone number then, so I just looked in the Palo Alto phone book, and he answer the phone. He was real nice and I said, “Hi my name is Steve jobs, you don't know me but I'm 12 years old and I'm building a frequency counter and I would like some spare parts” and he chatted with me for like 20

minutes. I'll never forget it as long as I live. He didn’t know me at all, but he ended up giving me some parts and he got me a job that summer working at HewlettPackard on the line, assembling frequency counters. Assembling may be too strong. I was putting in screws. It didn’t matter; I was in heaven.

Out in the back, near the bay, they had a fenced-in area with things like Polaris submarine interiors that had been ripped and sold for salvage. All the controls and buttons were right there. The colors were military greens and grays, but they had these switches and bulb covers of amber and red. There were these big old lever switches that, when you flipped them, it was awesome, like you were blowing up Chicago.

I remember my first day, expressing my complete enthusiasm and bliss at being at

HewlettPackard for the summer to my supervisor, a guy named Chris, telling him that my favorite thing in the whole world was electronics. I asked him what his favorite thing to do was and he looked at me and said, “To fuck!”. I learned a lot that summer. My dad would drive me in the morning and pick me up in the

evening.

It had a remarkable influence on me, HewlettPackard was really the only company I had ever seen in my life at that age, and it formed my view of what a company was by how well they treated their employees. At that time they didn’t know about cholesterol but they used to bring a big card full of donuts and coffee out at 10 o'clock every morning. Everybody would take a coffee and donut break, just little things like that. It was clear that the company recognized that it’s true value was it’s employees. I was very influenced by Bill Hewlett and Dave Packard.

I think it is fair to say there wouldn't have been an Apple if there hadn't been a HewlettPackard.

Woz

So that was the early days, and I met Steve Wozniak around that time too at a friend's garage. He was about 18. I was a little more mature than my years, and he was a little less mature than his, so it evened out. I was around 14 years old, he was about five years older than I. Woz was very bright, but emotionally he was my age. We immediately hit it off, he was the first person that I'd met that knew more about electronics then I did at that point. I liked him a lot and we became best friends because we shared an interest in computers and we had the same sense of humor.

We pulled all kinds of pranks together. Normal stuff. Like making a huge flag with a giant middle finger on it. The idea was that we would unfurl it in the middle of a school graduation. Then there was the time Woz made something that looked and sounded like a bomb and took it to the school cafeteria.

He had gone off to college and gotten kicked out for pulling pranks and was living with his parents. He was going to the local junior college and we started doing projects together.

When I was in high school, Woz and I, mostly Woz, made this little device called a TV Jammer. It was this little oscillator that put out frequencies that would screw up the TV. And Woz would have it in his pocket, and we would go into like a dorm at Berkeley where he was going to school. And a bunch of folks would be watching like Star Trek, and he would screw up the TV, and somebody would get up to fix it, and just as they had their foot off the ground, he would turn it back on. And they'd put their foot back on the ground he'd screw up the TV again. And this went on for the rest of the Star Trek episode.

It wasn't just electronics and computers, either. Woz and I very much liked Bob Dylan's poetry, and we spent a lot of time thinking about a lot of that stuff. It was an incredible time for music. It was like living at a time when Beethoven and Mozart were alive. People will look back on it that way. And Woz and I were deeply into it. We tracked down this guy in Santa Cruz who put out this newsletter on Dylan. Dylan taped all of his concerts, and some of the people around him were not scrupulous, because soon there were tapes all around. Bootlegs of everything. And this guy had them all. I had more than a hundred hours, including every concert on the '65 and '66 tour. Instead of big speakers I bought a pair of awesome headphones and would just lie in my bed and listen to that stuff for hours.

Besides Dylan, I was interested in Eastern mysticism, which hit the shores at about the same time.

I think Woz was in a world that nobody understood. No one shared his interests, and he was a little ahead of his time. It was very lonely for him. He's driven from inner sights rather than external expectations of him, so he survived OK.

Woz and I are different in most ways, but there are some ways in which we're the same, and we're very close in those ways. We're sort of like two planets in their own orbits that every so often intersect.

Blue Box

One of the things that Woz and I did was build blue boxes. I don't think it works anymore, but they were devices that you could build to make free long-distance phone calls.

We read about this story in Esquire magazine, about this guy named Capt. Crunch who could supposedly make free telephone calls. And we were captivated, how could anybody do this? and we thought it must be a hoax. The way it worked was you know how when you make a phone call in the background you hear… dud..dud.. dud.. dud.. dud? It turned out that that was the signal from one telephone computer to another, controlling the computers in the network. And AT&T made a fatal flaw when they designed the original digital telephone network, they put the signaling from computer to computer in the same band as your voice. That meant that if you could make those same signals you could put it right in the handset and literally the entire AT&T International phone network would think you were an AT&T computer. You could fool the entire telephone system into thinking you were a telephone computer and to open up itself and let you call anywhere in the world for free.

We started looking through the libraries looking for the secret tones that would allow you to do this. So one night we were at SLAC [the Stanford Linear Accelerator Center], and way in the bowels of their technical library, way down at the last bookshelf, in the corner bottom rack, we found an AT&T technical journal that laid out the whole thing. It was like, holy shit, and we kept saying to ourselves, 'It's real. Holy shit, it's real.' It was all laid out – the tones, the frequencies.That's another moment I'll never forget, when we saw this journal we thought, my God it's all real.

We set out to build a box that emits those frequencies and that makes those tones. These were illegal I have to add. But in spite of that we were so fascinated by them that Woz and I finally after three weeks build a box like this that worked. I remember the first call we made was down to LA to one of Woz's relatives down in Pasadena. We dialed the wrong number, we woke some guy up in the middle of the night and we were yelling at him like: "don't you understand we made this call for free" and this person didn't appreciate that.

You could call from a pay-phone go to White Plains New York, take a satellite to Europe, take a cable to Turkey, take a cable back to Atlanta and you could go around the world five or six times, because we learned all the codes to get on the

satellites and stuff. You could call the pay phone next door, you could shout in the phone and after about a minute it would come out the other phone, it was miraculous.

Woz build the best one, it was the first digital blue box in the world. I got together the rest of the components, like the casing and power supply and keypads, and figured out how we could price it. It took us 6 months of discovery to figure out how to build them, it was a tremendous process in itself. We put a little note on the bottom of them and our logo was “he’s got the whole world in his hands”.

We made a hundred or so Blue Boxes and sold almost all of them. We would give them to our friends and use them for ourselves.

We once called the Vatican and Woz told them he was Henry Kissinger, and they started waking people up in the hierarchy, Cardinal's and this and that. And they actually send someone to wake up the Pope in the middle of the night, when we finally just burst out laughing, and they realized we weren't Henry Kissinger. So we never got to talk to the Pope, but it was very funny.

You would rapidly run out of who to call, but it was the magic of the fact that two teenagers can build this box for a hundred dollars worth of parts and control the entire telephone network in the whole world from Los Altos in Cupertino, California. That was magical, and experiences like that thought us the power of ideas, the power of understanding that us two, we didn't know much we could build a little thing that could control a giant thing. That we could build something ourselves that could control billions of dollars worth of infrastructure in the world, that was what we learned. And that was an incredible lesson.

I don't think there would've ever been an Apple Computer if there had not been blue boxing, because we would not have the confidence to build something and make it work.

Early Seventies

I got stoned for the first time in the summer of 1970, I was fifteen.

I've always thought that people's spark of self-consciousness turns on at about fifteen or sixteen. I discovered Shakespeare, Dylan Thomas, Plato and all that classic stuff. I loved King Lear. I read Moby Dick and went back as a junior taking creative-writing classes.

I got my first car, a Nash Metropolitan that summer. In retrospect that might seem like the most wickedly cool car. But at the time it was the most uncool car in the world. Still, it was a car, so that was great. My dad helped me buy and inspect it. The satisfaction of getting paid and saving up for something, that was very exciting.

My dad once found some pot in my car. 'What's this?' he asked. I said, "That's marijuana." That was the only real fight I ever got in with my dad. He wanted me to promise that I'd never use pot again, but I wouldn't promise.

I wasn't completely in any one world for too long. There was so much else going on. My friends were the really smart kids. I was interested in math and science and electronics. They were too, and also into LSD and the whole counterculture trip.

I was starting to get stoned regularly. We would also drop acid occasionally, usually in fields or in cars. This was California. You could get LSD fresh made from Stanford. You could sleep on the beach at night with your girlfriend.

I met Chrisann Brennan around that time. We worked together on an animated movie, then started going out, and she became my first real girlfriend. We also had this job in the Santa Clara Mall wearing full-body Alice in Wonderland costumes for $3 an hour. It was hot, the costumes were heavy, and after a while I felt like I wanted to smack some of the kids. I once told my dad I was going to live in a cabin with Chrisann. He said, "No you're not. Over my dead body."

By the time I was a senior, I'd gotten permission to spend about half my time at Stanford, taking classes. I had this phenomenal AP English class. The teacher was this guy who looked like Ernest Hemingway. He took a bunch of us snowshoeing in Yosemite.

It was right after the Sixties and before this general wave of practical purposefulness had set in. Now students aren't even thinking in idealistic terms, or at least nowhere near as much. They certainly are not letting any of the

philosophical issues of the day take up too much of their time as they study their business majors.

We wanted to more richly experience why we were alive, not just make a better life, and so people went in search of things. Our consciousness was raised by Zen, and also by LSD.

Throughout that period of time I used LSD approximately ten to fifteen times. I would ingest it on a sugar cube or in a hard form of gelatin. I would usually take it when I was by myself. It was great. I remember this one time when I had been listening to a lot of Bach. All of a sudden the wheat field was playing Bach. It was the most wonderful feeling of my life up to that point. I felt like the conductor of this symphony with Bach coming through the wheat.

Using LSD was a profound experience, one of the most important things in my life, it shows you that there'sÓÓ another side to the coin, and you can't remember it when it wears off, but you know it. It reinforced my sense of what was important—creating great things instead of making money, putting things back into the stream of history and of human consciousness as much as I could.

It's a pretty interesting thing. Timeframe's an interesting thing when you think about people looking back. I do think when people look back on it in a hundred years, they're going to see this was a remarkable time in history. And especially the whole San Francisco Berkeley Bay area believe it or not. There was just something going on here. You have to go back a little in history. I mean this is where the beatnik era happened in San Francisco. This is where the hippy movement happened, and things like the Whole Earth Catalog. This is the only place in America where Rock 'n Roll really happened. Right? Most of the bands in this country, outside of Bob Dylan in the 60's, I mean they all came out of here. The best music came from here – the Grateful Dead, Jefferson Airplane, Joan Baez, Janis Joplin, Jimmy Hendrix, everybody. Why is that? That's a little strange when you think about it. A lot of it happened right in our backyard here. Remember that the 60s happened in the early 70s and that's sort of when I came of age so I saw a lot of this. To me, the spark of that was that there was something beyond sort-of what you see everyday. There is something going on here in life beyond just a job and a family and two cars in the garage and a career. There is something more going on, there's another side of the coin that we don't talk about much and we experience it when there's gaps; when everything is not ordered and perfect. When there's kind-of a gap … you experience this inrush of "something", and a lot of people have set off throughout history to find out what that was, whether it's Thoreau or Indian

mystics or whatever it might be. And the hippy movement got a little of that – they wanted to find out what that was about, and that life wasn't about what they saw their parents doing. And of course the pendulum swung a bit too far the other way and it was crazy. But there was a germ of something there, and it's the same thing that causes people to want to be poets instead of bankers, and I think that's a wonderful thing. And I think that same "spirit" can be put into products. And those products can be manufactured and given to people, and they can sense that spirit.

I came of age at a magical time. California had a sense of experimentation and a sense of openness—openness to new possibilities. The great thing that came from that time was to realize that there was definitely more to life than the materialism of the late 50's and early sixties. We were going in search of something deeper.

Reed

I went to college at Reed, in Oregon. The kids who went to Stanford already knew what they wanted to do. They weren't really artistic. I wanted something that was more artistic and interesting. I think I might have headed to New York if I didn't go to college.

I had some experiences there that have stayed with me my whole life, and I was thinking of some of them to recount to you. One of them was that I was forced to go to humanities lectures, what seemed like every day. I studied Shakespeare with Professor Svitavsky. And at the time I thought these were meaningless and even somewhat cruel endeavors to be put through. I can assure you that as the patina of time takes its toll, I thank God that I had these experiences. It has helped me in everything I've ever done, although I wouldn't have ever guessed it at the time.

One of the things in my life I really feel ashamed about is that I refused to let my parents come onto campus. It was hard for them to send me to college, but they managed somehow. They had done so much to make sure I could go there, but I just didn't want them around. I didn't want anyone to know I had parents. I wanted to be like an orphan who had bummed around the country on trains and just arrived out of nowhere, with no roots, no connections, no background. I was not very sensitive, and I hurt their feelings. I shouldn't have.

I dropped out of Reed College after I ran out of money after one semester, but then stayed around as a drop-in for another eighteen months or so before I really quit, so I never graduated from Reed. I couldn't see the value in it. I had no idea what I wanted to do with my life, and no idea how college was going to help me figure it out, and here I was, spending all the money my parents had saved their entire life, because I had naïvely chosen a college that was almost as expensive as Stanford. So I decided to drop out and trust that it would all work out OK. It was pretty scary at the time, but looking back, it was one of the best decisions I ever made. The minute I dropped out, I could stop taking the required classes that didn't interest me and begin dropping in on the ones that looked far more interesting.

The Dean of the school was a man named Jack Dudman, who was one of the heroes of my life while I was there, because Jack Dudman looked the other way when I was staying on campus without paying. He looked the other way when I was taking classes without being a formal student and paying the tuition. And,

oftentimes, when I was at the end of my rope, Jack would go for a walk with me and I would discover a twenty dollar bill in my tattered coat pocket after that walk with no mention of it from Jack before, during, or after. I learned more about generosity from Jack Dudman and the people at the school than I learned anywhere else in my life.

Much of what I stumbled into by following my curiosity and intuition turned out to be priceless later on. Let me give you one example. Reed College at that time offered perhaps the best calligraphy instruction in the country. Throughout the campus every poster, every label on every drawer was beautifully hand-calligraphed. Because I had dropped out and didn't have to take the normal classes, I decided to take a calligraphy class to learn how to do this. I learned about serif and sans-serif typefaces, about varying the amount of space between different letter combinations, about what makes great typography great. It was beautiful, historical, artistically subtle in a way that science can't capture, and I found it fascinating. None of this had even a hope of any practical application in my life. But ten years later when we were designing the first Macintosh computer, it all came back to me, and we designed it all into the Mac. It was the first computer with beautiful typography. If I had never dropped in on that single course in college, the Mac would have never had multiple typefaces or proportionally spaced fonts, and since Windows just copied the Mac, it's likely that no personal computer would have them. If I had never dropped out, I would have never dropped in on that calligraphy class and personal computers might not have the wonderful typography that they do.

It wasn't all romantic. I didn't have a dorm room, so I slept on the floor in friends rooms.

Another thing I remember from Reed is being hungry: all the time. The cafeteria taught me quickly to be a vegetarian. And I didn’t have so much money so I would gather up Coke bottles for the five-cent deposits to buy food with.

I discovered the cheapest way to eat was Roman meal cereal. It was invented by a Harvard history professor. He one day wondered what the Roman legions took with them to eat as they conquered and pillaged these villages. He found out through his research that it was Roman meal. And you could buy it at the local store and it’s the cheapest way to live. So, I lived for many months on Roman meal.

Also several of us, after not eating for a few days, would hitchhike or walk the seven miles across town to the Hare Krishna temple on Sundays, where they would feed all comers. And we, through practice, discovered just the right

moment to arrive after their particular religious practices and right before the food. And, not having eaten for a few days, we would eat a lot, and on several occasions stay over, because we were not able to move. The following morning, they would wake us up at four o'clock in the morning because it was their time to go gather flowers for their temple to honor Krishna. So they would take us with them, pre-dawn, out into the neighborhood where they would proceed to steal flowers from their neighbors. And the neighbors that lived close to the Hare Krishna temple soon were wise to their pillage and would get up early in the morning and guard their flower beds, and so they would have to go in an ever-wider circumference around their temple.

In spending a little time with these people, I noticed some of their other behaviors: they used to sell incense to the local department stores and then go steal it back, so that the department stores would buy more and they would have a thriving business. And their ethics told them that this was fine, that anything in the service of Krishna was fine. In interacting with them I think I learned more about situational ethics than I ever did on campus.

There was a constant flow of people stopping by, from Timothy Leary and Richard Alpert to Gary Snyder. There was a constant flow of intellectual questioning about the truth of life. That was a time when every college student in this country read Be Here Now and Diet for a Small Planet—there were about ten books. It was profound. It transformed me and many of my friends. You'd be hard pressed to find those books on too many college campuses today.

None of the really bright people I knew in college went into politics. They all sensed that, in terms of making a change in the world, politics wasn't the place to be in the late Sixties and Seventies. All of them are in business now—which is funny, because they were the same people who trekked off to India or who tried in one way or another to find some sort of truth about life.

When I was 17 years old I didn't imagine I would be in technology. I always thought of myself as a humanities person as a kid, but I liked electronics. Then I read something that one of my heroes, Edwin Land of Polaroid, said about the importance of people who could stand at the intersection of humanities and sciences, and I decided that's what I wanted to do.

Atari

The whole period had a huge influence. As it was clear that the Sixties were over, it was also clear that a lot of the people who had gone through the Sixties ended up not really accomplishing what they set out to accomplish. And because they had thrown their discipline to the wind, they didn't have much to fall back on. Many of my friends have ended up ingrained with the idealism of that period, but also with a certain practicality, a cautiousness about ending up working behind the counter in a natural-food store when they are 45, which is what they saw happen to some of their older friends. It's not that that is bad in and of itself, but it's bad if that's not what you really wanted to do.

I decided I wanted to travel, but I was lacking the necessary funds. So I came back down to get a job. I was looking in the paper and there was this ad that said, "Have fun and make money." so I called. It was Atari. I had never had a job before other than the one when I was a kid. By some stroke of luck, they called me up the next day and hired me.

The first day I walked into Nolan Bushnell's office I said, "I think you have a really awesome company. I think that everything is pretty good, but I've seen your soldering connections and they're really crappy." Nolan replied, "Well, let's fix them.", And I said, "I will."

I was, like, employee number 40. It was a very small company. They had made Pong and two other games. My first job was helping a guy named Don work on a basketball game, which was a disaster. There was this basketball game, and somebody was working on a hockey game. They were trying to model all their games after simple field sports at that time, because Pong was such a success.

Atari had shipped a bunch of games to Europe and they had some engineering defects in them, and I figured out how to fix them, but it was necessary for somebody to go over there and actually do the fixing. I volunteered to go and asked to take a leave of absence when I was there. They let me do it.

I had a wonderful couple of weeks in Turin, which is this charged-up industrial town. The distributor took me every night to dinner at this place where there were only eight tables and no menu. You'd just tell them what you wanted, and they made it. One of the tables was on reserve for the chairman of Fiat. It was really super.

Next I ended up in Switzerland and moved from Zurich to New Delhi, so I spent some time in India.

India

For me it was a serious search. I'd been turned on to the idea of enlightenment and trying to figure out who I was, and how I fit into things. I was going to find my guru.

When we landed in Delhi I felt the waves of heat rising from the tarmac. I got dysentery pretty fast. I was sick, really sick, got a really high fever. I dropped from 160 pounds to 120 in about a week.

After I felt better I headed to Haridwar during a festival called Kumbh Mela. There were holy men all around. Tents with this teacher and that teacher. There were people riding elephants, you name it. I was there for a few days, but I decided that I needed to get out of there too.

I was walking around in the Himalayas and I stumbled onto this thing that turned out to be a religious festival. There was a baba, a holy man, who was the holy man of this particular festival, with his large group of followers. I could smell good food. I hadn't been fortunate enough to smell good food for a long time, and I was very hungry. So I wandered up to pay my respects and eat some lunch. For some reason, this baba, upon seeing me sitting there eating, immediately walked over to me and sat down and burst out laughing. He didn't speak much English and I spoke a little Hindi, but he tried to carry on a conversation and he was just rolling on the ground with laughter. Then he grabbed my arm and took me up this mountain trail. It was a little funny, because here were hundreds of Indians who had traveled for thousands of miles to hang out with this guy for ten seconds, and I stumble in for something to eat and he's dragging me up this mountain path. We get to the top of this mountain half an hour later and there's this little well and pond. He said, 'You are just like a baby.' I was not relishing this attention. We sit down and he pulls out this straight razor. I'm thinking he's a nutcase and begin to worry, then he pulls out a bar of soap and he dunks my head in the water – I had long hair at the time – and he lathered up my hair, and starts to shave my head. He told me that he was saving my health. I'm completely stunned. I'm 19 years old, in a foreign country, up in the Himalayas, and here is this bizarre Indian baba who has just dragged me away from the rest of the crowd, shaving my head atop this mountain peak. I'm still not sure why he did it.

I came back after seven months in Indian villages, and I wasn't going to find a place where I could go for a month to be enlightened. It was one of the first

times I started thinking that maybe Thomas Edison did a lot more to improve the world than Karl Marx and Neem Karoli Baba put together.

I found myself asking, What was the one most important thing that had struck me? And I think it was that Western rational thought is not an innate human characteristic, it is a learned ability. I saw the craziness of the Western world as well as its capacity for rational thought. It had never occurred to me that if no one taught us how to think this way, we would not think this way. And yet, that's the way it is.

In the villages of India, they never learned it. They learned something else, which is in some ways just as valuable but in other ways is not. That is the power of intuition and experiential wisdom. They don't use their intellect like we do, they use their intuition instead, and their intuition is far more developed than in the rest of the world. Intuition is a very powerful thing, more powerful than intellect, in my opinion. It places value on experience versus intellectual understanding.

I saw a lot of people contemplating things but it didn't seem to lead to too many places. I began to realize that an intuitive understanding and consciousness was more significant than abstract thinking and intellectual logical analysis. I got into it in my typical nutso way. I got very interested in people who had discovered something more significant than an intellectual, abstract understanding.

If you just sit and observe, you will see how restless your mind is. if you try to calm it, it will only make it worse. But over time it does calm, and when it does, there's room to hear more subtle things - that's when your intuition starts to blossom and you start to see things more clearly and be in the present more. Your mind just slows down, and you see a tremendous expanse in the moment. You see so much more than you could see before. It's a discipline; you have to practice it. This was not something to think about. This was something to do: to close your eyes, hold your breath, jump in, and come out the other end more insightful.

At one point I was thinking about going to Japan and trying to get into the Eihei-ji monastery, but my spiritual advisor Kobun China Otogawa urged me to stay here. He said there is nothing over there that isn't here, and he was correct. I learned the truth of the Zen saying that if you are willing to travel around the world to meet a teacher, one will appear next door. I ended up spending as much time as I could with him. He had a wife, who was a nurse at Stanford, and two

kids. She worked the night shift, so I would go over and hang out with him in the evenings. She would get home about midnight and shoo me away.

Zen has been a deep influence in my life ever since and it's had a big impact on my work. I have always found Buddhism, Japanese Zen Buddhism in particular to be aesthetically sublime. The most sublime thing I've ever seen are the gardens around Kyoto. I'm deeply moved by what that culture has produced, and it's directly from Zen Buddhism.

Homebrew

Atari called me up and wanted me to go back to work there. I didn't really want to, but eventually they persuaded me to go back as a consultant.

I was working a lot at Atari at night and I used to let Woz in, and so Woz and I were hanging out. Atari put out a game called Gran Track, the first driving game with a steering wheel to drive it. Woz was a Gran Track addict. He would put great quantities of quarters into these games to play them. I would just let him in at night and let him onto the production floor and he would play Gran Track all night long. When I came up against a stumbling block on a project, I would get Woz to take a break from his road rally for ten minutes and come and help me. He puttered around on some things, too.

He took me to some Homebrew Computer Club meetings, where computer hobbyists compared notes and stuff. I didn't find them all that exciting, but some of them were fun. Woz went religiously. There were a few hundred people at that meeting, it got up to that big. Initially it was maybe fifty, but it grew to 200, 300 people eventually. We started going when it was literally 30 to 40 people.

It was a bunch of people that were building their own computers because they couldn't afford to buy them. Computers were fifty to a hundred thousand dollars, who could afford that?

The clubs were based around a computer kit called the Altair. Everybody that was interested in building computers was at that meeting. It was so amazing to all of us that somebody had actually come up with a way to build a computer you could own yourself. That had never been possible. Remember, when we were in high school, neither of us had access to a computer mainframe. We had to drive somewhere and have some large company take a benevolent attitude toward us and let us use the computer. But now, for the first time, you could actually buy a computer. It was just sort of a computer that you could own.

The Altair was a kit that came out around 1975. At that time, there were no graphics. It was all alphanumerics, and I used to be fascinated with the programming, simple programming. On the very early versions of computer kits, you didn't even type; you threw switches that signaled characters. It sold for less than $400. Even though it was relatively inexpensive, not everyone could afford one. That's how the computer clubs started. People would band together and eventually become a club. They really didn't know what to do with it. The first thing that they did was to put languages on it, so you could write some

programs. People didn’t start to apply them for practical things until a year or two later, and then it was simple things, like bookkeeping.

Woz and I always had the coolest stuff there, and we build a reputation for having the neatest stuff.

If you want to know what’s going to happen in 5 years, you don’t look in the mainstream, you look in the fringe, and the fringe back in 1975 was the Homebrew Computer Club.

Apple I

There were timesharing computers available, and there was a time sharing company in Mountain View where we could get free time on. But we needed a terminal and we couldn't afford one, so we designed and built one. That was the first thing we ever did. We really build it because he couldn't afford to buy anything.

At one point Woz designed a computer terminal with video on it. At a later date, he ended up buying a microprocessor and hooking it up to the terminal and made what was to become the Apple I. That's what an Apple I was, really an extension of this terminal, and putting a microprocessor on the back end. Really kind of two separate projects put together.

Woz and I laid out the circuit board ourselves, and we worked on the design for about six months. Woz was up till 4 in the morning for many moons. At that time Woz was working for Hewlett Packard and I was working for Atari. We liberated some parts from Hewlett Packard and Atari, and we build this all by hand. It would take 40 hours to build one and about another 30 to debug it. And it would always be breaking because there would be these tinny little wires.

We showed it to our friends and they all wanted one, and a lot of them wanted to build one too. And although they could liberate most of the parts as well they sort of didn't have to skills to build them, which we had acquired by training ourselves building them. So we ended up helping them building most of their computers and it started getting to be a tremendous drain on our lives. I said, "Look, there are a lot of people that want to build it and they can get the chips, but they don't want to solder it all together. So why don't we make a printed circuit board, which is a piece of fiberglass with copper on both sides that is etched to form the wires, so that you could build an Apple I in a few hours instead of 40 hours. They can just plop their chips in the PC board"—soldering a printed circuit board is easy, there are no wires—"and they've got it done." We thought if we only had one of those we could sell them to our friends for as much as it cost us to make them, and make our money back. And everybody would be happy and we would have a life again.

We went to Atari and showed them our early prototypes and we went to HP, and we encouraged each company to hire the other one and let us do this for them. We went to Atari and said, 'Hey, we've got this amazing thing, even built with some of your parts, and what do you think about funding us? Or we'll give

it to you. We just want to do it. Pay our salary, we'll come work for you.' And they said, 'No.' Then we went to Hewlett-Packard, and they said, “Hey, we don't need you, you haven't got through college yet.” We got turned down in both places. Probably for good reasons.

Then what we did was, since it was the only alternative left, I sold my Volkswagen bus and Steve sold his HP 65 calculator. We raised $1300 to pay a friend of ours to make the artwork to make a printed circuit board, and to finance them. We decided we better manufacture a hundred of them, and we sold some to our friends, and I was trying to sell the rest of them so that we could get our microbus and calculator back.

I was out trying to peddle pc boards one day and walked into the first Computer store in the world, which was the Byte Shop in Mountain View I think, on El Camino. It metamorphosized into an adult bookstore a few years later, but at this point it was the Byte Shop. And the person running it, I think his name was Paul Terrell, said, “you know I'll take 50 of those, but I want them fully assembled.” I saw dollar signs in front of my eyes. We had never thought of this before. So we then kicked this around and thought, why not, why not try this. I spent the next several days on the phone talking with various electronic parts distributors, and I told them, “I have this purchase order from the Byte Shop chain of computer stores for 50 of my computers and the payment terms are COD. If you give me the parts on a net 30 day terms I can build and deliver the computers in that time frame, collect my money from Terrell at the Byte Shop and pay you.” We didn't know what we were doing. And we said here’s the parts we need, we figured we’d buy a 100 sets of parts, build 50, and sell them to the Byte Shop for twice what it cost us to build them. Therefore paying for the whole hundred and we could sell the rest and make a profit.

We convinced these distributors to give us these parts on net 30 days credit, so we had 30 days to pay them. We bought the parts, we build the products, and we sold 50 of them to the Byte Shop, got paid in 29 days, and went off and paid the parts people in 30 days.

We were able to build the boards more cheaply than we thought, because I got a good deal on parts. So the fifty we sold to the Byte Shop almost paid for all the material we needed to make a hundred boards.

We were in business, but we had the classic Marxian market realization crisis, in that the profit was not in liquid currency, but in computers sitting in the corner. Then all of a sudden we had to think wow… how are we going to realize our profit? We started thinking about distribution, and started calling the other

computer stores we'd heard about across the country, and just kinda eased into business that way. That's how we got into this. We didn't think about starting a company at first, we were just doing it for ourselves and then our friends, and the circle got bigger and bigger and bigger. Gradually the whole thing began to build momentum. And at that point in time we had some feeling that we were on to something, but the feeling is so different than actually seeing it happen.

At one point I said to Woz: "Let's start a company. Even if we don't get our money back, at least we'll have a company." We had absolutely nothing to lose. I was 20 years old at the time, Woz was like 24, 25. We had no families, no children, no houses. Woz had an old car, I had a Volkswagen van. All we were gonna lose was our cars and the shirts off our back, we had nothing to lose, and we had everything to gain. We figured even if we crash and burn, and lose everything, the experience will have been worth ten times the cost. What did we have to lose? There was no risk.

Some time later after I had just come from an apple farm, I don't eat meat and I was on one of my fruitarian diets, I told Woz: "Oh, I've got a name for the company: Apple Computer." It sounded fun, spirited and not intimidating, Apple took the edge off the word 'computer'. Plus, it would get us ahead of Atari in the phone book. Woz said, "But what about Apple Records?" And I said, "They're a different company." So we said, "Okay, we'll do Apple Computer."

We started Apple in my parents garage on April Fools' Day 1976. Apple was about as pure of a Silicon Valley company as you could imagine. Our role model was Hewlett-Packard. And so I guess that's what we went into it thinking. Hewlett-Packard, you know, Jobs and Wozniak. After about a year we moved to Cupertino, and we've been there ever since.

The customers for the Apple I were Woz and me and our friends in the Homebrew Computer Club. The Apple I was really the first computer to address the needs of the hobbyist who wanted to play with software, but could not build his or her own hardware. It came with a digital circuit board, but you still had to go get your own keyboard, power supply, and television monitor. If you were a techie, the Apple I seemed to go 90 percent of the way. Of course, if you weren't a techie, it only went 10 percent of the way, so you needed to be pretty much a hardware hobbyist.

When it came to building the computer together, Woz was the brilliant hardware engineer and focused on the core design of the computer. I was worrying about which parts we ought to use, and how somebody that wasn't a Woz was going to manage to buy all the extra parts you still needed to buy and

plug this thing together. Woz designed most of it. I helped on the memory part and I helped when we decided to turn it into a product. Woz isn't great at turning things into products, but he's really a brilliant designer. Neither of us had any idea that this would go anywhere. Now we made the very important decision to not offer our computers as a kit. Even though you needed to buy these extra parts, the main computer board itself came fully assembled. We were the first company in the world to do that. Everybody else was offering their little computers as a kit. And that meant that there was maybe an order of magnitude more people who could actually buy our computer and use it then if they had to build it themselves.

Remember an Apple I was not particularly useable for too much, but it was so incredible to have your own computer. It was kind of an embarkation point from the way computers had been going in these big steel boxes with switches and lights.

The first face to face gathering of personal computer hobbyists from all around the country was a show put on in Atlantic City in 1976. It was in the basement of some dingy hotel. It just happened to be about 300 degrees outside. So the basement was like a steambath. It was impossible to be down there for longer than half an hour without being completely drenched. Nevertheless there were a few hundred hobbyists completely drenched walking around for hours. We had a little tiny booth there. There was a hotel table with a tablecloth over it. And there were, Woz and I and a friend or two of ours, and we had our few Apple l's there and a little poster we made. That was really the first computer show in the world.

We sold almost 200 of the Apple I. It wasn't that big a deal, but we made about $95,000 and I started to see it as a business besides something to do.

Apple I was just a printed circuit board. There was no case, there was no power supply; it wasn't much of a product yet. It was just a printed circuit board. I think they're all collector's items now.

Personal Computers

The best way to understand a personal computer is probably an analogy. Take the electric motor..

the electric motor was first invented in the late 1800s. When it was first invented it was only possible to build a very very large one, which meant that it could only be cost justified for very large application. Therefore electric motors did not proliferate very fast at all. But the next breakthrough was when somebody took one of these large electric motors and ran a shaft through the middle of the factory. And through a series of belts and pulleys brought and shared the horsepower of the one large electric motor on 15 or 20 medium sized workstations, thereby allowing one electric motor to be cost justified on some medium scale tasks. And electric motors proliferated further then. But the real breakthrough was the invention of the fractional horsepower electric motor. We could than bring the horsepower directly to where it was needed, and be cost justified on a totally individual application. I think there's about 55 or so fractional horsepower motors now in every household.

If we look at the development of computers we see a real parallel. The first computer was called the ENIAC in 1947 it was developed particularly for ballistic military calculation. It was giant and hardly anyone got a chance to use it.

The next real breakthrough was in the sixties with the invention of what is called time sharing. What we did is we took one of these very large computers, and we shared it. Since it could execute so many instruction so quickly, we'd run some on Fred's job over here, and we'd run some on Sally's job, and we'd run some on John's job, and we'd run some on Susie's job and we'd share this thing. And it would run so fast that everyone would think they had the whole computer for themselves. Time sharing is what really started to proliferate computers in the sixties. You could use computer terminals connected with some umbilical cord to some large computer somewhere else. That’s timesharing, and that’s what got computers on college campuses in large numbers.

The reason Apple exists is because we stumbled on to fractional horsepower computing five years before anybody else, that's the reason we exist. We took these microprocessor chips, which is sort of a computer on a chip, and we

surrounded it with all the other stuff you need to interact with a computer. We made a computer that was about 13 pounds.

People would look at it and say, “where is the computer? this is just a terminal.” And we would say, “no that is the computer.” and after about five minutes of repeating this a lightbulb would go on in their minds that this was the entire computer. This fractional horsepower computing created a revolution, it was invented in 1976

with the first personal computer.

Though the analogy is nowhere perfect and certainly one needs to factor out the environmental concerns of the analogy as well, there is a lot to be said for comparing it to going from passenger trains to automobiles. The advent of the automobile gave us a personal freedom of transportation. In the same way the advent of the computer gave us the ability to start to use computers without having to convince other people that we needed to use computers.

The biggest effect of the personal computer revolution has been to allow millions and millions of people to experience computers themselves decades before they ever would have in the old paradigm. And to allow them to participate in the making of choices and controlling their own destiny using these tools.

Our whole company, our whole philosophical base, is founded on one principle. That principle is that there is something very special and very historically different that takes place when you have one computer and one person. Very different than if you have ten people and one computer. I think humans are basically tool builders, and the computer is the most remarkable tool we've ever built. The big insight a lot of us had in the 1970s had to do with the importance of putting that tool in the hands of individuals. Let's say that—for the same amount of money it takes to build the most powerful computer in the world—you could make 1,000 computers with one-thousandth the power and put them in the hands of 1,000

creative people. You'll get more out of doing that than out of having one person use the most powerful computer in the world.

Because people are inherently creative. They will use tools in ways the toolmakers never thought possible. And once a person figures out how to do

something with that tool, he or she can share it with the other 999. It's an extremely powerful paradigm. It's what has driven a bunch of us since this whole thing began to happen, and it hasn't changed. It hasn't changed for me since 1975.

Apple II

The Apple I took us over a big hurdle, but a lot of people who wanted to use the product were unable to. We were getting some feedback from a fairly small sample—maybe 40, 50 people. We were hearing from dealers, too, they'd say, "I think I can sell 10 times more of these if you would just put a case and keyboard around it." That's where a lot of the direction for the Apple II came from. If there hadn't been an Apple I, there would not have been an Apple II. The first product solved some of the problems and exposed the remaining ones in a much clearer light. The key thing about that product was that we learned. We had it about 50% right. It was very clear to me that while there were a bunch of hardware hobbyists, that could assemble their own computers, or at least take our board, add the transformers for the power supply, and the case, and the keyboard, and go get the rest of the stuff, for every one of those there were a 1000 people that couldn't do that. But who wanted to mess around with programming, software hobbyists, just like I had been when I was 10 discovering that computer. There were a lot more software hobbyists than hardware hobbyists around. We could satisfy a lot more people if they didn't have to be hardware hackers to use it.

And the Apple II peeled off that hardware layer.

My dream for the Apple II was to sell the first real packaged personal computer, a computer you could just roll out of the box and use. Woz's ambitions were to add color graphics, he was never really interested in Apple as a company. He was just sort of interested in getting the Apple II on a printed circuit board so he could have one and be able to carry it to his computer club without having the wires break on the way.

Combining both of those dreams we actually designed the product. It wasn't just us. We brought in other people. Woz still did the logic of the Apple II, which certainly is a large part of it, but there were some other key parts. The power supply was really a key. The case was really a key. I got a bug up my rear that I wanted the computer in a plastic case, so I found a designer and we designed the packaging and everything. We had the whole thing ready to go, but we needed some money for tooling the case and things like that. The tooling of this plastic case was going to cost like $100,000. Just to get this whole thing into

production was going to be like $200,000. We need a few hundred thousand dollars, and this was way beyond our means.

So I went looking for some venture-capital. We went and talked to some venture capitalists, and none of them would give us any money.

No one would give us any money thank god, because then they would have ended up owning most of our company.

I ran across one venture capitalist, named Don Valentine, who came over to the garage, he later said,“I looked like a renegade from the human race”, that was his famous quote, because i had longer hair then. He said he wasn't willing to invest in us, but he recommended that I should go talk to Mike Markkula.
We hooked up with Mike just around the time we introduced the Apple II. Maybe a month before.

But the Apple II was pretty much designed and ready to go.

Mike had retired at about 30 or 31 from Intel, he was a product manager there and he got a bit of stock and made like a million bucks on stock options. Which at that time was quite a little bit of money. He was short and he had been passed over for the top marketing job at Intel, which I suspect made him want to prove himself. You could tell that if he could screw you, he wouldn’t. He had a real moral sense to him. He had been investing in oil and gas deals, and kind of staying home doing that sort of thing, and he was anxious to get back into something, and Mike and I hit it off very well. He said okay I'll invest after a few weeks, and I said: “no we don't want your money we want you.”

Mike really took me under his wing. His values were much aligned with mine. He emphasized that you should never start a company with the goal of getting rich. Your goal should be making something you believe in and making a company that will last.

We convinced Mike to actually throw in with us as an equal partner. So Mike put in $250,000, and Mike put in himself, and the three of us went off and took this design which was virtually done with the Apple II, and tooled it up and announced it at the first West coast Computer Faire in San Francisco in april 1977. I thought it was unlikely that Mike would ever see that $250,000 again, and I was impressed that he was willing to risk it.

The West Coast Computer Faire was a much more professional operation in comparison with the Atlantic City show about nine months earlier. But still very hobby oriented compared with what goes on today. There were maybe a hundred companies showing their wares. It was attended by maybe a few thousand people, which was a lot for our industry at that time.

That’s when we introduced the Apple II. It was great, the West Coast Computer Faire was small at that time but to us it was very large. We had this fantastic booth there, we had a projection television showing the Apple II, showing the graphics, which today would look very crude, but at that time was by far the most advanced graphics on a personal computer. My recollection is we stole the show, and a lot of dealers and distributors started lining up and we were off and running. I was 21.

Woz and I cared from the very beginning. We felt the people who were going to own the Apple II would care, too. We were selling these things for $1,600, I think, which was a lot of money back in 1977, and these were people who generally didn't have $1,600. I know people who spent their life savings on one. They cared what it looked like on the inside. We thought, why don't we take the extra few days or weeks and do it right? We had a fundamental belief that doing it right the first time was going to be easier than having to go back and fix it. I cannot say strongly enough that the repercussions of that attitude are staggering. I've seen them again and again throughout my business life. They're just staggering.

Woz is motivated by figuring things out. He concentrated more on the engineering and proceeded to do one of his most brilliant pieces of work, which was the disk drive, another key engineering feat that made the Apple II a possibility. I was trying to build the company—trying to find out what a company was. I don’t think it would have happened without Woz and I don’t think it would have happened without me.

The Apple II had a few qualities about it. Number one, it was the first computer ever with a plastic case on it. You could mold it and shape it to be a more cultural shape rather than just a rectangular box. And secondly, it was the first personal computer with color graphics on it. Third, in everything it did, it was the first PC that came fully assembled.

Every other computer came in a kit. So the real jump with the Apple II was that it was a finished product. It was fully assembled and had its own case and its

own keyboard, and you could really sit down and start to use it. That was the breakthrough of the Apple II: that it looked like a real product. That's what the Apple II was all about. Still, the first year, we sold only 3000 or 4000. It went on to sell maybe 10 million units over it's lifetime.

I once saw a video tape that we weren't supposed to see. It was prepared for the Joint Chiefs of Staff. By watching the tape, we discovered that at the time, every tactical nuclear weapon in Europe manned by U.S. personnel was targeted by an Apple II computer. Now, we didn't sell computers to the military; they went out and bought them at a dealer's, I guess.

But it didn't make us feel good to know that our computers were being used to target nuclear weapons in Europe. The only bright side of it was that at least they weren't Radio Shack's TRS-80s!

Thank God for that.

When we designed the Apple II we designed it in a garage, but what most people don't know is we designed it to be built in a garage, and we figured if we ever made 50 of them a month we'd be doing well.

We tried never to have one person make all the decisions. There were three people running the company at that time: Mike Scott, Mike Markkula and myself. Apple was a very small company for a long time. But the industry started to grow very rapidly in the 1979-80 time frame.

The neatest thing was, by 1979, I was able to walk into classrooms that had 15 Apple computers and see the kids using them. And those are the kinds of things that are really the milestones.

VisiCalc

Apple II was the world's first really successful Personal Computer by a mile. And really defined the personal computer as we know it today.

The disk drive was crucial, we were the first company to come out with a reliable, inexpensive floppy disk drive. We had a low cost floppy disk drive that really worked about two to three years before any of our competitors. And that was another incredibly important reason why the Apple II was successful. It was because of that design decision, and other design decisions like it, that the Apple II beat its competition.

The first real explosion that propelled the industry forward really happened in 1979. I remember when Dan Fylstra, who ran the company that marketed the first spreadsheet, walked into my office at Apple one day and pulled out this disk from his vest pocket and said, "I have this incredible new program. I call it a visual calculator." And it became VisiCalc. That’s what really propelled the Apple II to the success it achieved more than any other single event. The Apple II could hold up to 48 kilobytes of memory, which today doesn't seem like much, but at that time was maybe three times as much as its competitors. And that's why VisiCalc was written for the Apple II. It was the only computer that could hold it.

VisiCalc was a breakthrough, because that was the first real use of computers in business, where business people could see tangible benefits of using one. Before that, you had to program your own applications, and the number of people who want to program is a small fraction, maybe one percent. So what drove the success of the Apple II for many years, and let consumers have the benefit of that product, was VisiCalc selling into Corporate America.

Corporate America was buying Apple IIs and running VisiCalc on them like crazy. So that we could get our volumes up and our prices down, and sell it as a consumer product on Mondays and Wednesdays and Fridays, while selling it to business on Tuesdays and Thursdays.

We had some very strange ads back then. We had one where it was in a kitchen, and there was a woman that looked like the wife, and she was typing in recipes on the computer with the husband looking on approvingly in the back. Stuff like that.

Why did we succeed? I think we were very good at what we did and we surrounded ourselves by very fine people. See, one of the things you have to

remember is that we started off with a very idealistic perspective—that doing something with the highest quality, doing it right the first time, would really be cheaper than having to go back and do it again. Ideas like that. We never lost sight of how our idealism could translate into tangible results that were also acceptable in a more traditional sense.

Startups

The company is one of humanity's most amazing inventions. It's totally abstract. Sure, you have to build something with bricks and mortar to put the people in, but basically a company is this abstract construct we've invented, and it's incredibly powerful.

Most people are starting companies because they want to make lots of money, I haven't seen very many of those succeed. The ones that succeed are people that sometimes don’t even want to start a company, they just have an idea that they want to get out, express out into the world and often times they have to start a company because nobody else will listen to them.

One of the things that happens in organizations as well as with people is that they settle into ways of looking at the world and become satisfied with things. And the world changes and keeps evolving and new potential arises, but these people who are settled in don't see it. That's what gives startup companies their greatest advantage. I think as long as humans don't solve this human nature trait of sort of settling into a world view after a while, there will always be opportunity for young companies, young people to innovate. As it should be.

The most important thing I think is that if you're to start something new, you have to have an idea, or a problem, or a wrong that you want to right, that you're really passionate about. Otherwise you're not going to stick it through. I think that's half the battle right there. I’m convinced that about half of what separates the successful entrepreneurs from the non-successful ones is pure perseverance.

A lot of people come to me and say, “I want to be an entrepreneur” and I go, "Oh that's great, what's your idea?" And they say, "I don't have one yet". And I have a pretty standard answer which is, "I think you should go get a job as a busboy or something until you find something you're really passionate about because it's a lot of work."

If you've got a family and you're in the early days of a company, I can't imagine how one could do it. I'm sure its been done but its rough. There are many moments that are filled with despair and agony, when you have to fire people and cancel things and deal with very difficult situations. And you have to do it over a sustained period of time. Its pretty much an eighteen hour day job, seven days a week for awhile. You pour so much of your life into this thing. It’s really tough and it consumes your life.

If you really look at the ones that ended up, you know, being “successful” in the eyes of society and the ones that didn’t, oftentimes, it’s the ones who were successful loved what they did so they could persevere when it got really tough. And the ones that didn’t love it quit because they’re sane, right? Any rational person would give up. Who would want to put up with this stuff if you don’t love it? And that’s what happens to most people, actually. That’s when you find out who you are and what your values are.

Another thing is that you’ve got to be a really good talent scout because no matter how smart you are, you need a team of great people and you’ve got to figure out how to size people up fairly quickly, make decisions without knowing people too well and hire them and see how you do and refine your intuition and be able to help, you know, build an organization that can eventually just build itself, because you need great people around you.

There were times in the first two years when we could have given up and sold Apple, and it probably would've died. When people sell out, even though they get fabulously rich, they're gypping themselves out of one of the potentially most rewarding experiences of their unfolding lives. Without it, they may never know their values or how to keep their newfound wealth in perspective. The rewarding thing isn't merely to start a company or to take it public. It's like when you're a parent. Although the birth experience is a miracle, what's truly rewarding is living with your child and helping him grow up.

Xerox PARC

I'll tell you an interesting story, it’s a real gem. I had three or four people that kept bugging me that I ought to get my rear over to Xerox PARC [Palo Alto Research Center], they kept saying, “You really need to go over to Xerox PARC and see what they've got going over there.” So I finally did.

Xerox PARC was a research lab set up by Xerox when they were making a lot of profits in the copier days. They were doing some computer science research which was basically an extension of some stuff started by a guy named Doug Engelbart when he was at SRI [Stanford Research Institute]. Doug had invented the mouse, and invented the bitmap display. And some Xerox folks that Xerox I believe hired away from Doug or split off from Doug somehow and got to Xerox, were continuing along in this vain.

I first went over there in 1979, it was a very important visit. I saw their early computer called the Alto, which was a phenomenal computer. The Alto had the world's first graphical user interface. It had windows. It had a crude menu system. It had crude panels and stuff. It had the mouse and the multiple-font text on the screen. It didn't work right but it basically was all there.

I remember being shown their rudimentary graphical user interface, and within 10 minutes, it was obvious that every computer in the world would work this way someday. It was one of those sort of apocalyptic moments. It was as if, all of a sudden, the veil had been lifted from my eyes. I thought it was the best thing I had ever seen in my life. You could argue about the number of years it would take, and you could argue about who the winners and the losers in terms of companies in the industry might be, but I don't think rational people could argue that every computer would work this way someday; it was so obvious once you saw it. You knew it with every bone in your body. It didn't require tremendous intellect. It was so clear. You would've felt the same way if you would have been there. Now remember it was very incomplete, and they had a bunch of things wrong, but we didn't know that at the time. Still though the germ of the idea was there, and they did it very well.

I realized in an instant that this would appeal to exponentially more people than the Apple II. I'm talking about people who didn't want to learn how to use a computer—they just wanted to use one. You could eliminate a whole layer of what someone had to know in order to take advantage of this tool.

We knew they hadn’t done it right, and that we could – at a fraction of the price. So I told Xerox, “I will let you invest a million dollars in Apple if you will open the kimono at PARC. You’re sitting on a gold mine. I can’t believe Xerox is not taking advantage of this.” And it's good that they showed us, because the technology crashed and burned at Xerox. The problem was that Xerox had never made a commercial computer. They were copier-heads who had no clue about what a computer could do. This group of people at Xerox was more concerned with looking out fifteen years than they were looking out fifteen months trying to make a product that somebody could use. They just grabbed defeat from the greatest victory in the computer industry. Xerox could have owned the entire computer industry.

GUI

I remember coming back to Apple thinking, our future has just changed. This is where we have to go. I got our best people together, and started to get them working all on this. I told them, “This is it! We’ve got to do it! How long would this take to implement?”

What we had to do at Apple was two things. One was complete the research, which really was only about fifty percent complete. There were a lot of issues that they hadn't solved like menus, and other things like that. And the second was to find a way to implement it at a low enough cost where people would buy it. And that was really our challenge.

The problem was that we hired a bunch of people from Hewlett-Packard, and they didn't get this idea, they just didn’t get it. We fought tooth and nail with a variety of people there who thought the whole concept of a graphical user interface was crazy. On the grounds that it either couldn't be done, or on the grounds that real computer users didn't need menus in plain English, and real computer users didn't care about putting nice little pictures on the screen. They had no concept of proportionally spaced fonts, no concept of a mouse. I remember having dramatic arguments with some of these people, who thought the coolest thing in user interface was soft keys at the bottom of the screen. Fortunately I was the largest stockholder and chairman of the company so I won.

It was obvious that you needed a pointing device and the mouse seemed to be the best one. We tried a bunch of other ones subsequently at Apple and the mouse indeed was the best one. The basic concept of the mouse came originally from SRI through Xerox to Apple. The Xerox mouse cost about a thousand dollars a piece to build, we had to engineer one that cost 20 bucks to build. I remember arguing with these folks at Apple, people screaming at me that it would take us five years to engineer a mouse, and would cost $300 to build. I finally just got fed up and went outside and found David Kelly design, and asked him to design me a mouse that I wanted to be able to use on Formica and my blue jeans, and in 90 days we had a mouse that we could build for 15 bucks that was phenomenally reliable.

We refined it a little bit, Xerox’s had three buttons, and we found that people would push the wrong button, or were scared they would push the wrong button, so they always looked at the mouse instead of the screen. So we got it down to

one button so that you could never push the wrong one, made some refinements like that.

I found that in a way Apple did not have the caliber of people that was necessary to seize this idea, there was a core team that did, but a larger team that had mostly come from Hewlett-Packard that didn't have a clue.

IBM

The first-great age of personal computers started around 1980, and that was age of productivity with the explosion of spreadsheets and word processors and things like that, and that primarily benefited businesses.

The people at the top of IBM knew nothing about computers. Nothing. Nothing. In 1977 IBM had dismissed the personal computer as too small to do serious computing, and therefore unimportant to their business.

By 1981 the Apple II, with the help of VisiCalc, had become the world's most popular computer, Apple had grown to a $300 million corporation becoming the fastest growing company in American business history. Vying for a share IBM entered the personal computer market in November of 1981 with the IBM PC.

IBM's first product was terrible, it was really bad. It’s curious to me that the largest computer company in the world couldn’t even match the Apple II, which was designed in a garage six years earlier. The IBM PC fundamentally brought no new technology to the industry at all. It was just repackaging and a slight extension of Apple II technology.

If it just would have been up to IBM they would've crashed and burned. We made a very big mistake though. We made the mistake of not realizing that a lot of other people had a very strong vested interest in helping IBM make it better. That was the genius in their approach, to have a lot of other people have a vested interest in their success, and that's what saved them in the end. The invention of Lotus 123, I think it was 1982, was what really propelled the IBM PC to the level of success that it achieved. What Lotus did was combine a good spread sheet and graphics program.

By 1983 Apple and IBM emerged as the industry's strongest competitors each selling approximately $1 billion worth of personal computers. IBM wanted to wipe us off the face of the earth. It was very scary. Here was Apple a $1 billion company, and here was IBM at that time probably a $30 billion company. They were so large, and dominated certain markets so completely, because they not only controlled the technology, they controlled the customer, they had direct contact with the customer. I think Apple was the only thing standing between them and total industry dominance.

IBM was essentially Microsoft at its worst. They were not a force for innovation; they were a force for evil. Once IBM gained control of a market sector, they almost always stopped innovation.

I mean everybody was very hooked on Big Blue back then and they bought IBM. There was that famous phrase, "You never get fired for buying IBM."

Lisa

There were two kinds of Apple customers. There were the educational aspects of Apple, and then there were sort of the non-educational side. Apple was the first "lifestyle" computer.

But Apple drifted away from its roots. You know what it is, people get confused, companies get confused, when they start getting bigger they want to replicate their initial success. And a lot of them think somehow there is some magic in the process of how that success was created, so they try to institutionalize process across the company. And before very long, people get very confused that the process is the content. And what makes great products is not the process, it’s the content.

We had a little bit of that problem at Apple, and the problem eventually resulted in the Lisa. We had a lot of people who were great at the management process, they just didn't have a clue as to the content. Lisa had its moments of brilliance, in a way it was very far ahead of its time, but there wasn't enough fundamental content understanding.

After setting up the framework for the concepts and finding the key people, and sort of setting the technical directions, Markkula and Scotty felt I wasn’t up to running the Lisa division. Scotty decided I didn’t have the experience to run the thing. I never yelled at anyone more than I yelled at Scotty. In the early days, if there was a disagreement, I would generally defer my judgment to some of the other people who had more experience than I had. In many cases, they were right. In some important cases, if we had gone my way, we would have done better. Since we ran the place as a team for the most part I lost. I was upset and felt abandoned by Markkula. It hurt a lot. There’s no getting around it. I brooded about it a lot. I wouldn’t feel resentment. I’d feel great sorrow about it and I’d be frustrated, which I was.

The thing that was harder for me was that they hired a lot of people in the Lisa group who didn’t share the vision we originally had. There was a tug-of-war in the Lisa group between people like me, who wanted a lean machine, and those hired from Hewlett-Packard and other companies. Who brought with them a perspective of larger machines, like John Couch, and who were aiming for the corporate market.

It’s true: We expressed very high hopes for Lisa and we were wrong. First of all, it was too expensive—about ten grand, and we were trying to sell it to these

big companies when our expertise was selling to consumers. To these Hewlett-Packard guys $10,000 was cheap, to our market, to our distribution channels, $10,000 was impossible. There were other problems: late shipping; the software didn't come together in the end as well as we hoped and we lost a lot of momentum.

I thought Lisa was in serious trouble, I thought Lisa was going off in this very bad direction as I just described, and I could not convince enough people in the senior management of Apple that that was the case.

IBM was coming on very strong, and coupled with our being about six months late, coupled with the price being too high, plus another strategic mistake we made—deciding to sell Lisa only through about 150 dealers, which was absolutely foolish on our part—meant it was a very costly mistake.

We produced a product that was a complete mismatch to the culture of our company, the image of our company, the distribution channels for our company, for our current customers, none of them could afford a product like that, and it failed. We had gotten Fortune 500-itis, trying to sell to those huge corporations, when our roots were selling to people.

And at that point in time, I brewed it for a few months. It was not very long after that it really occurred to me that we had to do something, the Apple ll was running out of gas, and we needed to do something with this technology fast or else Apple might cease to exist as the company that it was.

The question was, 'How do I go about influencing Apple?' Well, I can run around telling people things all day, but that's not going to result in what I really want. So I thought a really good way to influence Apple would be by example — to be a general manager here at Apple. I just decided that I was going to go off and do it myself with a small group, sort of go back to the garage, to design the Macintosh. They didn't take us very seriously. They wanted to give me something to do, which was fine. It was like going back to the garage for me. I think Scotty was just sort of humoring me. So I got the best people who were at Apple, because I thought that if we didn't do that, we'd be in real trouble. Of course, it was those people who came up with Macintosh.

Scully

If I had felt that I was the person to run Apple in 1983, then I would have thrown my own name into the hat for the job, which I did not. So it was a conscious decision on my part to find John Sculley.

John came from PepsiCo, and he was really smart. You wouldn't believe how smart he was. I spend an evening with him, one of the most exciting evenings in my whole life. I can't tell you how much fun I've had. It stimulated me, roused my long-held desire to be an architect of ideas.

He was the first person outside of Apple that I showed the Mac and I told him, "I really think you're the guy. I want you to come and work with me, even if I have to pay for it out of my own pocket, I can learn so much from you, because you're the best person I've ever met. I know you're perfect for Apple, and Apple deserves the best." I asked him, "Do you want to sell sugared water for the rest of your life? Or do you want to come with me and change the world?" That sealed the deal.

For the first year or so, things went well. But then our visions of the future began to diverge. He didn't learn things very quickly, and the people he wanted to promote were usually bozos. We had different ways of looking at the world, different views on people, different values. I began to realize this a few months after he arrived. I tried to educate him about the details of engineering, but he had no idea how products are created, and after a while it just turned into arguments.

I learned that my perspective was right. Products are everything. I actually thought a lot about that, and I think I understand it now pretty well. How are monopolies lost? Think about it. Some very good product people invent some very good products, and the company achieves a monopoly. But after that, the product people aren't the ones that drive the company forward anymore. It's the marketing guys or the ones who expand the business into Latin America or whatever.... So a different group of people start to move up. And who usually ends up running the show? The sales guy.

What happened was, at PepsiCo they changed their product once every 10 years. To them the new product was a new size bottle. So if you were a product person, you couldn't change the course of that company very much. So who influenced the success of PepsiCo? The sales and marketing people, therefore they were the ones that got promoted, and therefore they were the ones that ran

the company. Well for PepsiCo that might've been okay, but it turns out the same thing can happen in technology companies.

I told him, “I think you’re bad for Apple, and I think you’re the wrong person to run the company. You really should leave this company. You don’t know how to operate and never have. I wanted you here to help me grow, and you’ve been ineffective in helping me. I think you really lost your stride. You were really great the first year, and everything went wonderful. But something happened.”

There was something I did not ever see about John until that time which was that he had an incredible survival instinct. Somebody once told me this guy didn't get to be the president of PepsiCo without these kinds of instincts.

What can I say? I hired the wrong guy.

Macintosh

IBM was coming on very, very strong, and the momentum was switching to IBM. The software developers were moving to IBM. The dealers were talking more and more of IBM.

It's hard to remember how bad it was in the early 1980's. With IBM taking over the world with the PC, with DOS out there; it was far worse than the Apple II. The main thing was very simply that the technology we developed was superior. They tried to copy the Apple II and they had done a pretty bad job. You needed to know a lot. The special incantations you had to learn like "slash q-zs" and things like that. The manual for WordStar, the most popular word-processing program, was 400 pages thick. To write a novel, you had to read a novel—one that reads like a mystery to most people. They were not going to learn slash q-z any more than they were going to learn Morse code. Things were kind of slipping backwards.

A lot of people thought we were nuts for not being IBM-compatible, for not living under IBM's umbrella. There were two key reasons we chose to bet our company on not doing that: The first was that we thought that IBM would fold its umbrella on the companies making compatible computers and absolutely crush them. Second and more important, we did not go IBM-compatible because of the product vision that drives Apple. What we wanted to do at Apple was make computers into appliances and get them to tens of millions of people. That's simply what we wanted to do. And we couldn't do that with the current IBM-generation type of technology. It could not be as good if we became compatible with IBM. Of course, it's true that we didn't want IBM to dominate this industry. So we had to do something different. That's why we came up with the Macintosh.

Jef Raskin, who was running the Macintosh team at the time, was really pompous. He didn't know much about interfaces. I decided to nab some of his people who were really good, like Bill Atkinson, bring in some of my own, take the thing over and build a less expensive Lisa, not some piece of junk. It was a bunch of us going off and starting in the garage again, I had my own ragtag team and I was in control, because it's better to be pirates than to join the Navy.

Yeah, we felt the weight of the world on our shoulders. We knew that we had to pull the rabbit out of the hat with Macintosh, or else we'd never realize the dreams we had for either the products or the company. It became clear to all of

us who worked on Macintosh that it was just gonna blow the socks off the industry, that it was going to redefine the industry.

Macintosh was basically this relatively small company in Cupertino, California, taking on the goliath, IBM, and saying "Wait a minute, your way is wrong. This is not the way we want computers to go. This is not the legacy we want to leave. This is not what we want our kids to be learning. This is wrong and we are going to show you the right way to do it and here it is. It's called Macintosh and it is so much better. It's going to beat you and we're going to do it." And that's what Apple stood for. And that's exactly what it had to do.

If Macintosh hadn't been successful, then I should have just thrown in the towel, because my vision of the whole industry would have been totally wrong.

We were on a mission from God to save Apple, so we went off and built the most insanely great computer in the world.

The people who were doing the work were the moving force behind the Macintosh. My job was to create a space for them, to clear out the rest of the organization and keep it at bay. We used Apple as a financial mechanism, and we used the sales force. This was the neatest group of people I've ever worked with. They were all exceptionally bright, but more importantly they shared a quality about the way they looked at life, which is that the journey is the reward. They really wanted to see this product out in the world. It was more important than their personal lives.

As we evolved the Mac, it became very clear this was also a way to reinvent Apple. Mac stood for what we were as a company – taking technology that's out of reach of the people and making it really great. That's what we did with the Apple II, and that's what were going to do again with Mac. As a company, we would be getting back to our roots—selling computers to people, not corporations. That's what was so exciting about Macintosh, while Lisa pioneered this amazing software technology, with Macintosh we were able to take that software technology, and pull it down into a price range affordable not just to the corporation as Lisa was, but to the individual. We knew we could make a computer that was cheaper and better than Lisa. So coupled with this radical ease-of-use we were able to bring these products not just to hundreds of thousands or a few million people, but to tens of millions of people, and that's really what the personal computer revolution was all about.

We really started to design it so that it could be sold for $1000, we didn't make it, we could have sold it at $2000 although we came out at $2500. We adopted the 68000 microprocessor that Lisa had, we negotiated a price that was a fifth of

what the Lisa was going to pay for it, because we were going to use much higher volume.

We fundamentally redefined a lot of things at Apple, and we had to do it from scratch. We reinvented everything. We reinvented manufacturing, I visited about 80 automated factories in Japan, and we build the worlds first automated computer factory in the world in California. We spent over $20 million on the computer industry's first automated factories in Fremont California, and it overlooked Ford and GM. We designed Macintosh every step of the way for manufacturability. But in addition to that, in addition to just designing the machine, we designed and build the machine to build the machines. We built the product, we build the automated factory, the machine to build the machine, we build a completely new distribution system, we built a completely different marketing approach, and I think it worked pretty well.

We spent four years of our life doing that. It was more than two years on the computer itself. We had been working on the technology behind it for years before that. I don't think I've ever worked so hard on something, but working on Macintosh was the neatest experience of my life. Almost everyone who worked on it will say that. I think all of us on the Mac team point to that as the high point of our careers. It's like the Beatles playing Shea Stadium. We were really working fourteen-to-eighteen-hour days, seven days a week. For, like, two years, three years. That was our life. But we loved it, we were young, and we could do it.

I think the Macintosh was created by a group of people who felt that there wasn't a strict vision between sort of science and art. The people who made Mac were sort of on the edge. Or in other words, that mathematics is really a liberal art if you look at it from a slightly different point of view. And why can't we interject typography in the computers? Why can't we have computers talking to us in the English language? And, looking back, this seems like a trivial observation. But at the time it was cataclysmic in its consequences. And the battles that were fought to push this point of view out the door were very large.

None of us wanted to release it at the end. It was as though we knew that once it was out of our hands, it wouldn't be ours anymore. When we finally presented it at the shareholders' meeting, and when it was introduced after we went through it all, and had the computer speak to people itself, and things like that, everyone in the whole auditorium of that twenty five hundred people gave it a five-minute standing ovation.

What was incredible to me was that I could see the Mac team, the first few rows had all the people that worked on the Mac. About a hundred people, a hundred fifty people that really made it happen, and the whole first few rows of Mac folks were all just crying. It was as though none of us could believe that we'd actually finished it. Everyone started crying.... I was biting my tongue very hard because I had a little bit more to do. It was a very very emotional moment, because from that day forward it was no longer ours. We couldn't change it. If we had a good idea the following day it was too late. It belonged to the world at that point in time.

It was kind of like watching the gladiator going into the arena and saying, 'Here it is.' It was really perceived as Apple's do or die. And it went even deeper... If we didn't do this, nobody could stop IBM.

We wanted to get the Mac out a year before we did but we had internal deadlines that we were not able to meet, but by the time we bought the spots for the Super Bowl and things like that it was basically in the bag.

We set a goal for ourselves of Macintosh the first 100 days, and we had two things that we wanted to accomplish during those first 100 days. First to establish Macintosh as the third milestone product of our industry, alongside the Apple II and the IBM PC. And secondly to sell 50,000 Macintoshes during the first hundred days, to demonstrate that there would be phenomenal consumer acceptance for both the product, and the vision behind the product.

Let's examine how long it took the first 2 milestone products to reach a 50,000 units installed base to give us a bit of perspective. First there was the Apple II, introduced in 1977 it took 2,5 years to sell the 50,000th Apple II in late 1979. Next there was the IBM PC, introduced in late 1981 it took 7,5 months before it sold it's 50,000 units in mid-1982. Macintosh was introduced on January 24 1984 and reached it's 50,000 unit sale on April 6 1984 in just 74 days.

During 1984 Microsoft expected to get half of its revenues from software for the Macintosh. What's interesting, and what's hard to remember now is that Microsoft wasn't in the applications business then. They took a big bet on the Mac because this is how they got into the apps business. Lotus dominated the apps business on the PC back then. Apple did the Mac itself, but we got Bill Gates and his team involved to write these applications. We were doing a few apps ourselves. We did MacPaint, MacDraw and stuff like that, but Bill and his team did some great work.

The whole idea of the Macintosh was a computer for people who wanted to use a computer rather then learn how to use a computer. People really don't have to

understand how computers work. Most people have no concept of how an automatic transmission works, yet they know how to drive a car. You don’t have to study physics to understand the laws of motion to drive a car. You didn’t have to understand any of this stuff to use Macintosh. To use an analogy, if you go back to the 1880’s there were approximately 25,000 trained telegraph operators in the United States. You really could send a telegram between Boston and San Francisco and it would take about 3 or 4 hours to go through the relay stations and it really worked. It was a great breakthrough in technology that had been around for about 30-40 years. There were some people that talked about putting a telegraph machine on every desk in America to improve productivity. What those people didn't know was that about the same time Alexander Graham Bell filled the original patents for the telephone. A breakthrough in technology because putting a telegraph machine on every desk in America to improve productivity would not have worked, people wouldn't have spent the 20 to 40 to 100 hours to learn Morse code, they just wouldn't have done it. But with the telephone within 10 years there were over 200,000 telephones on desks in America. It was a breakthrough because people already knew how to use it, it performed the same basic function, but with radical ease-of-use. And in addition to just letting you click in the words it would let you sing, it let you intone your sentences to really get your meanings across. The Macintosh finally was like the first telephone. In addition to letting you do the old spreadsheets and word processing, it let you sing, it let you make pictures, and let you make diagrams where you could cut them and paste them into your documents, it let you put that sentence in bold helvetica or old English if that's the way you wanted to express yourself.

With the Macintosh we had gotten back on the track of letting us bring this technology not just to the people that had been hooked up to those big blue boxes in fortune 500 corporations. The Macintosh was the agent of change to bring computers to the rest of us with its graphical user interface. Computers and society were out on a first date, and for some crazy reason, we were in the right place at the right time to make that romance blossom.

Society

One of the things that I had in my mind growing up, I don’t know how it got there, was that the world was sorta something that happened just outside your peepers.

And you didn't really try to change it, you just sorta tried to find your place in it and have the best life you could. And it would all just go on out there, and there were some pretty bright people running it. And as you start to interact with some of these people you find that they are not a lot different than you. The people actually making these decisions every day, that are sort of running the world, are not really that very much different. They might have a little more judgment in some areas but basically they’re the same. And once you realize that, you start to feel you have a responsibility to do something about it, because the world is in pretty bad shape right now. The world's getting worse.

Definitely. For two reasons. On a global scale, the population is increasing dramatically and all our structures, from ecological to economic to political, just cannot deal with it. And in this country, we seem to have fewer smart people in government, and people don't seem to be paying as much attention to the important decisions we have to make.

We live in an information economy, but I don't believe we live in an information society.

People are thinking less than they used to. It's primarily because of television. When you're young, you look at television and think, "Why is the television programming so bad? Why are television shows so demeaning, so poor?" The first thought that occurs to you is: Well, there is a conspiracy: the networks that are controlling this are feeding us this slop because its cheap to produce, and to try and dumb us down, because of this because of that. I thought it was a giant conspiracy to rob the American populace of their mind if not their soul. But then I found out the truth, which is far more depressing, which is the networks give people precisely what they want. The truth of the matter, if you study it in any depth, is that networks absolutely want to give people what they want so that they will watch the shows. If people wanted something different, they would get it.

The reason people want this stuff is, they come home from a long day, they have dinner with their kids and they're fighting, and they get them to bed, and they just wanna turn on the television and turn off their brain for half an hour, and that's what they get. I must admit I don't watch much TV, but I do that every once in a while, after a long hard day I will turn on the TV for half an hour, and it really does turn your brain off.

That's far more depressing than a conspiracy. Conspiracies are much more fun! Conspiracy is optimistic! You can shoot the bastards! We can have a revolution!

But the networks are really in business to give people what they want. It's the truth. The vast majority of the public are pretty mindless most of the time. People are reading less and they're certainly thinking less.

When you pass a certain age, I don't know what it is 25-30 years old, you sort of as a human being inherit the responsibility of being a guardian of the earth for future generations of which you are all a member. I'm not exactly sure what that means but obviously that's the case. And I think this particular generation of people that is your guardian is doing an extremely poor job, and all of the help you can muster is really necessary.

I'm an optimist in the sense that I believe humans are noble and honorable, and some of them are really smart. I have a very optimistic view of individuals. As individuals, people are inherently good. I have a somewhat more pessimistic view of people in groups. And I remain extremely concerned when I see what's happening in our country, which is in many ways the luckiest place in the world. We don't seem to be excited about making our country a better place for our kids.

I guess one of the things that motivates a lot of people that I've seen that actually go out and do something in any different field is that most of the time, we're taking things. Neither you nor I made the clothes we wear; we don't make the food or grow the foods we eat; we use a language that other people evolved; we use another society's mathematics. And we're sorta taking from this giant pool constantly, and the most ecstatic thing in the whole world is to actually put something back into that pool. Very rarely do we get a chance to put something back into that pool. I think people from all different fields, that maybe you heard from and a whole bunch that you haven't, would express the same sort of feeling, it's the most ecstatic thing that I've encountered, so I would highly recommend it.

LaserWriter

The first major explosion that had driven our industry was the spreadsheet. The second really big explosion was desktop publishing. Happened in 1985 with the Macintosh and the LaserWriter printer. At that point, people could start to do on their desktops things that only typesetters and printers could do prior to that. That brought about a very big revolution in publishing.

We got the first Canon laser printer engine shipped to the United States at Apple, and we had it hooked up to a Lisa actually imaging pages, long before anybody, long before HP, and long before Adobe.

A few times people would tell me… there's these guys over at this garage at Xerox PARC called Adobe and you ought to go see them. And I finally went and saw them, and I saw what they were doing, and it was better than what we were doing. They were going to be a hardware company, they were going to build printers and the whole thing. I could quickly see that our hardware was going to be better than theirs and that their software was more advanced than what we were working on. I was simply blown away by what I saw. I convinced them to drop plans to be a hardware company and be a software company instead. And we within two or three weeks had canceled our internal project, a bunch of people want to kill me over this, but we did, I had cut a deal with Adobe to use their software and we bought 19.9 percent of Adobe at Apple. They needed some financing, we wanted a little bit of control, and we were off to the races.

I remember the first time I saw a piece of paper come out of the laser printer prototype we had. It was this printer from Canon, and running this very sophisticated controller we had designed at Apple, and Postscript software from Adobe. An amazing amount of technology. The piece of paper came out and I looked at it and it was so beautiful, I thought, "We can sell this. Because we don't need to tell anybody anything about what's in this box. All we have to do is hold this piece of paper up and go, Do you want this? If you do, buy this box." That was our whole marketing strategy.

When we introduced the LaserWriter no one at the company wanted to do it, but a few of us at the Mac group, everybody thought a $7000 printer was crazy, because the last really expensive thing we really tried to sell was Lisa. What they didn't understand was that you could share it with AppleTalk, they understood it intellectually, but not literally. So we pushed this thing through and I basically

had to do it over a few dead bodies. It was the first laser printer on the market, and the rest is history.

We also envisioned really the networked office, and so in january of 1985, when we had our annual meeting and we introduced our new products, I made probably the largest marketing blunder of my career by announcing the Macintosh Office instead of just desktop publishing. We had desktop publishing as a major component of that, but we announced a bunch of other stuff as well, I think we should've just focussed on desktop publishing at that time.

Apple was the largest printer company measured by revenue in the world. It lost that distinction to Hewlett-Packard about three or four years later unfortunately, but for a while it was the largest printer company in the world.

The things I'm most proud about at Apple is where the technical and the humanistic come together, as it did in publishing. The typographic artistry coupled with the technical understanding and excellence to implement that electronically came together and empowered people to use the computer without having to understand arcane computer commands. It was the combination of those two things that I'm the most proud of.

Ousted

It was very painful, I'm not even sure if I want to talk about it. Well alright…

What happened was that the industry went into a recession in late 1984, sales started seriously contracting and John didn't know what to do, he had not a clue. And there was a leadership vacuum at the top of Apple. There were fairly strong general managers running the divisions, I was running the Macintosh division, somebody else was running the Apple II division *etc.* There were some problems with some of the divisions, there was a person running the storage division, that was completely out to lunch.

A bunch of things needed to be changed, but all of those problems got put in a pressure cooker because of this contraction in the market place.

I think that Apple was in a state of paralysis in the early part of 1985. John was in a situation where the board was not happy, and John decided a really good person to be the root of all these problems would be me. He was going to recommend to the board that I step down from running the Macintosh division. I told him, “I don’t believe you’re going to do that. If you do that, you’re going to destroy the company.”

It wasn't an issue of competing visions for the company cause I don't think John had a vision, it was an issue of execution. In the sense that my belief was that Apple needed much stronger leadership to unite these various factions that we created with the divisions. And that the Macintosh was the future of Apple, that we needed to reign back expenses dramatically in the Apple II area, that we needed to be spending very heavily into the Macintosh area, things like that. John's vision was that he should remain the CEO of the company, and anything that would help him do that would be acceptable.

I even told John, “why don’t you become chairman and I’ll become president and chief executive officer?” But I don’t think I was capable at that time of running the company as a whole. You know I was 30 years old, and I don't think I had enough experience to run a $2 billion company. Unfortunately John didn’t either.

We had a falling out. When we did, our board of directors sided with him. John had cultivated a very close relationship with the board and they believed him, so that's what happened. The board felt that I couldn’t run a company, and that was their decision to make. But they made one mistake. They should have separated

the decision of what to do with me and what to do with Sculley. They should have fired Sculley, even if they didn’t think I was ready to run Apple.

The hardest, one of the most difficult days, was that day John said at the analysts meeting about there not being a role for me in the future, and he said it again in another analysts meeting a week later. He didn't say it to me directly, he said it to the press. Anyway I was told in no uncertain terms that there was no job for me. I volunteered to start a research division? Give me a few million bucks a year, and I'll go hire some really great people and we will work on the next great thing. I was told there was no opportunity to do that. It was really really tragic, it would've been far smarter for Apple to sort of let me work on the next thing.

If my vote had counted for everything at Apple, I certainly would not have told Steve Jobs that there was no place for him at Apple. But my vote was just one vote. So...

I was asked to move out of my office. They leased a little building across the street from most of the other Apple buildings. We nicknamed it Siberia. My associate was told about it. Yeah, she said, "They want you to get out in two weeks."

So I moved across the street, and I made sure that all of the executive staff had my home phone number. I knew that John had it, and I called the rest of them personally and made sure they had it, and told them that I wanted to be useful in any way i could, and to please call me if I could help on anything. They all had, you know, a cordial phrase, but none of them ever called back.

I used to go into work, I'd get there and I would have one or two phone calls to perform, a little bit of mail to look at. My calendar had some commitments on it that obviously were slightly more long-term than I could adjust immediately. Those included a trip to the Soviet Union; it included a trip to introduce the Macintosh office products in Europe. Given the state of mind I was in, I think I did a pretty good job for the company with that.

In June, July ... most of the corporate-management reports stopped flowing by my desk. A few people might see my car in the parking lot and come over and commiserate. I would get depressed and go home in three or four hours, really depressed. I did that a few times and I decided that was mentally unhealthy. So I just stopped going in. You know, there was nobody really there to miss me.

I think that John felt that after the reorganization, it was important for me to not be at Apple for him to accomplish what he wanted to accomplish. He had issued that public statement that there was no role for me there then or in the future, or

in the foreseeable future. And I, you know, I respected his right to make that decision. That was about as black-and-white as you need to make things. Probably a little more black-and-white than it needed to be.

I was out, and very publicly out. What had been the focus of my entire adult life was gone, and it was devastating. I really didn't know what to do for a few months. I felt that I had let the previous generation of entrepreneurs down, that I had dropped the baton as it was being passed to me. I met with David Packard and Bob Noyce and tried to apologize for screwing up so badly. I was a very public failure and I even thought about running away from the Valley.

You've probably had somebody punch you in the stomach and it knocks the wind out of you and you can't breathe. I just felt like I'd been punched, the air knocked out of me and I couldn't breathe. That's how I felt all summer long.

New Venture

Over the summer of 1985, I obviously had a lot of time to think about things. The thing I had to do was try to relax. It was hard, but I went for a lot of long walks in the woods and didn't really talk to a lot of people. And gradually my spirits started to come back little by little.

I got three offers to be a professor during that summer, and I told all of the universities that I thought I would be an awful professor.

Something slowly began to dawn on me. I still loved what I did. The turn of events at Apple had not changed that one bit. I'd been rejected but I was still in love.

I had a piece of paper one day and I was writing down what the things were that I cared most about, that I was most proud of personally, about my 10 years at Apple. There's obviously the creation of the products Apple II and Macintosh. Other than that, the thing that I really cared about was helping to set up the Apple Education Foundation. I came up with this crazy idea that turned into a program called "The Kids Can't Wait," where we tried to give a computer to every school in America and ended up giving one to every school in California, about 10,000

computers. Then I looked at myself and asked, "What am I best at and what do I enjoy most doing?" I think what I'm best at is creating sort of new innovative products. I'm a tool builder.

That's how I think of myself. I want to build really good tools that I know in my gut and my heart will be valuable. That's what I enjoy doing. And I enjoy, and I'm best, working with a small team of talented people. That's what I did with the Apple II, and that's what I did with the Macintosh. I put those two together, working with small teams of really talented people to create breakthrough products, and education, that's where the idea for NeXT came from.

I wanted to make things. And if there's no place for me to make things at Apple, then I'll do what I did twice before. I'll make my own place. You know, I did it in the garage when Apple started, and I did it in the metaphorical garage when Mac started. I was not ready to be an industry pundit, I was 30, and for me not to be able to practice my craft ever again in my life seemed odd. And so I decided to start over.

There was a group of about six people at Apple that called me. They were thinking of leaving the company. Apple had a way of neglecting people. The interesting thing about the group was that we'd all known each other for four years. We had an immense amount of confidence in each others'

abilities and genuinely liked each other. And we all had a desire to have a small company where we could influence its destiny and have a really fun place to work. We decided we wanted to start a company that had a lot to do with education and in particular higher education, colleges and universities. Our vision was that there was a revolution in software going on on college and university campuses. We talked about this enterprise, you know, for the first time less than two weeks before I told the board that I wanted to start this company. We had no business plan. We hadn't done anything. Now, you might say we're all crazy. We had a general direction. We wanted to find out what higher education needed. We planned to go visit a lot of colleges in October and just listen.

Then we wanted to build it for them, whatever it was. Courseware, whatever.

At a board meeting I stated that I had decided to start a new venture, and tendered my resignation as Chairman. I told John Sculley, "Don't get upset. These are very low-level people that you won't miss, and they will be leaving anyway. these people were going to resign anyway. They are going to be handing in their resignations by nine this morning." He confirmed Apple's willingness to discuss areas of possible collaboration between Apple and my new venture. The board declined to accept my resignation and asked me to defer it for a week. I agreed to do so in light of the encouragement the Board offered with regard to the proposed new venture and the indications that Apple would invest in it. Some Company representatives said they feared I would use proprietary Apple technology in my new venture.

I told the board: "We're not going to take any technology, any proprietary ideas out of Apple. We're willing to put that in writing. It is the law, anyway. There is nothing, by the way, that says Apple can't compete with us if they think what we're doing is such a great idea." It is hard to think that a $2 billion company with 4,300-plus people couldn't compete with six people in blue jeans. I told them that I would wish our parting to be both amicable and dignified.

In the fall of 1985, this education thing popped out. I had been reading some biochemistry, recombinant DNA literature. I had recently met Paul Berg, a Nobel Prize-winning molecular biologist, and the inventor of some of the recombinant techniques. I called him up and I said, "You remember me, I'm ignorant about this stuff, but I've got a bunch of questions about how it works, and I'd love to have lunch with you."

So we had lunch at Stanford. He was showing me how they were doing gene repairing, and what some of his students were doing to understand how proteins fold. Actually, it's straightforward, it's kind of neat. It smells a lot like some of the concepts you find in computer science. He was explaining how he does experiments in a wet laboratory and they take a week or two or three to run. I asked him, "Why don't you simulate these on a computer? Not only will it allow you to run your experiments faster, but someday every freshman microbiology student in the country can play with the Paul Berg recombinant software." His eyes lit up. And that was sort of a landmark lunch. Because that's when I started to really think about this stuff, and get my wheels turning again. I was real excited.

What if you came up with something that was as easy to use as a Mac, or even easier, and had the power of a workstation? What if you unleashed that machine in higher education? The more I thought about it, the more excited I got. That’s where we got the idea of doing a machine for higher education, but our original concept was about a third as good as the computer turned out to be. The improvement came from a lot of interaction between people in higher education and those of us at NeXT.

We had three high-level goals.

One was to make the best computers in the world for individuals.

They might be in networks or in groups, but one person, one computer. Second, we wanted a company where really bright people could come and be handed a lot of responsibility early on. If we had an exciting place to work, we could get the best and the brightest to come work here. The third goal was to make sure that the people who build this company shared in its success.

I didn’t see it then, but it turned out that getting fired from Apple was the best thing that could have ever happened to me. The heaviness of being successful

was replaced by the lightness of being a beginner again, less sure about everything. It freed me to enter one of the most creative periods of my life.

Pixar

This story is very interesting, this all started with George Lucas. Again a friend of mine told me I should go visit these crazy guys up in San Rafael, California who were working at LucasFilm.

Now George Lucas, who produced the Star Wars film trilogy, had a few problems he wanted to solve. I'll give you an example of one. When you make a copy of an analog audio recording, like tape cassette to another tape cassette, you pick up noise artifacts, in this case hiss. If you make a second generation copy it gets worse exponentially. The same is true of optical analog copies. If you copy optically one piece of film to another you get hiss if you will, and in this case the noise artifacts are visual, you get a dirty frame. Which comes across as blurriness in some cases, comes across as other artifacts in other cases. When George was making the original Star Wars movies he had to combine many many pieces of film together to make one frame, sometimes up to thirteen pieces of film for each frame. The matte paintings for the backgrounds might be a few pieces of film, the models might be a few pieces of film, the live action might be a few pieces of film, some special effects might be a few pieces of film. And every time he'd make a copy to composite two together, and then add a third, then add a fourth, he was adding noise artifacts with each generation. By the time he got to combining all these pieces of film to make just one frame of his movie, it was dirty. If you go buy a disk of any of the Star Wars films, if you stop it on some of the frames, they are really grungy. Incredibly noisy, very bad quality.

George being the perfectionist he was, thought, “I wonder if I could combine them digitally, if it could be totally clean?” Because when you make a digital copy of an analog recording it’s perfect. It turns out if you make a digital copy of a piece of film, it's perfect. So he said, ”I’d like to do it perfectly, do it digitally.”

George was a smart guy, and at one point when he had a lot of money coming in from these films he realized that he ought to start a technology group. And so he hired this guy named Ed Catmull, who was at the New York Institute of technology, to come out and build a computer group for him and figure out how to solve this problem. He hired some other very smart people and they figured out how to do it for him. They developed software and actually built some specialized hardware at the time.

George was the first one ever to do this, and after this problem was solved George decided that this was costing him several million dollars a year and that he didn't want to fund it anymore, and he decided to sell this computer group.

When I first met Ed Catmull, who ran the computer division at LucasFilm, he showed me what they were working on and I was blown away. The graphics were years beyond anything I had ever seen before. These guys were way ahead of us on graphics, they were way ahead of anybody.

I came back and tried to convince Sculley to buy it for Apple. I wanted to buy it because I was really into computer graphics. I realized they were way ahead of others in combining art and technology, which is what I've always been interested in, and I just knew in my bones that this was going to be very important. But the folks running Apple weren't interested, and they were busy kicking me out anyway.

Ed shared with me a dream that he'd had since graduate school to make the world's first computer-animated feature film. And I bought into that dream both sort of emotionally, spiritually and financially and John Lasseter bought into it, too. But it was Ed's dream from the beginning

So I ended up buying this group from George Lucas, and together we incorporated it as Pixar. And we set about revolutionizing high end computer graphics.

If I knew in 1986 how much it was going to cost to keep Pixar going, I doubt if I would have bought the company. But life kind of snookered me into doing that, and perhaps it was for the better.

If you look at the ten most important revolutions in high end graphics, eight of them have come out of Pixar. All of the software that was used to make Terminator, for example--to actually construct the images that you saw on the screen--or Jurassic Park with all the dinosaurs, was Pixar Software. Industrial Light and Magic uses it as the base for all of their stuff.

But Pixar had another vision. Pixar's vision was to tell stories. To make real films. Our vision was to make the world's first animated feature film--completely computer synthetic, sets, characters, everything.

Adoption

I think it’s quite a natural curiosity for adopted people to want to understand where certain traits come from. I was mostly an environmentalist. I thought the way you are raised and your values and most of your world view came from the experiences you had as you grew up. But some things aren’t accounted for that way. I think it’s quite natural to have a curiosity about it. And I did. I wanted to find out who my real parents were. So I started searching. I looked for years and I never could discover who my biological parents were. Then I was given the name of a doctor in San Francisco who I was told might have some knowledge. I thought this would be my last chance. So I went to see him. He was retired and I talked to him at his home. He said he was very sorry but he couldn't help me. He knew nothing about my birth or adoption. I left thinking he was my last hope, I might as well give up. Everything turned into dead ends. I'd done everything I could. A few weeks later I got a letter from the doctor telling me the story of how I was adopted. It turns out this doctor had delivered me, but he had promised my biological parents he'd never tell who they were. In those days that was how things were done. But after meeting me, he felt he had to tell me.

However, the doctor had died just as he finished writing the letter to me. The letter was found on his desk.

My real parents were not married and they told the doctor they couldn't get married at that time so they wanted to put me up for adoption. They told the doctor that they had one important condition that had to be met by anyone who would adopt me. They felt very strongly that I should be adopted by college graduates, and that the people had to promise to give me a college education no matter what. The first couple that wanted to adopt me was wealthy and said that was no problem, so everything was all set for me to be adopted by this lawyer and his wife.

Except that when I popped out, and just before everything was finalized a baby girl became available. And they decided at the last minute that they really wanted a girl. My parents, who were on a waiting list, got a call in the middle of the night asking, "We've got an unexpected baby boy. Do you want him?" They said, "Of course." My biological mother found out later that my mother had never graduated from college and that my father had never graduated from high school. She refused to sign the final adoption papers.

She only relented a few months later when my parents promised that I would go to college. They were working class and didn't know how they would be able to afford to pay for a college education, but they promised.

There's some notion that because I was abandoned, I worked very hard so I could do well and make my biological parents wish they had me back, or some such nonsense, but that's ridiculous. Knowing I was adopted may have made me feel more independent, but I have never felt abandoned. I love my adoptive parents; they were great. Both my parents got me. They were my parents 1,000%.

I remember once sitting on the lawn telling Lisa McMoyler, a girl that lived across the street, that I was adopted and she said, "So does that mean your real parents didn't want you?" Uuuuhhh… lightning bolts... I remember running into the house, I think I was probably crying, asking my parents, and they sat me down and said, "No you don't understand"

they said, "We specifically picked you out." Both of my parents said that and repeated it slowly for me. And they put an emphasis on every word in that sentence. I realized that I was not — just abandoned. I was chosen. I was special. They felt a lot of responsibility once they sensed that I was special. They found ways to keep feeding me stuff and putting me in better schools. They were willing to defer to my needs. I've always felt special. My parents made me feel special.

I wanted to meet my biological mother mostly to see if she was okay and to thank her, because I'm glad I didn't end up as an abortion. There was never any acrimony between us. She was twenty-three and she went through a lot to have me.

When I was looking for my biological mother obviously I was looking for my biological father at the same time. I learned a little bit about him and I didn't like what I learned. I asked her to not tell him that we ever met and not tell him anything about me. I was in this restaurant once or twice and I remember meeting the owner who was from Syria. And it was most certainly him. I shook his hand and he shook my hand.

And that's all.

I also met my sister Mona, and she’s a writer. After I was adopted, my real parents finally married and they had Mona. So she is my sister, not my half sister. As we got to know each other, we became really good friends, and she is my family. I don’t know what I’d do without her. She's one of my best friends in the world. I call her and talk to her every couple of days I can’t imagine a better sister. My adopted sister, Patty, and I were never close. I used to be way over on the nurture side, but I've swung way over to the nature side. And it's because of Mona and having kids.

NeXT

Everything I've done with computers in my life, starting with the Apple II and the Macintosh, have been along pretty much a single vector. And NeXT was just one more point on that same vector. Which is that if you believe that computers are the most incredible tools we've ever built, which I do, then the more powerful tool we can give to people, the more they can do with it.

It took us three years to build the NeXT computer. The machine was the best machine in the world.

Believe it or not, they're selling on the used market, in some cases, for more than we sold them for originally. They're hard to find even today. It was a totally 'plug and play' machine. Except for Macintosh, that was hard to find. It was an extremely powerful machine, way beyond the Macintosh. So it sort of nicely combined the power of the workstations with the 'plug and playness' of the Mac. The machine had a fit and finish that you don't find today. I don't just mean great in packaging; I mean in terms of operation.

Simple things to complex things. Simple things like soft power on and off. A trivial little thing, but one of the biggest reasons people lost information on computers was because they turned them off at the wrong time. And when you got into a multi-tasking network system that could have much more severe consequences. So we were the first people to do that where you push a button and you request the computer to turn off. It figured out what it needed to do to shut down gracefully and then turned itself off. The NeXT

Computer was also the first computer with built-in high quality sound, CD quality sound. It was just ahead of its time.

We basically wanted to keep doing what we were doing at Apple, to keep innovating. But we made a mistake which was to try to follow the same formula we did at Apple, to make the whole widget. But the market was changing. The industry was changing. The scale was changing. We had to get up to a certain scale if we wanted to play in the sandbox. It meant we had to succeed on a very large scale, if we wanted to have the effect we were looking for at the end of the process. And in order to do that we really had to be world class manufacturers. We were building the next billion-dollar computer company—from the ground

up. We probably had the most automated factory in the world. Our circuit board came out untouched by human hands. We had a series of sophisticated robots, some of which we built, some of which we bought.

Our smallest competitor was $1.75

billion those days. The world didn’t need another $100-million computer company. We were not competing at the Homebrew Computer society anymore, we were competing with Europe Inc. and Japan Inc.

and IBM Inc. In the end we knew we would be either the last company to make it or the first to not make it. We were right on the edge.

We thought we would be the last one that made it, but we were wrong. We were the first one that didn't. We put an end to the companies that tried to do that.

We certainly made our fair share of mistakes, but in the end I think we should have taken a bit longer to realize the world was changing and just gone on to be a software company right off the bat.

We learned a very important lesson. When you ask people to go outside of the mainstream, they take a risk. So there has to be some important reward for taking that risk or else they won't take it. What we learned was that the reward can't be one and a half times better or twice as good.

That's not enough. The reward has to be like three or four or five times better to take the risk to jump out of the mainstream. The problem was, in hardware you couldn’t build a computer that was twice as good as anyone else's anymore. Too many people knew how to do it. You were lucky if you could do one that was one and a third times better or one and a half times better. And then it was only six months before everybody else catches up. But you could do it in software. As a matter of fact that’s what we did with NeXTStep, I think that the leap that we made was at least five years ahead of anybody.

Education

I used to think when I was in my twenties that technology was the solution to most of the world's problems, but unfortunately it just ain't so. After seeing a lot of schools, and traveling a lot of places and having some kids myself, and watching them learn how to read, I do not believe it is a problem that has a technological answer. I believe it’s a problem that has a human answer. We really thought that technology was going to be a miraculous substitute for parents and teachers and augment them. It turns out the more you look, the more you see the fundamental basics of the situation are really what's important.

The fundamental basics of how much time do kids get to spend with their parents day in and day out. How much time the kids get to spend with their teachers day in and day out. These very simple things, the student-teacher ratios, parent -kid ratios, these are the basic things that our society has to tackle. I’ve been to villages in the outskirts of India that had higher literacy rate than some of our cities.

There are many software approaches to teaching and reading. I've helped put more computers in more schools than anybody else in the world, and I am absolutely convinced that is by no means the most important thing. The most important thing is a person. A person who incites your curiosity and feeds your curiosity; and machines cannot do that in the same way that people can. The elements of discovery are all around you.

You don't need a computer. What children need is something more proactive. They need a guide. They don't need an assistant. I think we have all the material in the world to solve this problem; it's just being deployed in other places.

I'm a very big believer in equal opportunity as opposed to equal outcome. I don't believe in equal outcome because unfortunately life's not like that. It would be a pretty boring place if it was. But I really believe in equal opportunity. Equal opportunity to me more than anything means a great education. Maybe even more important than a great family life, but I don't know how to do that. Nobody knows how to do that.

But it pains me because we do know how to provide a great education. We really do. We could make sure that every young child got a great education. We fall far

short of that.

It’s not a technological problem that we face here and I think we do a disservice to ourselves and in some extent to our technology if we try to make it be so simple, it's not so simple and I don't have any magic answers. The computers are not gonna charge in and solve those fundamental problems because I don’t think they can. They are not going to substitute for the basic things that we as a society have to figure out how to provide in a better way in many places than we are doing right now. Once those problems are solved I think computers can take us to amazing places.

Obviously, one of the great challenges of an education is to teach us how to think. What we’re finding is that computers are actually going to affect the quality of thinking as more and more of our children have these tools available to them. Humans are tool users.

What’s really incredible about a book is that you can read what Aristotle wrote. You don’t have to have some teacher’s interpretation of Aristotle. You can certainly get that, but you can read exactly what Aristotle wrote. That direct transmission of thoughts and ideas is one of the key building blocks of why we are where we are, as a society. But the problem with a book is that you can’t ask Aristotle a question. I think one of the potentials of the computer is to somehow capture the fundamental, underlying principles of an experience. I remember the video game phenomenon, what was the most interesting thing about the video game phenomenon to me was that within a few years after its beginning kids and non-kids were putting in two and a half billion dollars worth of quarters into these things a year.

You can look at these things as games and dismiss them, or you can look at them as very simple simulated learning environments. Here’s a very crude example. The original video game, Pong, captured the principles of gravity, angular momentum and things like that, to where each game obeyed those underlying principles, and yet every game was different—sort of like life. That’s the simplest example.

The game is constantly telling you how well you are doing by how well you score. And so the more you learn the underlying principles the better you score. Most of the underlying principles of these games are fairly simple but carry the concept much further. Imagine if the underlying principles are a sophisticated macroeconomic model of how France might've functioned the time of Louis the

14th. This type of simulation then becomes a little less trivial than the video game, and yet the principles are still the same.

Information stored in electronic form will actually be fairly permanent and be fairly easy to transmit from generation to generation. And you can imagine what it will be like if we could use the historical material in the Library of Congress coupled with interactive computer technology to do these things. These simulations will become what most of our students are learning from.

What computer programming can do is to capture the underlying principles, the underlying essence, and then facilitate thousands of experiences based on that perception. Now, what if we could capture Aristotle's world view—the underlying principles of his world view? Then you could actually ask Aristotle a question. OK. You might say it would not be exactly what Aristotle was. It could be all wrong. But maybe not.

Part of the challenge, I think, is to start to refine these tools so that someday we can crudely, and then in a more refined sense, capture an Aristotle or an Einstein or a Land while he's alive. Imagine what that could be like for a young kid growing up. That's part of the challenge. But that's for someone else. It's for the next generation. We really want to turn over the reins to the next generation, whose fundamental perceptions are state-of-the-art perceptions, so that they can go on, stand on our shoulders and go much further. It's a very interesting challenge, isn't it?

NeXTStep

When I visited Xerox PARC in 1979, when I was at Apple, they showed me really three things. But I was so blinded by the first one that I didn't even really see the other two. I only saw the first one, which was the graphical user interface, and it was so incredible to me that it saturated me. It blinded me to see the other two. It took me years to recreate them, and rediscover them, and incorporate them back into a model, but they were very far ahead in their thinking.

One of the things that they showed me was object oriented programming, they showed me that, but I didn't even see that. The way that people were building software was that everything was custom, really everything was built by hand. There was no ability to re-use software that you had written prior, or somebody else had written. Objects was a way to basically re-use software an order of magnitude or two more efficiently. It's sort of interchangeable parts much like the industrial revolution brought to manufacturing of hard goods. Object oriented programming was sort of the industrial revolution of software.

The other thing I saw, but didn't see, was the elaborate networking of personal computers into something I would now call 'interpersonal computing.' They invented Ethernet there at PARC, they had 200 Alto computers hooked up in a local area network using e-mail and doing everything else over the network, all in 1979. It was an electronic community of collaboration that they used every day. I didn't even see that.

It took me, and to some extent the rest of the industry, a whole decade to start to address that second breakthrough-- using computers for human collaboration rather than just as word processors and individual productivity tools. NeXTStep turned some of that vision into reality. It incorporated the world's first truly commercial object oriented system with WebObjects. And it really was the most networked system in the world when it came out.

We found a way to do two or three things that were real breakthroughs. Number one was to put a much more powerful computer in front of people for about the same price as a PC. What we observed was that the computing power we could give to an individual was an order magnitude more than the PCs were giving. In the sense that people want to do many things at once and you really needed true multitasking. The second was to integrate that networking into the computer so we could begin to make this next revolution with interpersonal

computing. PCs had not been able to do that very well. We really did want to start to network these things together in very sophisticated networks. So the technology to build that in became available. The third thing, and maybe the most important, was to create a software architecture that was about ten times as powerful than any PC. And where new software could be created in a fourth of the time.

We spent four years with fifty to a hundred of the best software people we could find creating a whole new software system platform from the ground up. And it turned out beautifully.

Microsoft

What happened with the Mac was — well, first I should tell you my theory about Microsoft.

Microsoft's orbit was made possible by a Saturn five booster called IBM. Bill would get upset with me for saying this but of course it was true, and much to Bill’s and Microsoft's credit they have used that fantastic opportunity to create more opportunity for themselves.

Most people don't remember but until 1984 with the Mac Microsoft was not in the applications business, it was dominated by Lotus, and Microsoft took a big gamble to write for the Mac, and they came out with applications that were terrible. But they kept at it and made them better and eventually they dominated the Mac applications market.

Microsoft had two goals. One was to copy the Mac, and the other was to copy Lotus' success in the spreadsheet — basically, the applications business. And over the course of 10 years, Microsoft accomplished both of those goals. They were able to copy the Mac because the Mac was frozen in time. Apple deserved it. After I left, it didn’t invent anything new. The Mac didn't change much for those 10 years. It's amazing that it took Microsoft 10 years to copy something that was a sitting duck. One of the reasons I think Microsoft took ten years to copy the Mac is ‘cause they didn’t really get it at its core, they simply ripped off what other people did.

Then they used the springboard of Windows to get into the PC market with the same applications, so they dominated the applications in the PC space too. They were able to do that because of the revenue stream from the IBM deal. Nonetheless they made the most of it and I give them a lot of credit for that.

They are very strong opportunists and I don't mean that in a bad way. Bill built the first software company in the industry. I think he built the first software company before anybody really in our industry knew what a software company was, except for these guys. And that was huge. That was really huge. The business model that they ended up pursuing turned out to be the one that worked really well, you know, for the industry. I think the biggest thing was, Bill was really focused on software before almost anybody else had a clue that it was really the software. We never saw ourselves in a platform war with Microsoft, either…Maybe that’s why we lost. … But we never thought of ourselves in a platform war; we just wanted to make good products.

I shouldn’t say this in public, but the only problem with Microsoft is they just have no taste. I don’t mean that in a small way. I mean that in a big way, in the sense that they don’t think of original ideas, and they don’t bring much culture into their products. I have a problem with the fact that they just make really third-rate products. Their products have no spirit to them. They have no spirit of enlightenment about them. They are very pedestrian. And the sad part is that a lot of customers don’t have a lot of that spirit either. They're the mainstream. A lot of people who don't want to think about it too much are just going to buy their product. But the way we’re gonna ratchet up our species is to take the best and spread it around everybody. So that everybody grows up with better things, and starts to understand the subtlety of these better things. Microsoft’s just McDonald’s. And that's what saddened me. Not that Microsoft had won, but that their products didn’t display more insight and more creativity. I just think Bill and Microsoft are a bit narrow. He'd be a broader guy if he had dropped acid once, or gone off to an ashram when he was younger. I think Bill and I have very different value systems. I like Bill very much, and I certainly admire his accomplishments, but the companies we built were very different from each other.

If you say, well, how do you feel about Bill Gates getting rich off some of the ideas that we had ... well, Bill’s doing a lot of good with the money that he made. That’s a good thing. I think the world’s a better place because Bill realized that his goal isn’t to be the richest guy in the cemetery.

Rotten Apple

Apple was dying, Apple was dying a very painful death, it was on a glide slope to die. When I walked out the door at Apple we had a ten-year lead on everybody else in the industry. Macintosh was 10 years ahead, and we watched Microsoft take 10 years to catch up with it. Apple stopped creating, the Macintosh that was shipping was 25% different than the day I left.

One of the things that really hurt Apple was that after I left, John Scully got a very serious disease. And that disease, I've seen other people get it to, it's the disease of thinking that a really great idea is 90% of the work. That if you just tell all the other people, you know here's a great idea, then of course they can go off and make it happen. But what happened was that the understanding of how to move these things forward, and how to create these new products, somehow evaporated. I think a lot of the good people stuck around for a while, but there wasn't an opportunity to get together and do that, because there wasn't any leadership.

What happened with Apple was that they had fallen behind in many respects, certainly in market share, and most importantly, their differentiation had been eroded by Microsoft. What they had was their installed base. Which wasn't growing but shrinking slowly, providing a good revenue stream for several years, but it was a glide-slope.

When I left Apple it was a two billion dollar company. We were Fortune 300 and something. When the Mac was introduced we were a billion dollar corporation; so Apple grew from nothing to two billion dollars while I was there. That's a pretty high growth rate. It grew five times since I had left basically on the back of the Macintosh. I think what happened since I left in terms of growth rate was trivial compared with what it was like when I was there.

The trouble with Apple was it succeeded beyond its wildest dreams. We succeeded so well, we got everyone else to dream the same dream. The rest of the world became just like it. The trouble was, the dream didn't evolve. Innovation distinguishes between a leader and a follower. And Apple stood still. They produced almost no new innovation since the original Mac itself.

What ruined Apple wasn't growth.

What ruined Apple was values. John Sculley ruined Apple and he ruined it by bringing a set of values to the top of Apple which were corrupt, and corrupted

some of the top people who were there, drove out some of the ones who were not corruptible, and brought in more corrupt ones and paid themselves collectively tens of millions of dollars. They cared more about their own glory and wealth than they did about what built Apple in the first place--which was making great computers for people to use. They didn't care about that anymore. They didn't have a clue about how to do it, and they didn't take any time to find out because that's not what they cared about. They cared about making a lot of money. They got very greedy. So they had this wonderful thing that a lot of brilliant people made called the Macintosh. And instead of following the original trajectory of the original vision--which was to make this thing an appliance, to get this out there to as many people as possible--they went for profits. And they made outlandish profits for about four years. Apple was one of the most profitable companies in America for about four years. What that cost them was the future. What they should have been doing was making reasonable profits and going for market share, which was what we always tried to do. Macintosh would have had a thirty-three percent market share, maybe even higher, maybe it would have even been Microsoft, but we'll never know.

Scully destroyed everything I had spend 10 years working for, starting with me, but that wasn't the saddest part, I would've gladly left Apple, if Apple would have turned out the way I wanted it to. He basically got on a rocket ship that was about to leave the pad, and the rocket ship left the pad, and it kind of went to his head, and he got confused, and thought that he had built the rocket ship. Then he kind of changed the trajectory, so that it was inevitably going to crash into the ground.

Macintosh lost to Microsoft because Sculley insisted on milking all the profits he could get, rather than improving the product and making it affordable. They spend hundreds of millions of dollars a year on R&D, they had spent about a total of $5 billion on R&D. What they got for it?

I don't know.

Toy Story

Pixar was a marathon, not a sprint. There are times when you run a marathon and you wonder, “Why am I doing this?” But you take a drink of water, and around the next bend, you get your wind back, remember the finish line, and keep going.

Our dream was to make the world's first computer animated feature film, and that dream was what had been driving us. I got everybody together, and I said, “At our heart, we really are a content company. Let's transition out of everything else. Let's go for it. This is why I bought into Pixar. This is why most of you are here. Let's go for it. It's a higher-risk strategy, but the rewards are gonna be much higher, and it's where our hearts are.”

We developed tools, all proprietary, to do this, to manage the production of this thing as well as the drawing of this thing, computer synthetic drawing.

John Lasseter, the director, was there from the very start, Ed was there, and we were joined by other people along the way. I always believed in what John was doing. It was art. He cared, and I cared. I always said yes. I said to him, “All I ask of you, John is to make it great.”

After ten years we finally did it, it took longer than we thought it would but most things in life do take longer than I think they will. But we did believe that we could achieve that milestone sooner or later, I thought we would do it faster but I’m always anxious.

It was called ‘Toy Story.’, and it was phenomenal. Pixar wrote it, directed it, and produced it. The Walt Disney Corporation was distributing it, and it came out in november 1995 as Walt Disney's Christmas Picture. Tom Hanks was the main character's voice. Tim Allen was the second main character. Randy Newman did the music for it. It was just phenomenal.

The thing that enabled us to do it was the incredible team of people we were able to build here at Pixar, and the culture we were able to create. That was more difficult than it sounds, because half the people were from a creative background — artists, sculptors, animators — and half were from a technical background. Ed, more than anyone else, was able to really create a culture that views the best of both of those, and where each one was on the same level, where there weren’t second-class citizens. John, of course, is a force of nature that a lot of people know about. Ed is one of the real killers at Pixar that fewer people know about, but he’s awesome.

After Toy Story's success I realized that we needed to cut a new deal with Disney if we were ever to build a studio and not just be a work-for-hire place. I started to learn about how films are made. Basically, it's bands of gypsies getting together to make a film. After the film, they disband. The problem with that is that we wanted to build a company, not just make a single movie. We wanted Pixar to grow into a brand that embodies the same level of trust as the Disney brand. But in order for Pixar to earn this trust, consumers had to know that Pixar was creating the films. These were to be Pixar as well as Disney movies.

Because we could now fund half the cost of our movies, I could demand half the profits. But more important, I wanted co-branding. Michael Eisner didn't think we could have many hits, so he thought he was saving himself some money. Ultimately that was great for us, because Pixar would have ten blockbusters in a row. Eisner was reasonable and fair to me then. But eventually, over the course of a decade, I came to the conclusion that he was a dark man.

Pixar was the first digital studio in the whole world. It really combined art and technology together. Again in a very wonderful way. Pixar had by far and away the best computer graphics talent in the entire world, and the best animation and artistic talent to do these kinds of film. We had the second largest group of animators outside of Disney working side by side with these computer scientists. There was really no one else who could do this stuff. It was really phenomenal. We were probably close to ten years ahead of anybody else.

Pixar's seen by a lot of folks as an overnight success, but if you really look closely, most overnight successes took a long time. The computer graphics community had been climbing the wall of the castle for twenty years standing on each other shoulders and made immense progress. And finally with Toy Story we scaled the castle wall and we were in the castle.

Place in History

I want to talk for minute about a place in history. Apple turns out many products--a dozen a year; if you count all the minor ones, probably a hundred. Pixar is striving to turn out one a year. The converse of that is that Pixar's products will still be used fifty years from now, whereas I don't think you'll be using any product Apple brings to market this year fifty years from now. Pixar is making art for the ages. Kids will be watching Toy Story in the future. Apple is much more of a constant race to continually improve things and stay ahead of the competition.

If I look at the people at Pixar our heroes are Disney, just look at what they've done, we all got young children and our kids watch these Disney films and they learn a lot from these Disney films, about good and evil and right and wrong and they are entertained all along the way.

The other thing I would say is you may watch your favorite live-action film three, four, five times in your life. But for a great animated film, your kids may watch it dozens of times if not hundreds of times. And they might drag you along with them many of those times.

The interesting thing is when these films take four years to make and they last for 60 or 100 years, you start to develop a longer focal length point of view than just the next six months.

The technology we've been laboring on over the years at Apple becomes sort of part of the sediment layer for things to build upon. It’s is not a field where one writes a principia which holds up for 200 years, it’s is not a field where one paints a painting which will be looked at for centuries, or builds a church that will be looked at and admired with astonishment for centuries. It’s is a field where one does one’s work and in 10 years it will be obsolete. Sort of like sediments of rocks, you get to contribute your little layer of sedimentary rock to make the mountain that much higher, but no one on the surface, unless they have x-ray vision, will see your sediment. They will stand on it, and it will be appreciated by that rare geologist. When Snow White was re-released on DVD, in 2001, we were one of the 28 million families that went out and bought a copy of it. This was a film that was 60 years old, and my son was watching it and loving it. I don't think anybody's going to be beating on a Macintosh 60 years from now.

Apple and Pixar are the same in that they both deliver a product that has immense technology underpinnings. Pixar invented all this stuff but we don't view ourselves as a technology company our product is content, we are an entertainment company. And all this technology really is just in the service of the storytelling, in the service of the creative people.

Now what I would like to do is examine how technology has influenced the motion picture, how has the incorporation of technology progressed and how has is it changed the way we view motion pictures. The first motion picture was shown in 1895, it was created by two brothers Antoine and Louis Lumière and it was projected below the grand café in Paris France, on December 28, 1895. The invention of the motion picture was an amazing feat of technology, the Lumière brothers invented their own cameras and their own projectors.

We went along for almost 40 years before we saw the next major technological innovation. Which was sound, in 1927 The Jazz Singer premiered starring Al Jolson, it was mostly a silent picture with a few songs but in it Al Jolson spoke several lines, and with those lines ended the era of silent pictures forever. As a measure of how revolutionary this was, US movie attendance went from 60 million persons in 1927, when The Jazz Singer premiered, to a 110 million persons in 1929. Incidentally The Jazz Singer was immensely popular and saved the studio that produced it which was on the verge of bankruptcy, and that studio was Warner Bros. If Warner Bros. had not taken a major gamble on new technology there would be no Time Warner today.

The next major incorporation of technology was in 1932, in 1932 technicolor had perfected their three strip color film process after having had many problems with some earlier technology. Unfortunately they could not interest any major studio at that time in making a color film, can you believe that? The studios treated it as a outrageously risky expense and refused to pony up the money to make color films. There was only one studio at the time that decided to go for it and that was Walt Disney.

Walt Disney trained their animators in color theory and produced the first color films, the Silly Symphony cartoons, which won several Academy Awards and ushered in the age of color. By the way, Walt Disney took LSD, did you know that? he did once and that's where the idea for Fantasia came from, it’s true.

The next major breakthrough was in 1937 with Snow White, the world’s first animated feature film produced by Walt Disney. It incorporated many innovations including multi-plane camera, and really was the first new form of motion picture entertainment since the invention of the motion picture itself

some 42 years earlier. Animation would never be the same again and Disney had lead the way since then.

The next innovation was two years later, while there were a half a dozen live-action films which incorporated Technicolor before the Wizard of Oz, none of them were either commercially successful nor did they ignite the public's demand for color. The Wizard of Oz changed all that and became the icon of bringing color into live-action films.

We then progressed almost 40 years before the next major incorporation of new technology which was Star Wars in 1977. Star Wars not only totally redefined the science-fiction motion picture film genre, but it also elevated special-effects to become an equal partner to live-action and storytelling in motion pictures. Now although Star Wars's effects were produced pre computer graphics, they really opened the door for everything that followed.

We then progressed a little over a decade to Terminator two. Terminator two was the first film to bring computer graphics special-effects into the mainstream, although there were a few films to incorporate computer graphics special-effects like Alien and The Abyss before Terminator two, Terminator two was what captured the public and elevated computer graphic special-effects to the mainstream.

This was followed two years later by Jurassic Park which carried the art a little further, and created the most commercially successful film up to that time because of the computer graphics special-effects.

That brings us to 1995, in 1995 the centenary year of the invention of the motion picture itself we had another major milestone. Something that will go down as a landmark in motion picture history. And that is the first completely computer-generated feature-length motion picture, completely computer synthetic, on the hundredth anniversary of the motion picture itself. And that of course is Toy Story.

Toy Story represented the computer graphics community contributing not just special-effects to a motion picture, but the entire motion picture itself. It was a breakthrough on the scale of Technicolor, Snow White and Star Wars. It was way beyond what we had seen in computer graphics special-effects. Without diminishing Jurassic Park in anyway let me illustrate. If you take Jurassic Park and stack all of the frames that contain any computer synthetic element back to back you get about five and half minutes. Of course these frames do not include, background, sets or anything, they are usually just the one computer synthetic

element. Toy story is 79 minutes in length and every frame is totally synthetic, major, minor characters, background *etc.* An order of magnitude leap.

Again most importantly we see computer graphics not just playing a supporting role to live-action but actually providing the entire vision for the motion picture. With it we pioneered really the next major offshoot of the motion picture that was going to be a medium in it's own right. We've pioneered the whole medium of computer animation, but John once said—and this really stuck with me—"No amount of technology will turn a bad story into a good story." That dedication to quality is really ingrained in the culture of this studio. The people who go to see our movies are trusting us with something very important—their time and their imagination. So in order to respect that trust, we have to keep changing; we have to challenge ourselves and try to surprise our audiences with something new every time. We are about putting stories into the culture that's what we are about, to tell stories.

Selling NeXT

In the mid 90s the desktop computer industry was in a coma. It reminded me of Detroit in the '70s, when American cars were boats on wheels. Innovation had virtually ceased. Microsoft dominated with very little innovation.

A force of self-interest throughout the industry made Windows ubiquitous. Compaq and all these different vendors made Windows ubiquitous. They didn't know how to spell software, but they wanted to put something on their machines. That made Windows ubiquitous.

The desktop market had entered the dark ages, and it seemed like it was going to be in the dark ages for the next 10 years, or certainly for the rest of the decade. It was like when IBM drove a lot of innovation out of the computer industry before the microprocessor came along.

Apple had a single digit market share and falling. The Macintosh was going to die in another few years and it was really sad. The problem was this: no one at Apple had a clue as to how to create the next Macintosh, because no one running any part of Apple was there when the Macintosh was made--or any other product at Apple. They just had been living off that one thing for over a decade.

Again it wasn't that Microsoft was so brilliant or clever in copying the Mac, it was that the Mac was a sitting duck for 10 years. That was Apple's problem: Their differentiation evaporated. It was kind of tragic, and unless somebody pulled a rabbit out of a hat, Apple was dead.

Companies tend to have long glide slopes because of the installed bases. Apple was just gliding down this slope and they were loosing market share every year. Things start to spiral down once you get under a certain threshold. And when developers no longer write applications for your computer, that's when it really starts to fall apart. They couldn’t seem to come out with a great computer to save their lives. They needed to spend big on industrial design, reintroduce the hipness factor. But no, they hired Gil Amelio as CEO. It was as if Nike hired the guy that ran Kinney shoes.

Apple had just lost a billion dollars. A lot of people had written Apple off, I was discouraged as well. But Apple was still relevant. It had a base of 25 million users. Next to Microsoft, Apple was the only one that still mattered. Someone once said that profit is the very small difference between two very large

numbers: revenue and cost. Well, if Apple sold $7 billion worth of stuff, and it lost a billion, that meant it spent $8 billion. That's a huge amount of money! It meant that this was a company that could spend $5, $6, $7 billion dollars a year and still make a profit! Which NeXT could not. If you could eliminate waste and work to come up with a focused strategy, you have enormous resources to do good work. It was a wonderful, wonderful opportunity. Larry Ellison, who's actually my best friend, and I even discussed taking over Apple, but I decided I'm not a hostile-takeover kind of guy.

Apple needed a new operating system that would enable them to challenge Microsoft, much as the Macintosh challenged IBM technology 10 years earlier. If anything, IBM was more powerful than Microsoft was at the time. So I approached Apple to talk about NeXTStep. It was the first time I had set foot on an Apple campus since I left in 1985. I felt a twinge, but it wasn't all that emotional; nearly everything had changed, even the buildings. One of the reasons I went there was, when I was using NeXTStep, it was entrapping. I didn't want to use the present state of Mac or Windows for the rest of my life. I told them, "It's probably a totally crazy idea. I'll structure any kind of deal you want – license the software, sell you the company, whatever. When you take a close look, you'll decide you want more than my software. You'll want to buy the whole company and take all the people. I think we have an opportunity to take the next big technological step, and leapfrog Microsoft and everybody else." My advice was that if Apple was going to go with our technology, they should buy the company instead of licensing the software. You need the people for something as vital as an operating system. So in a remarkable turn of events, Apple bought NeXT.

Gil asked me to be an advisor to him and I agreed to do that, until he told me to go away or if I decided he wasn't listening to me. I liked working with Gil on strategic issues, and the area where I really concentrated my energy was to help Gil re-architect the organization of the company and his senior lieutenants. He was a nice guy, but the worst CEO

I've ever seen, I think if you needed a license to be a CEO he wouldn't get one. He had a saying. He said, "Apple is like a ship with a hole in the bottom leaking water and my job is to get the ship pointed in the right direction." He didn't really want me around. And I thought he was a bozo. I knew that before I sold him the company. I thought I was just going to be trotted out now and then for events like Macworld, mainly for show. That was fine, because I was working at

Pixar. I rented an office in downtown Palo Alto where I could work a few days a week, and I drove up to Pixar for one or two days. It was a nice life. I could slow down, spend time with my family.

The thing about NeXT was that we produced something that was truly brilliant for an audience that our heart really wasn't into selling to — namely, the enterprise. I suppose if you were writing a book, this would be a great plot line, because the whole thing circles back. All of a sudden, it's coming out for the market that we would've liked to create it for in the first place — i.e., consumers.

With this merger, the advanced software from NeXT would be married with Apple's very high-volume hardware platforms and marketing channels to create another breakthrough. Leapfrogging existing platforms, and fueling Apple and the industry copy cats for the next ten years and beyond. I still had very deep feelings for Apple, and it gave me great joy to play a role in architecting Apple's future. Joining Apple fulfilled the spiritual reasons for starting NeXT. So it's a good ending.

Get Back

After Gil resigned I got a call from Apple's board of directors asking me to return to Apple as their CEO, we'd just taken Pixar public, and I was happy being CEO

there so I declined. I never knew of anyone who served as CEO of two public companies, even temporarily, and I wasn't even sure it was legal. They then asked me to become chairman, and I again declined. I had no plans to leave Pixar. I told them, "I will help.

I will be an advisor. Unpaid. That's all I can give

now."

I was enjoying spending more time with my family. I was torn. I didn't know what I wanted to do. I knew Apple was a mess, so I wondered: Do I want to give up this nice lifestyle that I have? What are all the Pixar shareholders going to think? I talked to people I respected. I finally called Andy Grove at about eight one Saturday morning – too early. I gave him the pros and the cons, and in the middle he stopped me and said, "Steve, I don't give a shit about Apple." I was stunned. It was then I realized that I do give a shit about Apple – I started it and it is a good thing to have in the world. I felt the world would be a better place with Apple in it than not. And it's hard to imagine the world without Apple now. That was when I decided to go back on a temporary basis to help them hire a CEO.

During the negotiations when Apple wanted to buy NeXT, Apple said it would pay me 1.5 million shares in stock--which was about a sixth of my share of the purchase price--and the rest in cash. There was a catch: They wanted it to be unregistered stock so I couldn't sell it for six months. It was a big mistake, and here's why. At the end of six months they had to register the stock with the SEC as they promised. When they did, the business press assumed I was preparing to sell, even though I hadn't even thought about selling. When that all blew up, I thought, "Gee, Apple's taking a big PR hit on this.

If I sell in three or six months, there will be a second hit, so I might as well sell now." This was, by the way, before the Apple board began to twist my arm to

come back and run the company. Gil was still running the place. So I was also thinking, "Do I really want this $20 million worth of stock when I think the company is going to be worthless in a year?". So I sold it, I pretty much had given up hope that the Apple board was going to do anything. I didn't think the stock was going up. Literally within a few days, I got a call from Apple director Ed Woolard to discuss coming back.

Selling that stock actually was a good thing. I didn't want the people I work with at Apple to think I was coming back to get rich.

Because I didn't have a stake in Apple I was able to walk in with some moral authority and say, "Look, this isn't about me or the money I'm going to make. This is about what's right for Apple." It was purer in some ways. Bottom line is, I didn't return to Apple to make a fortune. I'd been very lucky in my life and already had one.

I went back to Apple and tried to hire a CEO, with the help of a recruiting agency, for almost four months. But they didn't produce the right people. That's why I finally stayed. Apple was in no shape to attract anybody good.

It was rough, really rough, the worst time in my life. I had a young family. I had Pixar. I would go to work at 7 a.m. and I'd get back at 9 at night, and the kids would be in bed. And I couldn't speak, I literally couldn't. I was so exhausted. I couldn't speak to my wife Laurene. All I could do was watch a half hour of TV and vegetate. It got close to killing me. I was driving up to Pixar and down to Apple in a black Porsche convertible, and I started to get kidney stones. I would rush to the hospital and the hospital would give me a shot of Demerol in the butt and eventually I would pass it.

One of my role models is Bob Dylan. As I grew up, I learned the lyrics to all his songs and watched him never stand still. If you look at the artists, if they get really good, it always occurs to them at some point that they can do this one thing for the rest of their lives, and they can be really successful to the outside world but not really be successful to themselves. That's the moment that an artist really decides who he or she is. You always have to keep pushing to innovate. Dylan could have sung protest songs forever and probably made a lot of money, but he didn't. He had to move on, and when he did, by going electric in 1965, he alienated a lot of people. His 1966 Europe tour was his greatest…. The Beatles were the same way. They kept evolving, moving, refining their art. That's what I've always tried to do — keep moving. Otherwise, as Dylan says, if you are not

busy being born, you’re busy dying. If they keep on risking failure, they’re still artists. Dylan and Picasso were always risking failure. This Apple thing is that way for me. I don’t want to fail, of course. But even though I didn’t know how bad things really were, I still had a lot to think about before I said yes. I had to consider the implications for Pixar, for my family, for my reputation. I decided that I didn’t really care, because this is what I want to do. If I try my best and fail, well, I’ve tried my best. It was like the first adult love of your life, something that is always special to you, no matter how it turns out.

I was basically fired from Apple when I was 30 and was invited to come back 12 years later. What a circle of life, life is just always mysterious and surprising and you never know what's around the next corner.

Rebuilding

Apple was about 90 days away from going bankrupt back then in the early days. And it was much worse than I thought when I went back initially. Much worse than I could imagine.

The people had been told they were losers for so long they were on the verge of giving up. I expected all the good people would have left, but I was incredibly surprised that a third of the people were like A to A+ players. The kind of people you kill to hire. You'd do anything to hire these people, they just come along once in a blue moon. I asked them as tactfully as I could, "why in the heck did you stay?" And a lot of them had this little phrase I heard several times they said, "I bleed in six colors", which was the old six color Apple logo and that was code for, because I love what this place stands for or at least what we stood for. That just made all of us work that much harder to have it survive, to have those values survive and bring them back.

A third of the company were at let's just say at the other end of the spectrum. They weren't bad people, they were people that were burned out or were not so good in the first place. But the folks that were less good was the management. We had to change the management of the company. We had to let people go, and it had to be done fast, because we were losing good people. And once we got rid of the barnacles, which were frankly in several of the top layers for the most part, things got a lot better.

Apple's problem had been a lack of execution, a lack of good management, just the basic stuff. There were people going 18 different directions, doing arguably interesting things in each one of them. Good engineers, lousy management. You looked about the farm that had been created, with all these different animals going in different directions, and it didn't add up, the total was less than the sum of it's parts. We had to decide what the fundamental directions were going to be, and what made sense and what didn't. I think the whole notion of being so proprietary in every thing that we did had hurt us. And the management and the vision that we had encouraged that, encouraged people to go reinvent the wheel out there our own way. And yeah it might be 10% better, but usually it ended up about 50% worse, because there were a lot of smart people that didn't work at Apple too.

I told the board, "Stop the train, this isn't going to work. This company is in shambles, and I don't have time to wet-nurse the board. So I need all of you to

resign, or else I’m going to resign and not come back on Monday.” They were an awful board, a terrible board. I agreed they could keep Ed Woolard and a guy named Gareth Chang, who turned out to be a zero. He wasn’t terrible, just a zero. Woolard, on the other hand, was one of the best board members I’ve ever seen. He was a prince, one of the most supportive and wise people I’ve ever met. Than we added, Larry Ellison, Jerry York, Bill Campbell and myself.

I also wanted to make sure the really good people who came in from NeXT didn’t get knifed in the back by the less competent people who were then in senior jobs at Apple.

In a situation like that, you don't have time to study everything. But, yeah, I had some ideas. What I told people was that every decision didn't have to be right, just enough of them had to be right, so don't get paralyzed. There were some very hard decisions to make. Like the decision to end the clone business. In hindsight that looks smart, but have you ever gotten death threats? That was scary. It was the dumbest thing in the world to let companies making crappier hardware use our operating system and cut into our sales.

One of the things I did when I got back to Apple was I gave the museum to Stanford. All the papers, and all the old machines, and kind of cleared out the cobwebs, and said, “let’s stop looking backwards here. It’s all about what happens tomorrow.” Because you can’t look back and say, well, gosh, you know, I wish I hadn’t have gotten fired, I wish I was there, I wish this, I wish that. It doesn’t matter. And so let’s go invent tomorrow rather than worrying about what happened yesterday. If you look backward in this business, you’ll be crushed. You have to look forward.

The first six months were very bleak, and at times I got close to throwing in the towel too. I'd never been so tired in my life. I'd come home at about ten o'clock at night and flop straight into bed, then haul myself out at six the next morning, take a shower and go to work. My wife deserves all the credit for keeping me at it. She supported me and kept the family together with a husband in absentia.

MicroDeal

Actually it's really interesting when I got to Apple, there were a lot of people at Apple, and a lot of our customers who thought, that for Apple to win Microsoft had to lose. And what was really clear was that if the game was a zero-sum game, then Apple was going to lose. A lot of people's heads were still in that place because Apple had invented a lot of this stuff, and Microsoft was being successful, and Apple wasn't and there was jealousy and this and that. There was just a lot of reasons for it that don't matter. It was clear that you didn't have to play that game because Apple wasn't going to beat Microsoft.

Apple didn't have to beat Microsoft. Apple had to remember who Apple was because they'd forgotten who Apple was. There were so many opportunities out there where Apple had a tremendous advantage and not have to go head to head with Microsoft.

So to me, it was pretty essential to break that paradigm. And it was also important because Microsoft was the biggest software developer outside of Apple developing for the Mac. So it was just crazy what was happening at that time. If we wanted to move forward and see Apple healthy and prospering again, we had to let go of a few things. We had to let go of this notion that for Apple to win Microsoft had to lose. And if we wanted Microsoft Office on the Mac, we'd better treat the company that puts it out with a little bit of gratitude. Apple lives in an ecosystem. It needs help from other partners. Relationships that are destructive don't help anybody in this industry. We had to embrace a notion that for Apple to win, Apple had to do a really good job. And if others were going to help us that's great, because we needed all the help we could get. And if we screwed up and we didn't do a good job, it was not somebody else's fault, it was our fault. Setting up Microsoft as satan and having a holy war against Microsoft would be the exactly wrong thing for Apple to do. So I called Bill Gates up and we tried to patch things up. I said, "I'm going to turn this thing around, and I need your help. Microsoft is walking over Apple's patents, if we kept up our lawsuits, a few years from now we could win a billion-dollar patent suit. You know it, and I know it. But Apple's not going to survive that long if we're at war. I know that. So let's figure out how to settle this right away." Bill always had a soft spot for Apple because we got him into the application software business. The first Microsoft apps were Excel and Word for the Mac.

Bill came up with a deal that was too complicated, what I wanted was a simple deal, all I needed was a commitment that Microsoft would keep developing for the Mac, and an investment by Microsoft in Apple so it had a stake in our success, and Bill agreed. The overall relationship had several parts to it, The first part of it was a patent settlement and cross-license. We reached a full cross-license for all patents that existed and for patents that were filed in the next five years. It was a very serious patent settlement. The second part was that Microsoft was committing to release Microsoft Office on Macintosh for the next five years. They were going to release the same number of major releases as they released on Windows during that time.

Next Apple decided to make Internet Explorer its default browser on the Macintosh. And lastly, Microsoft was making an investment in Apple. Microsoft was buying $150 million worth of non-voting Apple stock at market price, and agreed not to sell them for at least three years.

I wanted him to come to Macworld Boston in 1997 to announce our partnership, but we did a satellite downlink instead. That was my worst and stupidest staging event ever. It was bad because it made me look small, and Apple look small, and as if everything was in Bill's hands.

The era of setting this up as a competition between Apple and Microsoft was over as far as I was concerned. This was about getting Apple healthy, this was about Apple being able to make incredibly great contributions to the industry and to get healthy and prosper again. The largest software company in the world wanting to help Apple was a fact that didn't escape very many people. It added lot of credibility to what we were doing. I'm thankful to Bill for the support of this company. I think the world's a better place for it.

I think Bill Gates is a good guy.

We're not best friends, but we talk maybe once a month. I'm sure Bill was like me, and I sort of look at us as two of the luckiest guys on the planet, because we found what we loved to do early on in life, and we were at the right place at the right time. We've gotten to go to work every day with super bright people for 30 some years and do what we love doing. It's hard to be happier than that.

You know, I think of most things in life as either a Bob Dylan or a Beatles song, but there's that one line in that one Beatles song, "you and I have

memories longer than the road that stretches out ahead.” And that’s clearly true for Bill and I.

Think Different

We had a problem, and our problem was that Apple was all confused, Apple had forgotten what it was. Who is Apple? Why is Apple here? But not only had Apple forgotten who it was, but we felt a lot of our customers had forgotten who we were. We needed a way to communicate what the heck Apple's all about. We had to prove that Apple was still alive, and that it still stands for something special.

When I got here we had 25 different campaigns running around the world, none of them getting enough media dollars so you'd see any of them. Apple had just fired her agency and doing a competition with 23 Add agencies. We blew that up.

I called up Lee Clow at Chiat/Day, the ad agency that I was fortunate enough to work with years ago, we did some award-winning work, including the commercial voted the best add ever made by advertising professionals called "1984". I said, "Hi Lee, this is Steve. Guess what? Amelio just resigned. Can you come up here?" So he came up. Here was the best guy in advertising, and he hadn't pitched in ten years. Yet here he was, and he was pitching his heart out, because he loved Apple as much as we did. This chokes me up, this really chokes me up. It was clear that Lee loved Apple so much. He and his team had come up with this brilliant idea, 'Think Different.' And it was ten times better than anything the other agencies showed. It still makes me cry to think about it, both the fact that Lee cared so much and also how brilliant his 'Think Different' idea was. Every once in a while, I find myself in the presence of purity – purity of spirit and love – and I always cry. It always just reaches in and grabs me. That was one of those moments. There was a purity about that I will never forget. I cried in my office as he was showing me the idea, and I still cry when I think about it.

The question we asked was, our customers want to know who is Apple?, and what is it that we stand for?, where do we fit in this world? What we are about isn't making boxes for people to get their jobs done, or about processor speed or memory. It was about creativity. But Apple is about something more than that, Apple at the core, it's core value is that we believe that people with passion can change the world for the better. That's what we believe.

We decided that a really good way to find out a lot about somebody is to ask them who their heroes are. Because what that tells you is what they value. A lot

of things had changed, the market was a totally different place than it was, and Apple was totally different, and Apple's place in it was different. But values and core values, those things shouldn't change. The things that Apple believed in at it's core were the same things that Apple still stood for.

And so what we did, in our first brand marketing campaign in several years, was to get back to that core value. We wanted to find a way to communicate this. We decided that the best way we could think of to tell people who we were, and what we stand for is to tell them who our heroes are. That was the genesis of that campaign. It honored those people that have changed the world. Some of them living, some of them not, but the ones that aren't, you know that if they'd ever use a computer, it would've been a Mac.

We broke the campaign in a rather poetic way, the wonderful world of Disney was restarting on ABC, and the first thing they were showing was the network premiere of "Toy Story".

We got some incredible billboards and we even painted some giant walls in about five or six major cities. We also took out some newspaper ads in the Journal, the Times, the Mercury, the Examiner and USA Today, really stating the manifesto, the words:

Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. But the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do. - Apple Inc.

We had permission to use the image of Gandhi from Mahatma Gandhi's grandson. Jim Henson's children said, "our father would want to be in this campaign so we want you to use him." Yoko Ono personally gave me the picture we use of her and John. Before it ran, I was in New York, and I went to this small Japanese restaurant that I love, and let her know I would be there. I can see why John fell in love with her. We went to Lucie Arnaz Junior with this wonderful picture of Lucille Ball saying we want to use this and she said, " I

would love for you to use my mother in your campaign, but I want you to use a picture of my mother and father together because my father was a genius too." Almost all these people had never been in an advertisement before, and never would. It's was an incredibly moving experience for me that these people including their estates felt so strongly about Apple that they were willing to let us do this. I don't think there is another company on earth that could have done this campaign, and that to me is something very special.

So that put it out, and put us out there saying this is who we are, this is what we stand for, it touched the soul of this company. It's the people who Think Different that move this world forward, and that's what the Think Different campaign was about.

Apple Core

When I got here in July 1997, it took me about two weeks to figure out that Apple didn't have a consumer product in the pipe. There were 15 product platforms and a zillion and one variants of each one. It was incredible. You couldn’t figure out what to buy. I started asking around, and nobody could explain it to me. I started to ask people, why would I recommend a 3400 over a 4400? Or when should somebody jump up to a 6500, but not a 7300? I couldn’t figure this out! And I figured if I can’t figure it out working inside Apple with all these experts, how are our customers going to figure this out? How can we explain this to others, when we don't even know which products to recommended to our friends.

Since I couldn't figure out the damn product-line after a few weeks, we started with the product-line. We looked at the product roadmap going out for a few years and saw a lot of it didn’t make sense. There was way too much stuff, and not enough focus. Not only that, the products sucked!

There was no sex in them anymore! We actually got rid of 70% of the stuff of the product roadmap. So we were able to focus a lot more on the 30% of the gems, and add some new stuff in it that was going to take us in some whole new directions.

We also had not kept up with innovations in our distribution. We had anywhere from 2 to 3 months of inventory in our manufacturing/supplier pipeline, and about an equal amount in our distribution channel pipeline. So we were having to make guesses six months in advance about what a customer wanted, and we were not smart enough to do that, I don’t even think Einstein was smart enough to do that. We got really simple and started taking inventory out of those pipelines so we could let the customer tell us what they wanted, so we could respond super fast to that.

What we were trying to do was not something really highfalutin, we were trying to get back to the basics. Trying to get back to the basics of great products, great marketing, and great distribution. Apple had these pockets of greatness, but in some ways had drifted away from doing the basics really well. What happened at Apple over the years was, the goal used to be to make the best computers in the world, that was goal one. Goal two we got from Hewlett-Packard actually, which was we had to make a profit. Because if we don't make

a profit we can't do goal one. So yeah we enjoyed making a profit, but the purpose of making a profit was so we could make the best computers in the world. Along the way somewhere those two got reversed, the goal is to make a lot of money and if we have to make some good computers, well we have to do that, cause we can make a lot of money doing that. It's very subtle, very subtle at first but it turns out it's everything, that one little subtle flip.

We went back to business school 101. I couldn't get anyone to tell me the definitive market share for Apple but it was around seven percent from all I could gather.

We said, "what do people want?" Well they wanted two kinds of products, they wanted consumer products, consumers want them in general, and education wanted for the most part consumer products.

And we needed pro products because our design and publishing market wanted pro products. Apple was the dominant player in what I call creative content, publishing, design, prepress, *etc*. It was creative professionals using computers. What was interesting was that Apple was still the dominant market leader for creative professionals by far. It was like 80 percent of the computers used in advertising, graphic arts, design, prepress, all Macintoshes. In each of these categories we needed desktop and portable models.

What this told us was, if we had four great products, that's all we needed. As a matter fact, if we only had four we could put an A-Team on every single one of them instead of having a B or a C

team on any. And if we only had four, we could turn them all over every nine months instead of every 18 months. And if we only had four, we could be working on the next generation or two of each one, as we were introducing the first generation. That's what we decided to do, to focus on four great products.

A lot of times both in people and organizations your greatest strength can also be your greatest weakness. Or your greatest weakness can be your greatest strength.

Apple had been highlighted as having an incredibly great weakness of being totally vertically integrated, it makes the hardware, it makes the software, it controls the user experience, and it does the marketing. I perceived it as Apple's greatest strength if managed right. The fact that Apple controlled the product

design from end to end, gave Apple a unique opportunity. An incredibly unique opportunity to tackle some of these really gnarly complex problems, and could have an enormous potential advantage in the market if we solved them. We could solve them literally half a decade to a decade sooner then the 93 headed monster out there in the Wintel space. One company made the software. The other made the hardware... It wasn't working. The innovation couldn't happen fast enough. The integration wasn't seamless enough. No one took responsibility for the user interface. It was a mess. So one of our great advantages was that we controlled all the disciplines to implemented a vision much faster. We had a plan in place that the following next 12 months, we were gonna be second, in operations, logistics and the buying experience to nobody in this industry, including Dell.

I'll tell you a story in the sort of "it's a small world" department. In 1996 Dell pioneered the online store and Dells store became the standard of e-commerce sites. They had done phenomenal business. Dell actually came to NeXT to write their online store. And NeXT wrote it, we used WebObjects and we used our people to actually write their store. Of course NeXT was now part of Apple and the people that wrote the Dell online store were now Apple employees and working on our own online Apple Store. So we were able to take that knowledge and technology and go much further with it. Their store was online from July 96 until September 97. Their sales during that time grew from nothing to an annual rate of over 750 million dollars a year based on Dell's press releases. Then in September of 97 it got decommissioned in favor of a Microsoft software based site for political reasons. It was kinda slow and not as nice, but it was politically correct now. You would think that because of all this great work we did together Michael Dell would be really nice about everything, right? He would be grateful. That he would be saying really wonderful things about us. But when he was asked in early October 1997 what he would do if he were Apple's CEO, you know what he said? He said, "I'd shut it down, and give the money back to the shareholders." I don't know about you but I thought this was really rude. I had time to cool of, and I could sort of understand it.

Michael was maybe a little upset that we had taken something they had pioneered and had done it a lot better. He's a competitive guy, but none the less. We were basically setting the new standard for online e-commerce with the Apple Store. So I told him, "We're coming after you, buddy." We were not gonna sit around and take the punches anymore, and the way we were gonna do

that was execute ourselves.

We were fundamentally changing the way we did business without losing sight of why we did business: To make the best tools in the world for people who think creatively.

The company went from being a very divisionally oriented company with a zillion P&L centers, and very complicated, to a very simple organization, very functionally organized. Our goal was to revitalize and get organized, and if there were opportunities we'd seize them, we just had to be ready to catch the ball when it was thrown by life.

Getting Better

An American named Abraham Maslow came up with a theory that he called "the human hierarchy of needs"

and his theory was, a simple one in concept something profound in it's implications, that humans have certain needs that must be met and these needs can be stratified into certain levels. The bottom level need to be met first, and than they progress to the next level, and when those are met they progress to the next level. You start off with the physiological needs, food, clothing, shelter let's say, once those are met you then start to be more concerned with the safety of your environment, eventually with love, esteem and eventually self-actualization. I don't know if this is true or not, but I thought this was a good model so I borrowed it to construct Steve Jobs's version of this which I called "the Apple hierarchy of skepticism". Let me explain this to you, when I came to Apple, all I heard was you know that Apple was dying, that Apple couldn't survive and it turned out that every time we convinced people that we've accomplished something on one level, they came up with something new. And I used to think this was a bad thing like "

jeez, when are they going to believe we're going to be able to turn this thing around." But actually I think it's great, because what it meant was that we'd convinced them that we'd taken care of the last question and we're of to the next one.

So I thought let's try to get ahead of the game, let's try to figure out what all the questions are going to be and map out where we are, and that's what "the Apple hierarchy of skepticism" is that we borrowed from Dr. Maslow.

The first level was survival. And a lot of people thought Apple was in some sort of death spiral, which I believe had some truth to it.

What did we do? We did many many things but the three things that stood out in people's minds was, we brought in a new management team to run a company, a new Board of Directors with some phenomenally experienced people on it, and we did a deal with Microsoft, the largest software company in the world. And the combination of these three things, and a lot of other medium-size things, I think convinced people fairly rapidly that survival, at least in the short term, was not an issue and it gave us some time to demonstrate that we could accomplish

some other things.

Immediately once we did these things everybody moved up a level. So if it wasn’t about survival, well but there's no stable business in the Mac market. That was the next level of the hierarchy, we had to start demonstrating that we had a stable business. And that one could be made from the Macintosh market, because it's a great market. The most important thing was profits, in the end that's what a lot of people look at. The first full quarter of the new management team Apple delivered profits of 47 million dollars and the next with 55 million dollars worth of profits. This went a long way to convincing a lot of the skeptics.

The question wasn’t anymore: can we turn Apple around now? that was the booby prize, the question was: can we make Apple really great again?

SillyWood

There was a lot of hoopla about Hollywood and Silicon Valley converging. They called it "Sillywood" I think.

One of the things I learned at Pixar is that the technology industries and the content industries are parallel universes that have less in common than one would think. Hollywood and Silicon Valley are like two ships passing in the night. They are not trading passengers. They speak a different jargon; they have grown up with completely different models for how to grow a business, for how to attract and retain employees, for everything. They've grown up with completely different role models, and so the people think entirely differently. I mean, when you're in Silicon Valley, you don't have to explain Silicon Valley to anyone else because everybody's here and understands it. The same is evidently true of Hollywood--neither side can explain themselves to the other very well at all.

In Silicon Valley I swear most people still think the creative process is a bunch of guys in their late 20s and early 30s sitting around old couches drinking beer thinking up jokes, they really do, that's how television is made they think, that's how movies are made. I've seen from Pixar that couldn't be further from the truth, that the folks on the creative side work as hard as any technology folks I've ever seen in my life. They're just as disciplined, their process is just as difficult and disciplined as an engineering process is.

The contrapositive is true to, which is people in Hollywood and in the content industries they think technology is just something you write a check for and buy. They don't understand the creative element of technology, they don't understand that all technology is not created equal, they don't understand that this stuff is created by people working extraordinarily hard with passion, just like the creative talent that they have.

What I like in Silicon Valley is to hang out with the engineers. What I like about the people I've met from Hollywood are the creative people. They're the heart of Hollywood, not the people driving around in their Mercedes SLs talking on their cellular phones and making deals, the agents and stuff; I couldn't care less about that--that's not Hollywood to me.

Apple is the most creative of the PC companies; Pixar is the most technologically advanced entertainment company.

Apple releases new products every few months, and top execs make 10 major decisions a day. But the Holy Grail for Pixar is releasing one product — a movie-a-year, and as CEO I might make three really critical decisions a year, and they are very hard to change.

The movie business is a really different business than the computer business, in the computer business you know if somebody buys a Dell they are probably not gonna buy a Mac. If somebody buys a Mac they are probably not gonna buy a Dell. So there's a winner and a loser, but in the movie business it's not that way, if there's three lousy movies out you're probably not going to any of them, if there's three good movies out you might go see all of them. So it's not a zero-sum game like the computer business.

There's no technical culture in Hollywood, they couldn't attract and retain good engineers to save their life, because they're second class citizens down there. Just like creative people are second class citizens in Silicon Valley. The part of Hollywood that we have attracted at Pixar is the creative side, the creative talent. We value that exactly equally with the technical talent. One of the greatest achievements of Pixar was that it brought these two cultures together and got them working side-by-side.

Internet

The internet is phenomenal, it will clearly go down as the most important thing of the last 20

years of the past century in terms of computing and maybe beyond computing. Never have I seen anything more powerful than this computation combined with this network environment that we have.

We're living in the wake of the petrochemical revolution of about a 100 years ago. The petrochemical revolution gave us free energy—free mechanical energy, in this case. It changed the texture of society in most ways. This revolution, the information revolution, is a revolution of free energy as well, but of another kind: free intellectual energy. It's still crude, but this revolution will dwarf the petrochemical revolution.

The Web is incredibly exciting because it is the fulfillment of a lot of our dreams that the computer would ultimately not be primarily a device for computation, but metamorphasize into a device for

communication.

Higher Ed of course basically invented the Internet along with DARPA. Education has been on these computer networks for longer then almost anyone else. The Department of Defense has an office called DARPA, and they funded a thing called ARPANET many many years ago, to try to build a command and control network for military purposes. And they did a very brilliant thing. After they got a prototype working they gave it to the university community in America, and said 'bang on this for a while and see if it works and help us make it better'. And after a few years of the university community doing that, they created a separate version for military purposes, but they left the educational version going.

The Internet and the World Wide Web have become one thing and computers have turned into communication devices. We were spending more and more of the cycles of the computer to not only make it easy to use, but to make it easy to communicate. The Web was the missing piece of the puzzle which was really going to power that vision much farther forward.

By creating this electronic web, we have flattened out the difference between the

lone voice and the very large organized voice. We have allowed people who are not part of an organization to communicate and pool their interests and thoughts and energies together and start to act as if they were a virtual organization.

What that means is, we have much more opportunity for people to get to the marketplace — not just the marketplace of commerce but the marketplace of ideas. The marketplace of publications, the marketplace of public policy. You name it. We've given individuals and small groups equally powerful tools to what the largest, most heavily funded organizations in the world have. So I think this technology has been extremely rewarding. And I don't think it's anywhere near over.

It is a leveling of hierarchy. An individual can put up a Web site that, if they put enough work into it, looks just as impressive as the largest company in the world. I love things that level hierarchy, that bring the individual up to the same level as an organization, or a small group up to the same level as a large group with much greater resources. If you look at things I've done in my life, they have an element of democratizing.

The Web is an incredible democratizer. A small company can look as large as a big company and be as accessible as a big company on the Web. Big companies spend hundreds of millions of dollars building their distribution channels. And the Web is going to completely neutralize that advantage. It’s radically changing the way goods and services are discovered, sold and delivered, not only in this country but all over the world. As you know, electrons travel at the speed of light and so it tends to bring the world much closer together in terms of providers and customers. That's very exciting.

The leveling of big and small. The leveling of near and distant.

The Web and the Internet do that. It's a very profound thing, and a very good thing. I think the web as we look back years from now will be a defining technology, the defining social moment for computing, and I think it's going to be huge. Rational people can debate about whether technology has made the world a better place, but to me it’s not about faith in technology. It's faith in people.

Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful

things with them. It's not the tools that you have faith in — tools are just tools. They work, or they don't work. It's people you have faith in or not. Yeah, sure, I'm still optimistic I mean, I get pessimistic sometimes but not for long.

If the Web becomes too complicated, too fraught with security concerns, then its proliferation may stop - or slow down. It should be kept open. It should be kept free. One of the major reasons for the Web's proliferation is its simplicity. A lot of people want to make the Web more complicated. This simple model has had a profound impact by starting to become ubiquitous. The most important thing for the Web is not to become more complicated. By collective agreement.

Sure. Go for ubiquity.

iMac

Apple, the company that invented consumer computing, forgot to make a good computer for under $2000

for several years. Remember, the roots of Apple were to build computers for people, not for corporations. At the time we started Apple, IBM built computers for corporations. Now it was Microsoft and Intel. But there was nobody building a computer for people.

Funny enough, 20 years after we started Apple, there was nobody building computers for people again. You know? They were trying to sell consumers last year's corporate computers. We said, "Well, these are our roots. This is why we're here. The world doesn't need another Dell or Compaq. They need an Apple.”

The original genes of the Macintosh had populated the earth. Ninety percent in the form of Windows, but nevertheless, there were tens of millions of computers that worked like that. And that was great. The question was, what’s next? And what was going to keep driving this PC

revolution?

What was wrong with computers of the day was that they were really complicated, they had a zillion cables coming out of the back, they were really big and noisy, they were really ugly, and they took forever to get on the Internet. We decided that what computers look like and how they work mechanically was really important to people. We tried to invest a lot in making computers look much better and function much better.

We believed in ease-of-use, always have, and we were really big on making computers our friends could afford, and not all our friends are Larry Ellison.

So in 1998 we introduced the first iMac, and it was great, it looked like it was from another planet. A good planet. A planet with better designers. The back of the iMac looked better than the front of our competitors. We designed iMac to deliver the things consumers cared about most—the excitement of the Internet and the simplicity of the Mac. The iMac was the only desktop computer that came in only one box. You could set it up and be surfing the Internet in 15

minutes or less. iMac was next year’s computer for $1,299, not last year’s computer for $999.

When people looked at an iMac, they thought the design is really great, but most people didn’t understand it wasn’t just skin deep, it was not just surface. The reason the iMac didn’t have a fan was engineering. It took a ton of engineering and that’s true for everything else. We got rid of the floppy disk altogether, nobody was going to back up a 4-gigabyte drive onto 1-megabyte floppies. They used a Zip drive -- but they were too expensive to build into a consumer product. The second reason for a floppy was software distribution, but a lot of software came on CD-ROMs, because it was better and cheaper, so the iMac included a CD-ROM drive. We kind of missed the boat on the first CD burners. So we needed to catch up real fast. I felt like a dope. I thought we had missed it. We had to work hard to catch up.

We also got rid of these things called serial and parallel ports. When we shipped the iMac, we decided to go to this new I/O scheme called USB. Right after we shipped it I got a call from a very senior executive at Intel. He said, "You know who invented USB, don't you?" I said, "No, who?" He said, "Intel. Five years ago. And we've been trying to get the PC

industry to use it for five years, it was like trying to herd cats, and in literally 30 days you have jumped so far ahead of us it's unbelievable." We were the first to adopt USB even though Intel had invented it. You first saw it in mass on iMac’s. Another example of Apple’s greatest strategic advantage of designing the whole widget.

There were three kinds of iMac purchasers: No. 1, the Macintosh installed base; that was the most important segment. We were constantly listening to those folks, and we tried to build computers that they wanted and needed. They seemed to be responding to the iMac. The second kind were new users. One third of all iMac customers were first-time computer owners. Between five million and ten million new users were entering the market in the next year or two, and we wanted to get a much greater proportion of those than our market share was. And the third place we got customers was from the Wintel installed base.

The iMac was a pretty good indication of where we were headed. We all felt like it was our baby. Everybody at Apple had pride in it, because it represented what Apple ought to be doing. You expected this kind of innovation from Apple. Apple was getting back to that, and it was something we could all be proud of.

We entered 1999 with a feeling of having had tremendous success in 1998, what with the introduction of the iMac and all. What was reinvigorating the company was two things, there were a lot of really talented people in this company who listened to the world tell them they were losers for a couple of years, and some of them were on the verge of starting to believe it themselves. What they didn't have was a good set of coaches, a good plan. A good senior management team. But they had that now.

The first thing that started invigorating people was winning again.

They were seeing us win, by the customer reactions to the products, by the sales, the profitability. They saw that our own house was in order, that we stopped the waste that people had seen with their own eyes without knowing what to do about it. There was sanity returning.

The second thing that was reinvigorating them was that Apple was starting to innovate again.

There had been a vacuum in this industry for a long time, in many ways, and in that vacuum were a lot of areas where Apple's legacy was. The thing that our competitors were missing was that they thought it was about fashion, and they thought it was about surface appearance. They said, we'll slap a little color on this piece of junk computer, and we'll have one, too.

Apple went back to its roots, starting to innovate again, and people were sensing that, seeing it concretely, and really feeling good about it. That's why they came here. That's what they wanted to do. When they saw the iMac, for example, they thought we really can produce industry-leading products like this. It wasn't about charisma and personality, it was about results and products and those very bedrock things that are why people at Apple and outside of Apple were getting more excited about the company and what Apple stood for and what its potential was to contribute to the industry.

A lot of people couldn't get past the fact that we were not going after the enterprise market. But that was like saying, "How can the Gap be successful not making suits?" Then again, big companies were beginning to buy a lot from us simply because they liked our jellybeans. If you wanted to have your employee up and on your intranet in seven minutes and if you wanted to have lower

maintenance costs than you would running Windows, iMacs were great, but we made zero effort to sell to big companies.

Wealth

I never worried about money. I grew up in a middle-class family, so I never thought I would starve. And I learned at Atari that I could be an okay engineer, so I always knew that electronics was something I could always fall back on when I needed food on the table. I was voluntarily poor when I was in college and India, and I lived a pretty simple life even when I was working. Apple was so successful early on in life that I was very lucky that I didn't have to care about money then. So I went from fairly poor, which was wonderful, because I didn't have to worry about money, to being incredibly rich, when I also didn't have to worry about money. So I've been able to focus on work and then later on, my family.

It's very interesting, I was worth about over 1 million dollars when I was 23, and over 10 million dollars when I was 24, and over 100 million dollars when I was 25. And it wasn't that important, because I never did it for the money. Especially at that point of my life it was not the most important thing, the most important thing was the company, the people, the products we were making, what we were going to enable people to do with these products.

I think money is a wonderful thing because it enables you to do things, it enables you to invest in ideas that don't have a short term payback and things like that.

I saw a lot of other people at Apple, and especially after we went public in 1980, how it changed them. A lot of people thought they had to start being rich. A few people went out and bought Rolls Royces, and various houses, each with a house manager, and then someone to manage the house managers, and their wives got plastic surgery. I saw these people who were really nice, simple people turn into these bizarro people. And I made a promise to myself. I said, "I'm not gonna let this money ruin my life."

I gave my parents $750k worth of stock It was the first time in their lives they didn't have a mortgage. They had a handful of their friends over for the party, and it was really nice. Still, they didn't consider buying a nicer house. They weren't interested in that. They had a life they were happy with.

My favorite things in life don't cost any money. I end up not buying a lot of things. Because I find them ridiculous. It's really clear to me that the most precious resource we all have is time. Occasionally, I spend a little money to save myself a hassle, which means time. And that's the extent of it.

I bought an apartment in New York, but it’s because I love that city. I was trying to educate myself, being from a small town in California, not having grown up with the sophistication and culture of a large city. I considered it part of my education.

You know, there are many people at Apple who can buy everything that they could ever possibly want and still have most of their money unspent. I hate talking about this as a problem; people are going to read this and think, Yeah, well, give me your problem. They’re going to think I’m an arrogant little asshole. But there’s no way you could ever spend it all, and I don't view wealth as something that validates my intelligence.

I actually lost $250,000,000 in one year when the stock went down. I’m the only person I know that’s lost a quarter of a billion dollars in one year. It’s very character building!

I still don’t understand it. It’s a large responsibility to have more than you can spend in your lifetime—and I feel I have to spend it. If you die, you certainly don’t want to leave a large amount to your children. It will just ruin their lives. The challenges are to figure out how to live with it, and to reinvest it back into the world. Which means either giving it away or using it to express your concerns or values. I’m convinced that to give away a dollar effectively is harder than to make a dollar. In order to learn how to do something well, you have to fail sometimes. In order to fail, there has to be a measurement system. And that’s the problem with most philanthropy—there’s no measurement system. You give somebody some money to do something, and most of the time you can really never measure whether you failed or succeeded in your judgment of that person, or his ideas or their implementation. So if you can’t succeed or fail, it’s really hard to get better. Also, most of the time, the people who come to you with ideas don’t provide the best ideas. You got to seek the best ideas out, and that takes a lot of time.

Of course you want to have your people share in the wealth you create. At Apple we gave all our employees stock options very early on. We were among the first in Silicon Valley to do that. Basically, everybody gets a salary and stock. When I returned, I took away most of the cash bonuses and replaced them with options. No cars, no planes, no bonuses. The great thing about stock is that if the value of one person's shares goes up, everyone's does. It's a very egalitarian way to run a company that Hewlett-Packard pioneered and that Apple, I would like to think, helped establish.

At Pixar one of the most gratifying things is that there are a lot of folks who don't really care about getting rich, but who care a lot about the art or the technology. Yet they will never have to worry about money for the rest of their lives. Their families can live in a nice house, and they can concentrate on what they really love to do. It's wonderful.

You know, my main reaction to this money thing is that it’s humorous, all the attention to it, because it’s hardly the most insightful or valuable thing that’s happened to me. But it makes me feel old, sometimes, when I speak at a campus and I find that what students are most in awe of is the fact that I’m a millionaire.

I don't get a salary at Apple. I get a dollar a year so that my family can be on the health plan, but that's it. I make 50 cents for showing up ... and the other 50 cents is based on my performance. I haven't got any sort of odd chip on my shoulder about proving anything to myself or anybody else. Though the outside world looks at success from a numerical point of view, my yardstick might be quite different than that, I want to put a ding in the universe. Being the richest man in the cemetery doesn’t matter to me … Going to bed at night saying we’ve done something wonderful… that’s what matters to me.

OS X

In january 2000 we announced Mac OS X, the next great operating system, and we created a complete new graphic user interface called aqua. We made the buttons on the screen look so good, you wanted to lick them.

We wanted to give a much more powerful user interface to our pro customers, and to make it the dream interface for someone who’s never touched a computer before. But the user experience is what we cared about most, and we were expanding that experience beyond the box by making better use of the Internet. It was designed for the internet from the start. The user experience entailed four things: the hardware, the operating system, the applications, and the Net. We wanted to do all four uniquely well for our customers.

The technology we developed at NeXT was at the heart of Apple's renaissance.

It was a very robust operating system in terms of security and we have some practices that I think are certainly best of class practices in terms of how users have to relate with that operating system. I remember when we were designing OS X, Avi Tevanian the person that was running software at the time, showed us OS X. And every time you wanted to load an application in OS X, whether it was off the Internet or even off a disk, you had to type in your name and password. And we gave him incredible shit for that. We said, “Avi, are you nuts this is the Mac.” and he said, “trust me.”

We deferred to Avi after we twisted his arm for a year, and boy was he ahead of his time. Just that simple thing and there's like a 100 things like that in OS X, where you can't load an app off the Internet without authenticating before it runs. There’s a lot of stuff in OS X that was thought through correctly. Now we don't market this stuff because that's like the red cape and the bull.

I was getting suggestions from people inside and outside Apple that we needed to think about starting an ISP [Internet Service Provider] business, just like Compaq and Gateway and Dell. I was dragging my feet because it just didn't feel right. The more I thought about it, the more I saw that you can separate services from Internet access, and use those unique services to create incredible competitive differentiation, regardless of who provides the access. The big light bulb on services came on, the big light bulb being: "Wait a minute. We own a major operating system. Why don't we build some services that work uniquely with it to give us unfair competitive advantage?" Everything fell into place. Our secret weapon to be able to build these services so quickly was OS X and the set

of programmers' development tools that goes with it, WebObjects. We really did eat our own dog food around here.

Digital Hub

The first great age of the personal computer started with the age of productivity, you know, the spreadsheets, word processors and desktop publishing, and that kind of got the whole industry moving. It kind of plateaued for a while and was getting a little stale, and then the Internet came along. All of a sudden not only businesses were benefiting but regular people could buy these personal computers for our homes, and our children could get on the Internet, and we could get on the Internet, it was tremendous. Everybody needed more powerful computers to get on the Internet, and browsers came

along.

Then you could start to see that the PC was taken for granted, things had kind of plateaued a little bit, innovation-wise, at least. And then I think this whole notion of the PC–we called it the digital hub, but you can call it anything you want, sort of the multimedia center of the house came along.

We were beginning the age of digital lifestyle which was being triggered by all these wonderful digital devices, most of which were coming from Japan. We had Digital camcorders, Digital cameras, DVD players, handheld computers and cell phones. And all of these things the personal computer could actually make even better, sharing things over the Internet and kind of needing a repository for all that stuff. The PC was reborn again as sort of the hub of your digital life.

Everyone was talking about "information appliances" and other "post-PC" devices. So far, there had only been two or three that had succeeded — the Palm and game machines like the Sony PlayStation and possibly the cell phone.

None of the others had succeeded. Why was that? Well, if you looked at the Internet, you could see it is absolutely optimized for PCs.

All the pages were laid out to be viewed on a PC. That was one reason WebTV — a device that displayed Websites on a normal TV — had failed. Beyond that, the Web was rich with things like Java and QuickTime and RealPlayer and MP3 sound files. By the time you build a device that could handle those things, you've got something that was like a PC without the disk drives and was only about $50

cheaper than a PC or an iMac. Then you asked your user if they cared about

storing anything. Do you care about storing MP3 files, or would you rather wait a few minutes to download them every time you want to hear them? Do you care about storing the photos you take with your digital camera? The answer was almost always yes. It was not that expensive to add a disk drive to let you do these things, and once you did, you're back to a PC, and the only way to make it any cheaper was to start giving up things.

A lot of computer companies were searching for a consumer product. My view was that the personal computer had been the most successful consumer product of the last 10 years. What we had to do, what the industry stopped doing, was target the consumer PC sector of the market. IBM wanted to be IBM.

Dell was just selling to the corporate market, primarily. Compaq had just bought DEC -- my God! There was nothing wrong with wanting to be IBM. But Apple really was beating to a different drummer.

Apple was very much weighted toward the consumer-electronics space, because we were selling to a lot of consumers, that’s why we had a really good chance to be a serious player again.

We wanted to help them get more benefits from hooking up various things to computers and to each other. I first understood this with the camcorder. Using iMovie makes your camcorder ten times more valuable. That’s when it hit me that the personal computer was going to morph into something else.

The perfect example was the digital camcorder and the iMac. It was amazing what you could do when you plugged these things together.

We spent a lot of time working with the drive manufacturers to get a consumer drive that could burn a DVD. We were the first to ever ship that.

We were working on other digital devices like everybody else. Everybody at Apple had been working really hard the last two and a half years to reinvent this company.

We made tremendous progress. My goal was to get Apple healthy enough so that if we did figure out the next big thing, we could seize the moment. Apple now had the management and systems in place to get things done. I can't emphasize how rare that is. That's what made Sony and Disney so special. Now when we

saw new things or opportunities, we could seize them. In fact, we had already seized a few, like desktop movies, wireless networking, and iTools. A creative period like this lasts only maybe a decade, but it could be a golden decade if we managed it properly. There was a certain amount of homework involved, true; but mostly it was just picking up on things you saw on the periphery. Sometimes at night when you're almost asleep, you realize something you wouldn't otherwise have noted. I subscribed to a half-dozen Internet news services, and I got 300 E-mails a day, many from people I didn’t know, hawking crazy ideas. And I've always paid close attention to the whispers around me.

Leadership

There's different things in life you can do. You can become a painter, you can become a sculptor. You can make something by yourself. But that's not what I do. I do the other thing, which is, you work at things that one person can't do, and that you need large numbers of people to do. I know people like symbols, but it's always unsettling when people write stories about me, because they tend to overlook a lot of other people.

Great people are self-managing, they don't need to be managed. Once they know what to do they'll go and figure out how to do it. What they need is a common vision, and that's what leadership is. Leadership is having a vision, being able to articulate that so the people around you can understand it, and getting a consensus on a common vision. There needs to be someone who is sort of the keeper and reiterator of the vision. Because there's just a ton of work to do, and a lot of times when you have to walk 1000 miles, and you take the first step it looks like a long ways. It really helps if there's someone there saying we are one step closer, the goal definitely exists, it is not just a mirage out there. So in a thousand and one little and sometimes larger ways the vision needs to be reiterated.

The best way I came up with to effect change at Apple was by example, and that was probably more than anything else the key reason that I spent two and a half years of my life on Macintosh. To try by example to say, "hey, here's a better way to do things" and it turns out it has worked.

My job is to not be easy on people. My job is to make them better. My job is to pull things together from different parts of the company and clear the ways, and get the resources for the key projects. To take these great people we have and to push them and make them even better. Coming up with more aggressive visions of how it could be.

When you get really good people, they know they're really good, and you don't have to baby people's egos so much. What really matters is the work, and everybody knows that. People are being counted on to do specific pieces of the puzzle. And the most important thing you can do for someone who's really good and really being counted on is to point out to them when their work isn't good enough.

It's painful when you have some people who are not the best people in the world and you have to get rid of them; but I found my job has sometimes exactly

been that—to get rid of some people who didn’t measure up and I’ve always tried to do it in a humane way. When I have to take people out of their jobs, it's harder for me now. Much harder. I think that person could be me coming home to tell my wife and kids that I just got laid off. Or that could be one of my kids in 20 years.

Somebody once told me, "Manage the top line, and the bottom line will follow." What's the top line? It's things like, why are we doing this in the first place? What's our strategy? What are customers saying? How responsive are we? Do we have the best products and the best people? Those are the kind of questions you have to focus on.

You need a very product-oriented culture, even in a technology company. Lots of companies have tons of great engineers and smart people. But ultimately, there needs to be some gravitational force that pulls it all together. Otherwise, you can get great pieces of technology all floating around the universe. But it doesn’t add up to much.

I want to make the most of it, and that means providing an unobstructed path for the brightest minds in our industry. My job becomes more to help them pick the targets correctly and then get out of their way.

At Apple, there are ten really important decisions to make every week. It’s a transactional company; it’s got a lot of new products every month. And if some of those decisions are wrong, maybe you can fix them a few months later. At Pixar, because I’m not directing the movies, there are just a few really important strategic decisions to make every month, maybe even every quarter, but they’re really hard to change. Pixar’s much slower-paced, but you can’t change your mind when you go down these paths.

My job is to work with sort of the top 100 people, that's what I do. That doesn't mean they're all vice presidents. Some of them are just key individual contributors. When a good idea comes, you know, part of my job is to move it around, just see what different people think, get people talking about it, argue with people about it, get ideas moving among that group of 100 people, get different people together to explore different aspects of it quietly, and, you know - just explore things.

When I hire somebody really senior, competence is the ante. They have to be really smart. But the real issue for me is, are they going to fall in love with Apple? Because if they fall in love with Apple, everything else will take care of itself. They'll want to do what's best for Apple, not what's best for them, what's best for Steve, or anybody else.

I consider the most important job of someone like myself is recruiting. Recruiting is hard. Many times in an interview I will purposely upset someone: I'll criticize their prior work. I'll do my homework, find out what they worked on, and say, "God, that really turned out to be a bomb. That really turned out to be a bozo product. Why did you work on that?..." I want to see what people are like under pressure. I want to see if they just fold or if they have firm conviction, belief, and pride in what they did. It's just finding the needles in the haystack. We do it ourselves and we spend a lot of time at it. I've participated in the hiring of maybe 5,000-plus people in my life. So I take it very seriously. You can't know enough in a one-hour interview. So, in the end, it's ultimately based on your gut. How do I feel about this person? What are they like when they're challenged? Why are they here? I ask everybody that: 'Why are you here?' The answers themselves are not what you're looking for. It's the meta-data.

I'm brutally honest, because the price of admission to being in the room with me is I get to tell you your full of shit if you're full of shit, and you get to say to me I'm full of shit, and we have some rip-roaring fights. That keeps the B players, the bozos, from larding the organization, only the A players survive.

My best contribution to the group is not settling for anything but really good stuff. To be a yardstick of quality. Some people aren't used to an environment where excellence is expected. A lot of times, people don't do great things because great things really aren't expected of them, and nobody ever really demands that they try, and nobody says, 'Hey, that's the culture here'. If you set that up, people will do things that are greater than they ever thought they could be. Really some great work that will go down in history.

Some people say, 'Oh, God, if Jobs got run over by a bus, Apple would be in trouble.' And, you know, I think it wouldn't be a party, but there are really capable people at Apple. My job is to make the whole executive team good enough to be successors, so that's what I try to do.

My job is not to be easy on people. My job is to make them better.

Apple Retail

Our intention for the Apple retail stores was very simple. We were innovating, so let’s say we had a dozen major breakthroughs a year, we could only advertise three or four of them or otherwise if we did more than that, the consumers would think we were a little nuts. So the rest of them had to be delivered at the point-of-sale. We looked at the point-of-sale and said this point-of-sale is eroding, it's going to be Best Buy and other people like that.

This was at the beginning of the digital hub revolution that we saw, with digital photography and digital music and everything else. And we thought people are going to need to know more about this stuff. It’s going to get more complicated as we get these amazing peripherals like digital camcorders and digital cameras that have to connect to make it all work.

All of our competitor were selling the same product, they were all designed by the same company in Taiwan. So at the point of distribution you didn’t have to know very much to sell them. You didn’t have to be able to explain them cause they were all the same, and you just had to point at the one where your company got a point more gross margin that week, that was it. All that the salesman cared about was a $50 spiff. So unless we could find ways to get our message to customers at the store, we were screwed.

Most of the resellers weren’t investing enough in their stores or making other selling improvements. The confidence levels were getting less at the point-of-sale. Even if you trained them, they turned over every 120 days, so it was impossible to get knowledge at the point-of-sale.

The Mac faithful would drive to a destination, they’d drive somewhere special. But people who owned Windows - we wanted to convert them to Mac, and they would not drive somewhere special. They didn’t think they wanted a Mac. And they would not take the risk of a 20-minute drive in case they didn’t like it. Now if we put our store in a mall, or on a street that they're walking by, and we reduce that risk from a 20-minute drive to 20 footsteps, then they're more likely to go in and check out our products, because there's really no risk. The real estate was a lot more expensive but people didn’t have to gamble with 20 minutes of their time. They only had to gamble with 20 footsteps of their time. They will drop in out of curiosity, if we make it inviting enough, and once we get a chance to show them what we have, we will win. So we decided to put our stores in high-traffic locations.

Ron Johnson thought we had designed them all wrong. He thought they should be organized not around products but instead around what people do. And you know, he was right. It cost us, I don't know, six, nine months. But it was the right decision by a million miles.

We wanted the store to become the most powerful physical expression of the brand, and we wanted to make it the best buying experience in the world, and it worked.

What was interesting is, we didn't set out to do this, but the record for going from $0 to $1 billion in retail sales was held by Old Navy, part of the Gap. We beat it, our retail stores went from zero to a billion faster than anyone had ever done before.

Innovation

I understand the appeal of a slow burn, but personally I’m a big-bang guy. I have a great respect for incremental improvement, and I've done that sort of thing in my life, but I've always been attracted to the more revolutionary changes. I don't know why. Because they're harder. They're much more stressful emotionally. And you usually go through a period where everybody tells you that you've completely failed.

I have certainly been accused of not listening to the customers enough. And I think there is probably a certain amount of that that's valid. I obviously believe in listening to customers, but customers can't tell you about the next breakthrough that's going to happen next year, that's going to change the whole industry.

You know, there’s an old Wayne Gretzky quote that I love: ”I skate to where the puck is going to be, not where it has been.” And we’ve always tried to do that at Apple.

My philosophy has always been very simple. My philosophy is that everything starts with a great product. I think really great products come from melding two points of view—the technology point of view and the customer point of view. You need both. If you keep your eye on the profit, you’re going to skimp on the product. But if you focus on making really great products, then the profits will follow. Sure, what we do has to make commercial sense, but it’s never the starting point. One of the things I've always found is that you've got to start with the customer experience and work backwards to the technology. You can't start with the technology and try to figure out where you are gonna try to sell it. So you have to listen very carefully. But then you have to go and sort of stow away —you have to go hide away with people that really understand the technology, but also really care about the customers, and dream up this next breakthrough. That’s my perspective, that everything starts with a great

product.

It probably is true that the people who have been able to come up with the innovations in many industries are maybe not the people that either are best skilled at, or, frankly, enjoy running a large enterprise where they lose contact with the day-to-day workings of that innovative process.

Dr. Land at Polaroid, he's a perfect example. Dr. Edwin Land was a

troublemaker. He dropped out of Harvard and founded Polaroid. Not only was he one of the great inventors of our time, but more important, he saw the intersection of art and science and business and built an organization to reflect that, and I've never forgotten that. Polaroid did that for some years, but eventually Dr. Land, one of those brilliant troublemakers, was asked to leave his own company—which is one of the dumbest things I've ever heard of. The man is a national treasure. I don't understand why people like that can't be held up as models: This is the most incredible thing to be—not an astronaut, not a football player—but this.

My observation, is that the doers are the major thinkers. The people that really create the things that change this industry are both the thinker and doer in one person. I've never believed that they're separate. Michelangelo knew a tremendous amount about how to cut stone at the quarry.

Leonardo da Vinci was a great artist and a great scientist. If we really go back and we examine, you know, did Leonardo have a guy off to the side that was thinking five years out in the future what he would paint, or the technology he would use to paint it? of course not. Leonardo was the artist, but he also mixed all his own paints, he also was a fairly good chemist, he knew about pigments, knew about human anatomy. And combining all of those skills together, the art and the science, the thinking and the doing, was what resulted in the exceptional result. And there is no difference in our industry.

The finest dozen computer scientists I know are all musicians. Some are better than others, but they all consider that an important part of their life. I don't believe that the best people in any of these fields see themselves as one branch of a forked tree.

The people that have really made the contributions have been the thinkers and the doers. And a lot of people of course - it's very easy to take credit for the thinking. The doing is more concrete. It's very easy for somebody to say 'oh I thought of this three years ago'. But usually when you dig a little deeper, you find that the people that really did it were also the people that really worked through the hard intellectual problems as well. When you first start off trying to solve a problem, the first solutions you come up with are very complex, and most people stop there. But if you keep going, and live with the problem and peel more layers of the onion off, you can oftentimes arrive at some very elegant and simple solutions.

Most people just don't put in the time or energy to get there.

People think focus means saying “yes” to the thing you’ve got to focus on. But that’s not what it means at all. It means saying “no”

to the hundred other good ideas that there are. You have to pick carefully. I’m actually as proud of the things we haven’t done as the things we have done. Innovation is saying “no” to 1,000 things, saying no to 1,000 things to make sure we don't get on the wrong track, or try to do too much. We're always thinking about new markets we could enter, but it's only by saying no that you can concentrate on the things that are really important. Quality is much better than quantity. One home run is much better than two doubles.

We believe that customers are smart, and want objects which are well thought through. We try to look at everything as a repetitive process, and to instrument that process, and find out how it’s running. Then take it apart and put it back together in ways to dramatically improve it’s effectiveness. In a very straight forward way, just looking things directly in the eye, seeing them as repetitive processes, and then reengineering them. Most of the quality stuff as I’ve understood it is really a lot about reengineering your repetitive processes, to make them much much more effective by combining them, eliminating some, strengthening others.

The same philosophy that drives the product has to drive everything else if you want to have a great company. Manufacturing, for example, demands just as much thought and strategy as the product. If you don't pay attention to your manufacturing, it will limit the kind of product you can build and engineer. Some companies view manufacturing as a necessary evil, and some view it as something more neutral. But we view it instead as a tremendous opportunity to gain a competitive advantage.

Innovation has nothing to do with how many R&D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D. It’s not about money. It’s about the people you have, how you’re led, and how much you get it. The way we've succeeded is by choosing what horses to ride really carefully, technically we try to look for these technical vectors that have a future and that are headed up. I look for vectors going in time. What's changing, what are the trends?

What windows have just opened and what windows are closing?

I discovered that the best innovation is sometimes the company, the way you organize a company. Large companies do not usually have efficient communication paths-from the people closest to some of these changes at the bottom of the company to the top of the company, the people making the big decisions. There may be people at lower levels that see these changes coming but by the time the word ripples up to the highest levels, where they can do something about it, it sometimes takes ten years. Even in the case where part of the company does the right thing at the lower levels, usually the upper levels screw it up somehow. I mean IBM and the personal computer business is a good example of that.

Innovation comes from people meeting up in the hallways or calling each other at 10:30 at night with a new idea, or because they realized something that shoots holes in how we've been thinking about a problem. Actually, making an insanely great product has a lot to do with the process of making the product, how you learn things, adopt new ideas, and throw out old ideas. Sometimes when you innovate, you make mistakes. It is best to admit them quickly, and get on with improving your other innovations. If you do something and it turns out pretty good, then you should go do something else wonderful, not dwell on it for too long. Just figure out what's next.

iPod

We introduced the first iPod in 2001, and it didn't just change the way we all listened to music, it changed the entire music industry.

Apple was in a great spot, Apple maybe three or four years before was a little fragile, but in the last three or four years everyone at Apple had worked so hard, and we got such great customers that we've sold a lot of computers.

The great thing was that Apple's DNA hadn't changed. The place where Apple had been standing for the last two decades was exactly where computer technology and the consumer electronics markets were converging. It was not like we had to cross the river to go somewhere else; the other side of the river was coming to us.

Our industry, the whole personal computer industry hadn't really talked to that side of people before. We just talked to the side of people that had to add up numbers and write a letter, but there was so much more to it than that and we were finally, with this digital lifestyle era opening, going to be addressing those other things that all of us did, some of every single day.

We made what we thought was the best jukebox with iTunes, We did iTunes because we all loved music. Then we all wanted to carry our whole music libraries around with us. We had the hardware expertise, the industrial design expertise and the software expertise, including iTunes.

The more we looked at it, more and more consumer devices the core technology in them was going to be software. If you really look at the iPod from the very beginning we looked and said the ultimate competitive barrier is gonna be software in this thing. We're pretty clever at hardware but ultimately people will copy us and do other things. If you zoom out of the whole thing and you say why does the iPod exist, why was Apple successful in this business? It's because these really great Japanese consumer electronics companies who kind of owned the portable music market, invented it and owned it, hadn't grokked software. Because an iPod's really just software. They couldn't make the leap, couldn't conceive of, and implement the appropriate software. So we didn't worry about Sony, because we knew what we're doing and they didn't.

One of the biggest insights we had was that we decided not to try to manage your music library on the iPod. In order to make the iPod really easy to use – and this took a lot of arguing on my part – we needed to limit what the device itself would do. Instead we put that functionality in iTunes on the computer. For

example, we made it so you couldn’t make playlists using the device. That was controversial. But what made the Rio and other devices so brain-dead was that they were so complicated that only a genius could figure out half of their features. They had to do things like make playlists, because they weren’t integrated with the jukebox software on your computer. That’s why Apple enjoyed the success it did with the iPod. Owning the iTunes software and the iPod device allowed us to make the computer and the device work together, and it allowed us to put the complexity in the right place.

The way you can tell that you're onto something interesting is if everybody who knows about the project wants one themselves. If they can't wait to go out and open up their own wallets to buy one. That was clearly the case with the iPod. Everybody on the team wanted one, I mean, the first few hundred customers were us. We suddenly were looking at one another and saying, “This is going to be so cool.” We knew how cool it was, because we knew how badly we each wanted one personally. And the concept became so beautifully simple: a thousand songs in your pocket.

It was difficult for a while because for various reasons the Mac had not been accepted by a lot of people, who went with Windows. And we were just working really hard, and our market share wasn't going up. It makes you wonder sometimes whether you're wrong. Maybe our stuff isn't better, although we thought it was. Or maybe people don't care, which is even more depressing.

I had this crazy idea that we could sell just as many Macs by advertising the iPod. In addition, the iPod would position Apple as evoking innovation and youth. So I moved $75 million of advertising money to the iPod, even though the category didn’t justify one hundredth of that. That meant that we completely dominated the market for music players. We outspent everybody by a factor of about a hundred. By keeping the iPod for Mac only, it was driving the sales of Macs even more than we expected.

Taking iPods to Windows – that was the big decision. The biggest risk was that we saw people buying Macs just to get their hands on iPods. It was a really big argument for months, me against everyone else, I said, “over my dead body.” But eventually I gave in.

To make the iPod work on PCs, we initially partnered with another company that had a jukebox, gave them the secret sauce to connect to the iPod, and they did a crappy job. That was the worst of all worlds, because this other company was controlling a big piece of the user experience. We lived with this crappy outside jukebox for about six months, and then we finally got iTunes written for

Windows. In the end, you just don’t want someone else to control a big part of the user experience. People may disagree with me, but I am pretty consistent about that.

I was on Madison, and it was, like, on every block, there was someone with white headphones, and I thought, 'Oh, my God, it's starting to happen'.

It turned out that with the iPod we kind of got out from that operating-system glass ceiling. It was great because it showed that Apple innovation, Apple engineering, Apple design did matter. The iPod captured 70% market share. I cannot tell you how important that was after so many years of laboring and seeing a 4% to 5% market share on the Mac. To see something like that happen with the iPod was a great shot in the arm for everybody. The iPod grew from nothing to a billion-dollar a year business by year two, so the iPod was a billion-dollar business in two years, that had to get our attention.

There are lots of examples where not the best product wins. Windows would be one of those, but there are examples where the best product wins. And the iPod is a great example of that.

If there was ever a product that catalyzed Apple’s reason for being, it’s the iPod, because it combined Apple’s incredible technology base with Apple’s legendary ease of use with Apple’s awesome design. It’s like, this is what we do. So if anybody was ever wondering why is Apple on the earth, I would hold this up as a good example. It was as Apple as anything Apple had ever done.

I was very lucky to grow up in a time when music really mattered. It wasn't just something in the background; it really mattered to a generation of kids growing up. It really changed the world. I think that music faded in importance for a while, and the iPod helped to bring music back into people's lives in a really meaningful way. Music is so deep within all of us, but it's easy to go for a day or a week or a month or a year without really listening to music. And the iPod changed that for tens of millions of people, and that makes me really happy, because I think music is good for the soul.

Marketing

To me marketing is about values. It’s not about pop culture, and it’s not about fooling people, and it’s not about convincing people that they want something they don’t.

I'll give you my own opinion on this because marketing is a subjective thing, it’s not a science, there’s a lot of art to it. This is a very complicated world, it's a very noisy world. And we're not going to get a chance to get people to remember much about us, no company is. So we have to be really clear on what we want them to know about us. We don’t stand a chance of advertising with features, and benefits, and with RAMs, and with charts, and comparisons. The only chance we have of communicating is with a feeling.

What are the great brands? Levi’s, Coke, Disney, Nike. Most people would put Apple in that category. Apple fortunately is one of the half-dozen best brands in the world, it's one of the greats of the greats. Not just in this country but all around the globe. But even a great brand needs investment and caring if it’s gonna retain it's relevance and vitality.

You need a sales and marketing organization that is oriented toward educating customers rather than just taking orders. Providing a real service rather than moving boxes. This is extremely important. For most of your customers, after all, the sales folks are your company. So you've really got to pay attention to that. The point is that our philosophy is not a product philosophy. It's a philosophy of how we go about things, and it affects everything. What is Apple, after all? Apple is about people who think “outside the box,” people who want to use computers to help them change the world, to help them create things that make a difference, and not just to get a job done.

We’re about making better products. And what I love about the consumer market, that I always hated about the enterprise market, is that we come up with a product, we try to tell everybody about it, and every person votes for themselves. Go ‘yes’ or ‘no’, and if enough of them say ‘yes’ we get to come to work tomorrow. That’s how it works, it's really simple, as with the enterprise market it's not so simple, the people that use the product don't decide for themselves, and the people that make those decisions sometimes are confused.

Some people say, "Give the customers what they want." But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, "If I'd asked customers what they wanted, they

would have told me, 'A faster horse!'" People don't know what they want until you show it to them. Customers can't anticipate what the technology can do. They won't ask for things that they think are impossible. But the technology may be ahead of them. If you happen to mention something, they'll say, ‘Of course, I'll take that. Do you mean I can have that, too?’

It sounds logical to ask customers what they want and then give it to them. But they rarely wind up getting what they really want that way. Take desktop video editing. I never got one request from someone who wanted to edit movies on his computer. Yet now that people see it, they say, ‘Oh my God, that’s great! So you can't go out and ask people, you know, what’s the next big thing.

That's why I never rely on market research. We don't hire consultants. The only consultants I've ever hired is one firm to analyze Gateway's retail strategy, so I would not make some of the same mistakes they made when launching Apple's retail stores. But we never hire consultants, per se. We just want to make great products. Did Alexander Graham Bell do any market research before he invented the telephone?

We figure out what we want. And I think we’re pretty good at having the right discipline to think through whether a lot of other people are going to want it, too. That’s what we get paid to do. Our task is to read things that are not yet on the page.

Ad campaigns are necessary for competition, but good PR educates people; that’s all it is. It’s funny, the group of people that don’t use quality in their marketing are the japanese. You never see them using quality in their marketing, it’s only the american companies that do. Yet if you asked people on the street which products have the best reputation for quality, they will tell you the japanese products. Why is that, how can that be?. The answer is because customers don’t form their opinions on quality from marketing, they form their opinions on quality from their own experience with the product or services. One can spend enormous amounts on quality, one can win every quality award there is, yet if your products don’t live up to it, customers will not keep that opinion for long in their minds. That’s why I think we have to start from our products and services and not with our marketing department.

You can’t con people in this business. The products speak for themselves.

iTunes Store

Peer-to-peer networks Napster and Kazaa hit the music industry like a tsunami. They didn’t know what hit them for a few years. There was this amazingly efficient distribution system for stolen property called the Internet. It was such a compelling way to get music. It was instant gratification.

You didn’t have to go to the record store; the music was already digitized, so you didn’t have to rip the CD. It was so compelling that people were willing to become thieves to do it. So when we looked at the music industry most of the folks in the tech industries thought the record companies were completely brain-dead, why haven’t they jumped on this new business model, why don't they understand where things are going?

Well it turned out, the most important thing the record companies did, was not distribute music, it was not even to market music, it was picking which of 5,000

candidates were going to be the next Sheryl Crow. They had to pick, and they had to decide who to invest in, and manage a portfolio.

And some of them did it awfully well, the best music companies knew how to do that with a reasonably high success rate. And if they didn’t do that well, the rest of it didn’t matter. And the people that did that well, ended up running the music companies.

The problem was that that had nothing to do with technology, it was an intuitive process. So when the Internet came along and Napster came along, people in the music business didn't know what to make of the changes. A lot of these folks didn't use computers, weren't on e-mail – didn't really know what Napster was for a few years. They were pretty doggone slow to react.

The music companies had no connection with their listeners whatsoever, and so what changed in the music industry was not the back end of the business, the A&R the seeking out and development of artists and talent, but what changed was the front end of the business. The distribution and marketing was able to be done in a much more effective way, bypassing the distribution channel going direct to the end-user. So it was not surprising that they didn't understand that

distributing their content over the Internet was the next big wave. They didn't have a clue.

When we did the iPod, we said you know this thing could be the coolest thing ever invented, and it could also be a theft shuttle. So we put software in there that made it so it was not so easy to make it a theft shuttle for a normal honest person. We felt that most of the people using an iPod really would want to use it in an honest way.

The music industry was trying to fight the peer-to-peer networks, and they were trying to fight them by introducing this concept of intent. So if you had a product where the intent was that the product could be used to steal copyrighted content, then you could be held liable. And they really wanted us to come out and unequivocally support their position. The problem was that intent is a funny word. And we didn't want to support anything wholeheartedly where somebody could say, "well you know when you were dreaming up the iPod, one of your engineers had the intent that this could be used to hold pirated music" and all of a sudden we could be held liable. We asked them to clarify that, so we could reach an agreement. We came out very strongly in favor of the protection of intellectual property, and the protection of copyrighted content, but we couldn't go all the way. And that was maybe one of the things they were upset about.

Everybody was threatening to sue everybody else, and everybody was at war with everybody else, and we looked at this and said gosh there's got to be a middle path out of this. Our position from the beginning was that eighty percent of the people stealing music online didn't want to steal music. We thought they'd rather do it legal, if somebody offered them a competitive compelling way. But to tell people that they should stop being thieves – without a legal alternative that offers those same benefits – rung hollow.

We didn't believe it was possible to protect digital content. So what you had to do was compete with it. There was just no legal alternative. So we said, 'Let's create a legal alternative to this.' Everybody wins. Music companies win.

The artists win. Apple wins. And the user wins, because he gets a better service and doesn't have to be a thief.

When we first went to talk to these record companies we said, "None of this technology that you're talking about's gonna work. We have Ph.D.s here who know the stuff cold, and we don't believe it's possible to protect digital content." It only takes one stolen copy to be on the Internet. The way we expressed it to

them is: Pick one lock — open every door. It only takes one person to pick a lock. Worst case: Somebody just takes the analog outputs of their CD player, rerecords it and puts it on the Internet. You would never stop that. — and no one was gonna shut down the Internet. We started talking to them about this middle path, and about how their content needed to be protected from getting back on the Internet for honest people, but their real competitor was Kazaa. And they told us we were all wet. Because of their technological innocence, they were vulnerable to people telling them technical solutions would work. when they won't. They made the mistake of not appreciating technology. They just assumed that they could throw money at things and fix them.

The music companies loved the idea of subscriptions because they wanted to jack up the price every year. It was a money-driven thing, some finance person looked at AOL getting paid every month and said, 'I'd sure like to get some of that recurring subscription revenue. Wouldn't that be nice?' It was certainly not a user-driven thing. Nobody ever went out and asked users, 'Would you like to keep paying us every month for music that you thought you already bought?' We told them, “Nobody wants to subscribe to music. They've bought it for 50

years. They bought 45s, they bought LPs, they bought 8-tracks, they bought cassettes, they bought CDs. Why would they want to start renting their music? People like to buy it and they like to do what they damn well please with it when they buy it”. The subscription model of buying music was bankrupt. I think you could’ve made available the Second Coming in a subscription model and it might not have been successful.

We made a series of predictions that a lot of things they were trying would fail, and they said you are all wrong, get out of here. Then they went and tried them, and they all failed, for the reasons that we had predicted. And about nine months later we started to get some phone calls. We went back to them and they said, “you talk to us some more cause you guys we’re right about some of this stuff.” They started to believe that we might actually have some insight into this, and our credibility grew with them to the point where they were willing to take a chance with us. We did have the luxury of going in at the top, so I talked to Roger Ames at Warner, Doug Morris at Universal, and the other guys. They clearly realized that the Internet was in their future, but they were shell-shocked with Napster and people stealing their content.

The major discussions with the labels were really over giving the users broad personal use rights.

Kazaa was offering unlimited CD burning, Kazaa was offering the ability to have your music and never went away if you stopped paying your subscription fee, Kazaa was offering the ability to put your music on a portable player. So if they were not willing to offer the user those kinds of rights, they couldn't compete with Kazaa. They might as well put a big sign up saying, ”Kazaa this way.” And they got it, these were smart guys. We said, "We don't see how you can convince people to stop being thieves unless you can offer them a carrot – not just a stick." And the carrot is: We're gonna offer you a better experience... and it's only gonna cost you a dollar a song. The other thing we told the record companies was that if you go to Kazaa to download a song, the experience is not very good. You type in a song name, you don't get back a song – you get a hundred, on a hundred different computers.

You try to download one, and, you know, the person has a slow connection, and it craps out. And after two or three have crapped out, you finally download a song, and four seconds are cut off, because it was encoded by a ten-year-old. By the time you get your song, it's taken fifteen minutes. So that means you can download four an hour. Now some people are willing to do that. But a lot of people aren’t.

We were able to negotiate landmark deals with them that no one else has ever come close to in terms of offering the user really broad rights to the music they buy. Our idea was to come up with a music service where you don’t have to subscribe to it. You can just buy music at 99 cents a song.

You can burn as many CDs as you want for personal use, you can put it on your iPods, you can use it in your other applications, and you can have it on multiple computers.

Now, remember, it was initially just on the Mac, so one of the arguments that we used was, "If we're completely wrong and you completely screw up the entire music market for Mac owners, the sandbox is small enough that you really won't damage the overall music industry very much." So if the thing went radioactive it would only go radioactive on 10% of the market.

That was one instance where Macintosh’s small market share helped us.

Then about six months later we were able to successfully persuade them to take down the barriers, and let us move it out to the whole market. We got cards and

letters from lots of people that said that iTunes was their favorite app on Windows. It was like giving a glass of ice water to somebody in hell.

Another thing I think that appealed to the music companies was that we could do the whole thing. We made the operating system, we could write the applications, we made the computers, we made the iPod and we could control the whole thing.

I think a third thing that appealed to them was that we were a large company with a lot of money in the bank, and if we did something wrong they knew who to sue.

When we created the iTunes Music Store, we did that because we thought it would be great to be able to buy music electronically, not because we had plans to redefine the music industry. I mean, it just seemed like writing on the wall, that eventually all music would be distributed electronically. That seemed obvious because why have the cost? The music industry had huge returns. Why have all this overhead when you can just send electrons around easily?

Piracy and online downloads had already deconstructed the album. You couldn't compete with piracy unless you sold the songs individually. One of the great things about music was that you could deconstruct it down to these little $.99 morsels, and at $.99 you could buy three songs for the price of a Starbucks latte.

The music companies, there were four big ones, and we had really good relationship with most of them, but some of them were little difficult to deal with.

Remember, there were 10 billion songs that were distributed in the U.S. every year – legally – on CDs. When we sold a song on iTunes they made more money then when they sold it on a CD. They made more money because they didn't have to pay any marketing, and they made more money because there were no returns as there was in the physical world. We thought that was pretty good, but some of them kept talking about wanting to raise prices, because they're greedy.

Our core initial strategy on the store was that if you wanted to stop piracy, the way to stop it was by competing with it. By offering a better product at a fair price.

In essence, we made a deal with people. If they would pay a fair price, we would give them a better product, and they would stop being pirates. And it worked. If we went back and we raised prices—this is what we told the record companies

—we would be violating that implicit deal. Many users would say, "I knew it all along that the music companies were gonna screw me, and now they're screwing me." And they would never buy anything from iTunes again.

Discovering and buying music on a computer and downloading it to the iPod in our opinion is one of the geniuses of the iPod. An interesting thing that we learned was that you could only buy about 20% of the catalog that a record label owns. Like if you take Warner, great record company, you could buy about 20% of their songs, because the rest of them didn’t sell enough for the record stores to carry the CDs. They wouldn’t carry the inventory, so 80% of music we had never heard over the last few decades. It was in a fault somewhere, but it was not on the record store shelves, well when you didn’t have inventory like in an online store all of a sudden that catalog could open up, and you can find stuff you never heard before.

With the introduction of the iTunes Music Store we built the first real complete ecosystem for the digital music age. We had a way to buy music online legally that was fantastic—it was better than any other way to acquire music. We had a way to manage music with the iTunes Jukebox, which was the best in the world. And we had a way to listen to music on the go with the iPod—which was the most popular MP3 player in the world. So we really had, from one end to the other, a complete solution for digital music. We were the only people in the world to do this, so we felt great about it.

Management

My model for business is The Beatles. They were four guys who kept each other's kind of negative tendencies in check. They balanced each other and the total was greater than the sum of the parts. That's how I see business: great things in business are never done by one person, they're done by a team of people. You know when the Beatles were together they did truly brilliant innovative work. And when they split up they did good work but it was never the same and I see business that way too, it's really always a team.

When I was a young kid there was a widowed man who lived up the street. He was in his eighties. He was a little scary looking. And I got to know him a little bit. I think he may have paid me to mow his lawn.

One day he said to me, "come on into my garage I want to show you something." And he pulled out this dusty old rock tumbler. It was a motor and a coffee can and a little band between them. And he said, "come on with me." We went out into the back and we got some rocks. Some regular old ugly rocks. And we put them in the can with a little bit of liquid and little bit of grit powder, and we closed the can up and he turned this motor on and he said, "come back tomorrow." And this can was making a racket as the stones went around.

I came back the next day and we opened the can. And we took out these amazingly beautiful polished rocks. The same common stones that had gone in through rubbing against each other, creating a little bit of friction, creating a little bit of noise, had come out these beautiful polished rocks.

That's always been in my mind my metaphor for a team working really hard on something they're passionate about. It's that through the team, through that group of incredibly talented people bumping up against each other, having arguments, having fights sometimes, making some noise, and working together they polish each other and they polish the ideas, and what comes out are these beautiful stones.

It's that process that is the magic. We had a lot of great ideas when we started, but I always felt that a team of people doing something they really believe in is like that.

In my life I have observed something very early on at Apple, I didn't know how to explain it then, but I've thought about it since. Most things in life, the dynamic range between 'average' and the 'best' is, at most, two-to-one. If you get into a cab in New York City the difference between the worst taxi cab driver

and the best taxi cab driver might be two to one. The best one will get you to your destination in fifteen minutes, the worst one will get you there in half an hour. Or an automobile what's the difference between average and the best I don't know maybe 20 percent. Or the best cook and the worst cook, maybe it's three to one. Pick something like that. Usually the best is about 30% better than average. Two to one's a big delta.

So two-to-one is a big dynamic range in most of life. In software—and it used to be the case in hardware too—the difference between a good software person and a great software person is fifty to one, twenty-five to fifty to one, huge dynamic range. Very few things in life are like this, but in the field that I've been lucky enough to spend my life in it is like this. The difference between the average programmer and a great one is at least that. For instance, Woz was 25 to 50 times better than the average engineer. He could have meetings in his head.

The secret of my success is that we have gone to exceptional lengths to hire the best people in the world. And when you're in a field where the dynamic range is 25 to 1, boy, does it pay off.

And I found that there were these incredibly great people at doing certain things. They could just do stuff that no number of average people could do.

What I learned early on was that if you could assemble a team of these very high-performance people, extremely talented people, a few things happen: number one, unlike what you'd think, they actually all got along with each other. The neatest thing that happens when you get a core group of 10 great people, it becomes self policing as to who they let into that group. They don't want to work with B and C players and they only wanna hire more A players. So you build up these pockets of A players and it propagates. A players hire A players, B players hire C players. Do you get it? This whole prima donna thing turned out to be a myth with the very best people. Secondly, small and medium-sized teams of these people could accomplish extraordinary things and run circles around large teams of normal people. You couldn't replace one of these people with 50 average people.

So I have spent my work life trying to find, recruit, retain, and work with these kind of people. My #1 job here at Apple is to make sure that the top 100 people are A+ players. And everything else will take care of itself. If the top 50 people are right, it just cascades down throughout the whole organization. I've build a lot of my success off finding these truly gifted people, and not settling for B and C players but really going for A players. That's what the Mac team was like, they were all A players and these were extraordinarily talented people.

At Pixar, it was a whole company of A players. When I got back to Apple, that’s what I decided to try to do. You need to have a collaborative hiring process. When we hire someone, even if they’re going to be in marketing, I will have them talk to the design folks and the engineers. Any interviewee will speak with at least a dozen people in several areas of this company, not just those in the area that he would work in. Then we all get together without the person and talk about whether they’ll fit in. That way a lot of your “A” employees get broad exposure to the company, and—by having a company culture that supports them if they feel strongly enough—the current employees can veto a candidate.

My role model was J. Robert Oppenheimer. I read about he type of people he sought for the atom bomb project. I wasn’t nearly as good as he was, but that’s what I aspired to do.

After recruiting, it’s building an environment that makes people feel they are surrounded by equally talented people, and their work is bigger than they are. The feeling that the work will have tremendous influence and is part of a strong, clear vision—all those things.

In my experience, people get far more excited about doing something as well as it can be done than about doing something adequately. If they are working in an environment where excellence is expected, then they will do excellent work without anything but self-motivation. I'm talking about an environment in which excellence is noticed and respected and is in the culture. If you have that, you don't have to tell people to do excellent work. They understand it from their surroundings. You may have to coach them at first, but then you just get out of their way, and they'll surprise you time and time again.

So how do you communicate to people that they are in an environment where excellence is expected? You don't say it. You don't put it in an employee handbook. That stuff is meaningless. All that counts is the product that results from the work of the group. That will say more than anything coming out of your mouth or your pen. You have to pay close attention to details, even if they seem minor, because they communicate a big attitude about what you do. When something is not quite good enough do you stop and make it better or do you ship it? and everybody watches to see how the senior management makes those decisions. What we’ve tried to do was stop and make it great before we ship it, we have a problem, stop and fix them, and by example everybody watches very carefully when you’re in a difficult situation what decisions you make, what values you have. I always considered part of my job was to keep the quality level of people in the organizations I work with very high. That's what I consider one

of the few things I actually can contribute individually-- to really try to instill in the organization the goal of only having 'A' players.

I do feel there is another way we have an effect on society besides our computers. I think Apple has a chance to be the model of a Fortune 500 company. Apple has the opportunity to set a new example of how great an American corporation can be, sort of an intersection between science and aesthetics.

Something happens to companies when they get to be multibillion-dollar entities – their souls go away, somehow they lose their vision. They insert lots of layers of middle management between the people running the company and the people doing the work. They no longer have an inherent feel or a passion about the products. The creative people, who are the ones who care passionately, have to persuade five layers of management to do what they know is the right thing to do. What happens in most companies is that you don't keep great people under working environments where individual accomplishment is discouraged rather than encouraged. When you're a great person, why would you want to work for somebody you can't learn anything from. So the great people leave and you end up with mediocrity.

We attract a different type of person—a person who doesn't want to wait five or ten years to have someone take a giant risk on him or her. Someone who really wants to get in a little over his head and make a little dent in the universe. I know, because that's how Apple was built. Apple was an Ellis Island company. Apple was built on refugees from other companies. These are the extremely bright individual contributors who were troublemakers at other companies. We wanted people that were insanely great at what they did. Who were not necessarily those seasoned professionals, but who had at the tips of their fingers, and in their passion the latest understanding of where technology was, and what we could do with that technology.

We hired these people from other companies, and the reason they came to Apple was because they knew what to do, but the companies they were working for wouldn't take the risk and do it. So we said, "come to Apple and build this" and they said, "Who do i have to convince to do that?" and we said, "nobody, just go do it" and we got a collection of the best computer scientists in the world that just went and did it. That's why I go to work every morning to hang around these people and have fun.

In most companies if you're new and you ask, "why is it done this way?" the answer is: because that's the way we do it here, or that's the way it's always

been done. In my opinion the largest contribution is to approach these ways of doing things scientifically. Where there's a theory behind why we do them. There's a description of why we do them. And more importantly there's an opportunity to always question what we do. This is a radical approach to business processes than the traditional one, because it's always done this way. That single shift is everything in my opinion, because in that shift is a tremendous optimistic point of view about the people that work in a company. It says these people are very smart, they are not pawns, they're very smart, and if given the opportunity to change and improve, they will, they will improve the processes if there is a mechanism for it. That optimistic humanism I find very appealing. And I think we have countless examples that it works.

The oldest and largest organization in the world has only 4 layers of management, and that is the Catholic Church. So we see no reason why we need over 4 layers of management, and indeed we have usually about 3.

The organization is clean and simple to understand, and very accountable. That's been one of my mantras -- focus and simplicity. Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there, you can move mountains.

You've got to figure out a way to manage the complexity of large projects yet still allow your core teams to focus on the essentials. The way you do that is, you build up capabilities within your organization to do things on a high quality level on a routine basis. With good leaders leading small and medium-sized teams, and coordinating with their peers in other groups, so you can collectively do things that are very impressive.

Now, I don't get a chance to interact with 10,000 people. The number of people I get to interact with in this company is probably about 50 on a regular basis. Maybe 100.

You know what's interesting, the best managers are the very great individual contributors, who never ever want to be a manager, but decide they have to be the manager because no one else is able to do as a good job as them.

It doesn't take a new person long to see that people feel fine about openly disagreeing with me. That doesn't mean I can't disagree with them, but it does mean that the best ideas win. Our attitude is that we want the best. People judge you by your performance, so focus on the outcome. Don't get hung up on who owns the idea. Pick the best one, and let's go.

When you hire really good people you have to give them a piece of the business and let them run with it.

The whole philosophy is that people shouldn’t have to ask management permission to do something that needs to be approved. Authority should be vested in the people doing the work, to improve their own processes. To teach them how to measure them, to understand them, and to improve them. They should not have to ask permission to improve their processes. This philosophy carries with it a flattening of the traditional hierarchical organization, and a distribution of authority to the people who are best in the position to decide what should happen to improve these processes, the people doing the work themselves. The permission given with this philosophy is the permission to not have to ask permission. That doesn't mean I don't get to kibitz a lot. But the reason you're hiring them is because you're going to give them the reins. I want them making as good or better decisions than I would. The way to do that is to have them know everything, not just in their part of the business, but in every part of the business.

What we do every Monday is we review the whole business. We look at what we sold the week before. We look at every single product under development, products we're having trouble with, products where the demand is larger than we can make. And we do it every single week. I put out an agenda -- 80% is the same as it was the last week, and we just walk down it every single week. We don't have a lot of process at Apple, but that's one of the few things we do just to all stay on the same page. Our method is to develop integrated products, and that means our process has to be integrated and collaborative. Think of it this way, if you look at your own body, your cells are specialized, but every single one of them has the master plan for the whole body. We think our company will be the best possible company if every single person working here understands the whole master plan, and can use that as a yardstick to make decisions against. We think a lot of little and medium and big decisions will be made better if all our people know that. The biggest thing we’ll be measured on is: Are we able to stay a multibillion-dollar company that doesn’t lose its soul?

New Campus

Our headcount in Cupertino had dramatically expanded, Apple was growing like a weed. We had always been in Cupertino, started in an office park and eventually got into the buildings we were in. Those buildings held maybe 2600

people 2800 people, but we had almost 12,000 people in the area. So we were renting buildings, and not very good buildings either, from an ever greater radius from our campus. So we had this great campus down near 280, but we were in 30 other buildings. We rented every scrap of building we could find to put in our people, and they just kept getting further and further away from the campus. The whole situation was pretty inefficient, frustrating, and inconvenient for people. It was clear that we needed to build a new campus, we were just out of space. That didn't mean we didn't need the one we had, we did need it, but we needed another one to augment it. So we decided that we needed to build a new campus.

We didn't think we could do it in Cupertino, because there were not a lot of apricot orchards left.

We figured we would have to go outside Cupertino, and we looked.

There was a lot of land a lot cheaper in some other places in the valley. But after looking at a lot of things we found something in Cupertino that was a possibility. It was a lot more expensive than we could get elsewhere, but it was something where we could stay in the area that we liked the best. So we've actually gone ahead and acquired this property.

This land was kinda special to me. Right around that exact moment in time when I called up Bill Hewlett and he gave me a summer job, Hewlett and Packard themselves were walking on some property over here in Cupertino in Pruneridge, and they ended up buying it. They built their computer systems division there, and as Hewlett-Packard had been shrinking they decided to sell that property and we bought it. We bought that and bought the adjacent property. It all used to be apricot orchards and we got about a 150 acres. And we would like to put a new campus on that, so we can stay in Cupertino. Our plan is to basically take down all the buildings, and put up some more efficient structures, a campus basically, and build something nice.

We've hired some great architects to work with, some of the greatest in the world I think, and we've come up with a design that puts 12,000 people in one building.

We've seen these office parks with lots of buildings, and we think they get boring pretty fast, so we like to do something better than that. It's a circle, and so it's curved all the way around, there's not a straight piece of glass in this whole building, it's all curved. We've used our experience in making retail buildings all over the world, and we know how to make the biggest pieces of glass in the world for architectural use.

Today about 20% of the space is landscape most of it are several big asphalt parking lots. We want to completely change this and we want to make 80% of it landscape.

The way we're going to do this is we are going to put most of the parking underground. The building is four stories high, so there's nothing high here at all. We want the whole place human scale.

There's an energy center, we deal with people sitting at computers all day writing software. And if the power goes out on the grid we get to send everybody home, so we have to have backup power to power the place in the event of brownouts and stuff. I think what we are going to end up doing is making the energy center our primary source of power, because we can generate power with natural gas and other ways that can be cleaner and cheaper, and use the grid as our back up. We've got an auditorium, because now when we put on presentations we have to go to San Francisco to do them.

I think we do have a shot of building the best office building in the world, and I really do think architecture students will come here to see this. I think it could be that good.

Personal Life

You know, I'm not sure it's always a good idea to chronicle one's point of view about oneself. In the broadest context, my goal in life is to seek enlightenment — however you define it. But these are private things. I don't want to talk about this kind of stuff. I think, especially when one is somewhat in the public eye, it's very important to keep a private life.

I don't mind if people don't like me. Well, I might a little ... but I really mind it when somebody uses their position at Time magazine to tell 10 million people they don't like me. In 1982 Time decided they were going to make me Man of the Year, and I was twenty-seven, so I actually cared about stuff like that. I thought it was pretty cool. They wrote this terrible hatchet job, I read the article, and it was so awful that I actually cried. So I know what it's like to have your private life painted in the worst possible light in front of a lot of people. I've learned what it's like for everyone you meet after that to sort of have preconceptions about you. It's been a character-building experience.

I think of it as my well-known twin brother. It's not me. Because otherwise, you go crazy. You read some negative article some idiot writes about you — you just can't take it too personally. But then that teaches you not to take the really great ones too personally either. People like symbols, and they write about symbols.

I don’t have any skeletons in my closet that can’t be allowed out. I have a very simple life. I have my family and I have Apple and Pixar. And I don't do much else. I live in Palo Alto, I moved there when I got married and we had a child, because I wanted to be in more of a community and have neighbors.

Laurene and I have a wonderful family together. I've been very lucky, through random happenstance I just happened to sit next to this wonderful woman, I looked to my right, and there was a beautiful girl there, so we started chatting while I was waiting to be introduced. Afterwards I was in the parking lot with the key in the car, and I thought to myself, 'If this is my last night on earth, would I rather spend it at a business meeting or with this woman?' I ran across the parking lot and asked her, “Excuse me, wasn’t there something about a raffle you won, that I’m supposed to take you to dinner?” , She said yes, we walked into town and we've been together ever since. And I fell in love with this amazing woman who became my wife.

There were only two women in my life that I was truly in love with, Tina Redse, and my wife Laurene. I thought I was in love with Joan Baez, which was a serious relationship between two accidental friends who became lovers, but I really just liked her a lot. It was just Tina and Laurene.

I can tell you this: being married has a really good influence on me. And it’s a big deal. We have 3 kids, and it's a big deal. You see the world differently.

I'm a good morning person. I like it early in the morning. I wake up six-ish. At my house I have a pretty sophisticated setup; whether I'm at Apple or at Pixar or at my home, I log in and my whole world shows up on any of those computers. It's all kept on a server. So I carry none of it with me, but wherever I am, my complete world shows up, all my files. Everything. And I have high speed access to all of it. So my office is at home too. When I'm not in meetings, my work is fundamentally on email.

I'll work a little before the kids get up. And then we'll all have a little food and finish up some homework and see them off to school. If I'm lucky I'll stay at home and work for an hour because I can get a lot done, but oftentimes I'll have to come in. I usually get here about 9. 8 or 9. Having worked about an hour and a half or two at home.

I've read something that Bill Gates said. He said, "I worked really, really hard in my 20s." And I know what he means, because I worked really, really hard in my 20s too. Literally, you know, 7 days a week, a lot of hours every day. And it actually is a wonderful thing to do, because you can get a lot done. But you can't do it forever, and you don't want to do it forever, and you have to come up with ways of figuring out what the most important things are, and working with other people even more. Just working smarter to get things done. Because you can't work 15 hour days, 7 days a week. I always advise people to don’t wait, do something when you’re young, when you have nothing to lose, and keep that in mind. People can start companies when they are fifty, i’ve seen that, very successful companies, but it’s a lot easier when you’re young and have nothing to lose, and have the responsibilities to other people you will acquire later on in life.

I'm a long-term kind of person. I have been trained to think in units of time that are measured in several years. With what I've chosen to do with my life, you know, even a small thing takes a few years. To do anything of magnitude takes at least five years, more likely seven or eight. Rightfully or wrongfully, that's how I think.

I know this is going to sound really, really corny. But I feel like I'm an American, I was born here. And the fate of the world is in America's hands right now. I really feel that. And you know I'm going to live my life here and do what I can to help.

I can be very intense in my convictions, but I don't really care about being right, I just care about success. You'll find a lot of people that will tell you I had a very strong opinion, and they presented evidence to the contrary and five minutes later I changed my mind. I don't mind being wrong, and I'll admit that I'm wrong a lot. It doesn't really matter to me too much. You know I think all of us need to be on guard against arrogance, which knocks at the door whenever you're successful. And I don't know; all in all, I kind of like myself and I'm not that anxious to change.

I've done a lot of things I'm not proud of, such as getting my girlfriend Chrisann pregnant when I was 23 and the way I handled that. I wasn't sure it was my kid, because I was pretty sure I wasn't the only one she was sleeping with. Chrisann and I were not really even going out when she got pregnant. She just had a room in our house. I knew that she was not the person I wanted to marry, and we would never be happy, and it wouldn't last long. I was all in favor of her getting an abortion, but she didn't know what to do. She thought about it repeatedly and decided not to, or I don't know that she ever really decided – I think time just decided for her. I didn't want to be a father, so I wasn't.

I wish I had handled it differently. I could not see myself as a father then, so I didn't face up to it. But when the test results showed she was my daughter, it's not true that I doubted it. I agreed to support her until she was eighteen and give some money to Chrisann as well. I found a house in Palo Alto and fixed it up and let them live there rent-free. Her mother found her great schools which I paid for. I tried to do the right thing. But if I could do it over, I would do a better job.

5th Avenue

We went into retail in 2001 and had succeeded beyond our wildest dreams.

One of the stores was in Manhattan in Soho and it was our most expensive store to build. At first we were a little concerned on how much business it would do, but it had just done phenomenal business. We had so many Mac users in New York, and that store had gotten so crowded, that we realized that we had to open a second store in New York City.

We found this incredible location. The largest real estate developer in New York, Harry Macklowe, had just bought the GM building. He saw our Soho store and he said, “you got to be in my new building” and we said, “where do you have in mind?” and he said, “well underneath the Plaza there's some stores” and we said, “subterranean?, are you crazy?.” We called him back a day later and said, “we got this crazy idea, what if we can we re-do the plaza, make it this beautiful plaza, we’ll put our store underneath it, and we want an entrance right in the middle of the plaza” and he said, “what kind of entrance?” we said, “how about a 32 foot glass cube?” He loved the idea, we got it through the city and we built it.

This is the best store we’ve ever build. The cube is extremely state-of-the-art use of glass technology, there’s hardly any metal holding it up, it’s glass fins holding up glass. We had to build our own autoclaves to make the glass. If we wanted to do it with our current technology, we had to make the cube a foot shorter. And I didn’t want to do that. So we had to build some new autoclaves in China.

You know what's interesting is, we’ve never believed in the philosophy of having flagship stores that don't make money. Every single one of our stores makes money. And although we did spend a little more on these stores in New York, constructions was more expensive, and they also had to stand up to a lot of abuse, they still did very well for us. This store grosses more per square foot than any store in the world. It also grosses more in total – absolute dollars, not just per square foot – than any store in New York. That includes Saks and Bloomingdale’s.

One of the things we decided very early on was that we wanted to provide great service to our customers. We’re highly service-oriented and it had gotten to the point with our Soho store that we would open at 6 o'clock in the morning to

serve people at the Genius Bar, and we didn’t close till midnight. And we thought you know it isn't very much further to go and try a store that's open 24/365.

Design

Design is a funny word, design is a really loaded word. We don't have good language to talk about this kind of thing. In most people's vocabularies, design means veneer. It's interior decorating. It's the fabric of the curtains and the sofa. But to me, nothing could be further from the meaning of design. Design is not just what it looks like and feels like. Design is how it works. Design is the fundamental soul of a man-made creation that ends up expressing itself in successive outer layers of the product or service. Where does aesthetic judgment come from? With many things—high-performance automobiles, for example—the aesthetic comes right from the function, and I suppose electronics is no different. But I've also found that the best companies pay attention to aesthetics. They take the extra time to lay out grids and proportion things appropriately, and it seems to pay off for them. I mean, beyond the functional benefits, the aesthetic communicates something about how they think of themselves, their sense of discipline in engineering, how they run their company, stuff like that.

Everyone says they want to make a great product, or make a great movie, or whatever they're doing, so there's no difference there, but there's a big difference in the outcomes. Look at the design of a lot of consumer products—they're really complicated surfaces.

You know how you see a show car, and it's really cool, and then four years later you see the production car, and it sucks? And you go, What happened? They had it! They had it in the palm of their hands! They grabbed defeat from the jaws of victory! What happened was, the designers came up with this really great idea. Then they take it to the engineers, and the engineers go, “Nah, we can't do that. That's impossible.” And so it gets a lot worse. Then they take it to the manufacturing people, and they go, “We can't build that!” And it gets a lot worse.

Sure enough, when we took the original iMac prototype to the engineers they came up with 38 reasons why it couldn’t be done. And I said, “No, no, we're doing this.” And they said, “Well, why?” And I said, “Because I'm the CEO, and I think it can be done.” And so they kind of begrudgingly did it. But then it was a big hit.

When you want to understand something that’s never been understood before, what you have to do is construct conceptual scaffolding. To design something really well, you have to get it. You have to really grok what it's all about. It takes

a passionate commitment to really thoroughly understand something, chew it up, not just quickly swallow it. Most people don't take the time to do that. If you're trying to design a computer you will literally immerse yourself in the thousands of details necessary; all of a sudden, as the scaffolding gets set up high enough, it will all become clearer and clearer and that's when the breakthrough starts. It is a rhythmic experience, or it is an experience where everything's related to everything else, and it's all intertwined. It's such a fragile, delicate experience that it's very much like music. But you could never describe it to anyone.

Sometimes the technology just doesn't want to show you what it can do. It's hard to explain. You have to keep pushing on it and asking the engineers over and over again to explain why we can't do this or that—until you truly understand it. A lot of times, something you ask for will add too much cost to the final product. Then an engineer might say casually, "Well, it's too bad you want A, which costs $1,000, instead of B, which is kind of related to A. Because I can do B for just 50¢." And B is just as good as A. It takes time to work through that process—to find breakthroughs but not wind up with a product no one can afford.

Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things. The reason they were able to do that was that they've had more experiences, or they have thought more about their experiences than other people. Unfortunately, that's too rare a commodity. A lot of people in our industry haven't had very diverse experiences. So they don't have enough dots to connect, and they end up with very linear solutions without a broad perspective on the problem. The broader one's understanding of the human experience, the better design we will have.

I like things that do the job and kind of disappear into my life. Like Levis. They just kind of get faded and disappear, and you don't think about it much. If you look, you appreciate the design, but you feel something from them too. A lot of quality is communicated through a feeling that people have. They don't understand exactly why, but they know that a lot of care and love was put into the designing of the product.

I think every good product that I ever see in this industry, and pretty much anywhere, is because a group of people cared deeply about making something

wonderful that they and their friends wanted. They wanted to use it themselves. That’s how almost everything I know that’s good has come about.

I have a blast because I get to work with these super-talented people. Take Jony Ive, If I had a spiritual partner at Apple, it’s Jony. The difference that Jony has made, not only at Apple but in the world, is huge. He is a wickedly intelligent person in all ways. He understands business concepts, marketing concepts. He picks up just like that, click. He understands what we do at our core better than anyone. He gets the big picture as well as the most infinitesimal details about each product. And he understands that Apple is a product company. He’s not just a designer. That’s why he works directly for me. There’s no one who can tell him what to do, or to butt out. That’s the way I set it up.

We can have some incredible breakthroughs in a series of four or five hour-long conversations. Incredible breakthroughs working out the concept on a new product. Just for how it's gonna be, how we're going to engineer it, present it, what it's going to look like. We think up most of the products together and then pull others in and say, “Hey, what do you think about this?” Our design group is light-years ahead of their peers.

We've done so many hardware products where Jony and I have looked at each other and said, “We don't know how to make it any better than this, we just don't know how to make it” but we always do; we realize another way. And then it's not long after the new thing comes out that we look at the older thing and go, “How can we ever have done that?” Sometimes you just have to look at yourself and say this is not really great, it's okay, it's good, but let's not fool ourselves and call it great. We are willing to throw something away because it's not great and try again, when all the pressures of commerce are at your back saying you can't do that. But we are gonna take the heat because we want to make the best products in the world for customers.

Things are packages of emphasis, somethings are emphasized in products, somethings are not done as well in a product, somethings are chosen not to be done at all in a product. Different people make different choices and if the market tells us we’re making the wrong choices, we listen to the market.

We are just people running this company, we’re trying to make great products for people. And we have at least the courage of our convictions to say, we don't think this is part of what makes a great product, so we’re going to leave it out. You just make the best product you can, and you don't put it out until you feel it's right. But no matter what you think intellectually, your heart is beating pretty fast right before people see what you've produced.

We don't strive to appear cool. We just try to make the best products we can. And if they are cool, well, that's great. The main thing in our design is that we have to make things intuitively obvious. The way we're running the company, the product design, the advertising, it all comes down to this: Let's make it simple. Really simple. Simplicity is the ultimate sophistication. I love it when you can bring really great design and simple capability to something that doesn't cost much. We try to make something much more holistic and simple. It was the original vision for Apple. That's what we tried to do with the first Mac. That's what we did with the iPod.

Ultimately, it comes down to taste. Great art stretches the taste, it doesn't follow tastes. It comes down to trying to expose yourself to the best things that humans have done and then try to bring those things into what you're doing. Picasso had a saying, "Good artists copy. Great artists steal." And we have always been shameless about stealing great ideas.

PixNey

As we approached the end of our relationship with Disney and looked at our future, we sort of saw a fork in the road. Where we were headed for a Lucasfilm type distribution agreement on one side or, as Bob Iger and I started to talk more, potentially joining — throwing in with Disney, joining Disney.

The more we thought about it, the more we thought about becoming part of Disney and being able to make our films without being two independent companies with two independent shareholder bases, with two independent agendas. But really everybody focused just on the films, and the stories, and the characters. And then being able to leverage those assets through Disney's incredible array of unique distribution channels and other creative assets like the theme parks. After a lot of soul-searching and thinking and, of course, getting to know Bob, we came to the conclusion that this looked to be the most exciting path to Pixar's future. And so we decided to do it. We ended up doing this deal because we could get rid of all of the stuff that had nothing to do with making these movies, and we could focus on what Pixar does best. It enabled us to stay focused on what we love, which is making these movies. This was going to let us stay focused on that, and yet have the entire leverage of The Walt Disney Company to move these characters and stories out into the culture.

In terms of our employees that were Disney alums, Pixar was still going to be called Pixar. We were going to be a part of Disney, but we were also going to keep our culture.

One of the other things, too, was that the way we approached sequels was sort of looking at Godfather II and The Empire Strikes Back. We felt sick about Disney doing sequels, because if you looked at the quality of their sequels, like The Lion King 1.5 and Return to Never Land, it was pretty embarrassing. We didn't think there was any reason that a sequel couldn't be as good or even better than the original. We certainly strived for that with Toy Story 2. We didn't see sequels as second-class citizens; we saw them as first-class citizens. And as Bob said, there's nobody to try to make a film as good or better than the original than the people involved with the original.

The reason that we did this deal wasn't because we didn't think we had some pretty good options; it's because we thought this was the best option by far. No matter who else we did strike another deal with, we were still going to be two separate companies, with two separate sets of shareholders and two different agendas. Disney was the only company with animation in their DNA, and the

only company that we thought had this incredible collection of unique assets that were very attractive to us, as well. They were the only company that had Bob Iger, who we had grown to like a lot and trust. It wasn't that somebody else was unattractive; they were pretty attractive. But nobody could offer us what Disney could offer us. There was a certain amount of fear and trepidation, but what always happened was that making a great movie was the focal point of everybody's concerns. One way to drive fear out of a relationship is to realize that your partner's values are the same as yours, that what you care about is exactly what they care about. In my opinion, that drives fear out and makes for a great partnership, whether it's a corporate partnership or a marriage. In addition to that, counting Cars, we had seven children together. And keeping the family together was also a really nice benefit of this relationship.

iPhone

Over the years we had enormous, tremendous pressure to do a PDA, and we thought about this a lot. We looked at it and said wait a minute, 90% of the people that use these things just want to get information out, only 10% want to do major input on this thing. If what they really wanted was a repository for data that they can get out occasionally, putting in a phone number or correcting an address, we believed the cell phones were gonna do that. You had to have a phone in your pocket, so that was going to have to be the device that carries this information. So getting into the PDA market meant getting into the cellphone market.

We all had cellphones. We just hated them, they were so awful to use. The software was terrible. The hardware wasn't very good. We talked to our friends, and they all hated their cellphones too. Everybody seemed to hate their phones.

The carriers had gained the upper hand in terms of the power in the relationship with the handset manufacturers. They were starting to tell handset manufactures what to build. If Nokia and Motorola didn't listen to them well than Samsung and LG would. The handset manufacturers were really getting these big thick books from the carriers telling them here's what your phones are going to be. And when you bought a phone the carrier dictated what was on that phone.

If you look at Apple's DNA, we are not one of the greatest of selling to the fortune 500 and there's 500 of them, 500 CIOs that are orifices that you have to go through to get to the fortune 500. In the cell phone business there was five. We didn't even like 500, we rather run an ad for millions of people and let everybody make up their own mind, you can imagine what we thought about five to get to the end-users. So we didn't think that we were going to be successful in the cell phone business because of the carriers.

What we did instead is we had written I think some of the best software in the world to start syncing data from your personal computer onto your cell phone. Anyone that has used a Palm knows that there were two great revolutions in the Palm. One was the focused function and form factor. The second was the dock, the cradle that allows you to sync it to your PC. So that if you lost your Palm you did't lose your life. You could buy another one, stick it in there, refresh it, and off you go. That was the mode we copied for the iPod as an example. And that's what cellphones had been missing, cellphones hadn't docked with computers, and so every time you bought a new cellphone you were sitting there

putting in the numbers and stuff, it was crazy. We believed that was the mode cell phones needed to get to. Where your personal computer is your hub, all your data safe and secure there, you can enter it on a big screen with a real keyboard *etc. etc.* and sync it to your phone. You could still make changes on your phone, it was a little painful with that small keyboard but you could do it on occasion.

We saw that these things really could become much more powerful and interesting. Mobile devices are really important to people. It's not like this is an obscure product category that affects just a small part of the population. It's a huge market. I mean a billion phones got shipped every year, and that was almost an order of magnitude greater than the number of music players. It was four times the number of PCs that shipped every year.

We got to know some of the players, and we were able to persuade AT&T. They took a very big leap on us, we had never been in the handset business before, we had never been in the phone business in any way, shape or form. So they took a big leap on us and decided they we were going to trust us to do the right thing on the phone. We came from pretty different worlds. The telecommunications industry, the computer industry and of course music with the iPod. We did a pretty different kind of deal than they had ever done before. And it bend or broke a lot of their rules, they had never done anything like this. And they did it with us without ever seeing the phone. We were able to change the rules of the game and that's what got us excited about getting into the phone business.

iPhone was the first phone where we had a new relationship with a carrier that said, carrier you worry about the network, we will worry about what's on the phone. They took a gamble on us and likewise we took a gamble on them.

I think they mainly did it for 2 reasons: the first reason they did it was because music on phones had not been so successful on phones so far, and they really wanted to do something good with music on phones. And with the iPod build into the phone we could do that.

The second reason though I think is even more profound, and that is that they along with everyone else in the business were spending a fortune to build these 3G networks. And so far there wasn't a lot to do with it, people had not voted with their pocketbooks to sign up for video on their phones, because it hadn't really worked. So they had a lot of bandwidth, but these phones were not capable of taking advantage of it, because their internet experience was so poor. You didn't get the internet, you got the "baby internet" or the "mobile internet" or

something bizarre. What people wanted was the real internet on their phone, and they believed that we could deliver that.

We found a way to sell the phone that we wanted to sell, and define it the way we wanted to define it, have the control that we wanted to have over what was on the phone versus the carrier controlling that.

We were gonna reinvent the phone. It was a great challenge. Let's make a great phone that we fall in love with. We had the technology, we had the miniaturization from the iPod, and we had the sophisticated operating system from Mac.

Nobody had ever thought about putting operating systems as sophisticated as OS X inside a phone, so that was a real question. We had a big debate inside the company whether we could do that or not. And that was one where I had to adjudicate it and just say, “We’re going to do it. Let's try. The smartest software guys were saying they can do it, so let's give them a shot.” And they did.

Smart-phones at the time all had these keyboards that were there whether you needed them or not to be there. And they all had these control buttons that were fixed in plastic and were the same for every application. Well, every application wants a slightly different user interface, a slightly optimized set of buttons, just for it. What we did was get rid of all these buttons and just make a giant screen. A giant bit-mapped screen that could display anything we want. Put any user interface up. We could use that physical space for other things where you didn’t need a keyboard. You could keep changing the user interfaces as you come up with new ideas and applications. So it provided incredible flexibility to create great user interfaces for different applications.

We were gonna use the best pointing device in the world. We were gonna use a pointing device that we are all born with – we’re born with ten of them. We were gonna use our fingers. We had invented a new technology called multi-touch, which was phenomenal. Once you actually used a touch display, there was no going back it was unbelievable.

What’s hard for people to remember, and this is good I think, going back to pre-iPhone there was no app market for apps on phones. Phones were sold in truly walled gardens. The thought that a developer could make an app for a phone was unheard-of.

Apple enjoyed the success it did with the iPod because the Japanese consumer-electronics companies couldn’t make the leap to create the software. If you looked at handsets it looked very similar, the handset manufacturers got their hardware down, but they hadn’t been able to make the leap to software. The

usual suspects tried to copy the hardware, and it took them sometime. But the software was at least five years ahead of anything we'd seen out there. We were bringing breakthrough software to a mobile device for the first time. We were gonna enter a very competitive market, with a lot of players, we had the best product in the world, and we were gonna go for it and see if we could get 1 percent market share, and go from there. We had been innovating like crazy for the last few years on this, and boy, have we patented it. We filed over 200 patents for all the inventions in iPhone.

The iPhone was three things: a widescreen iPod with touch controls; a revolutionary mobile phone; and a breakthrough Internet communications device.

I didn't sleep a wink the night before the introduction, I was so excited.

So now we had the Mac and the iPod, and we added Apple TV and iPhone. And you know, the Mac was the only one really that you thought of as a computer. But it was not like Apple had somehow morphed into a mass-market consumer electronics company. Our DNA hadn't changed. It was that mass-market consumer electronics was turning into Apple. We thought about this and we thought, you know, maybe our name should reflect this a little bit more than it did. So we announced that day that we were dropping the computer from our name, and from that day forward, we were gonna be known as Apple Incorporated, to reflect the product mix that we had.

Apple DNA

Apple is this incredible journey.

I mean we do some amazing things here. The thing that binds us together at Apple is the ability to make things that are going to change the world. That is very important. We don't get a chance to do that many things, and every one should be really excellent.

Because this is our life. Life is brief, and then you die, you know? So this is what we've chosen to do with our life. We could be sitting in a monastery somewhere in Japan. We could be out sailing.

Some of the executive team could be playing golf. They could be running other companies. And we've all chosen to do this with our lives. So it better be damn good. It better be worth it. And we think it is. We have a major opportunity to influence where Apple is going. As every day passes, the work fifty people are doing here is going to send a giant ripple through the universe. I am really impressed with the quality of our ripple.

There's a very strong DNA within Apple, and that's about taking state-of-the-art technology and making it easy for people. We make tools for people. Tools to create, tools to communicate. The age we're living in, these tools surprise you. That's why I love what we do. Because we make these tools, and we're constantly surprised with what people do with them. That's who we think about.

One of the keys to Apple is that Apple's an incredibly collaborative company, all we are is our ideas, or people. We have no committees, we are organized like a start up, one person's in charge of iPhone OS software, one person's in charge of Mac hardware, one person's in charge of iPhone hardware engineering, another person's in charge of worldwide marketing, another person's in charge of operations.

We're the biggest start up on the planet, and we all meet for three hours once a week, and we talk about everything we're doing, the whole business. There's tremendous teamwork at the top of the company which filters down to tremendous teamwork throughout the company. Teamwork is dependent on trusting the other folks to come through with their part without watching them all the time.

Trusting that they're going to come through with their parts and that's what we do really well. We're great at figuring out how to divide things up into these great teams that we have and all work on the same thing, touch bases frequently and bring it all together into a product. We do that really well. And so what I do all day is meet with teams of people and work on ideas, and solve problems, to make new products, to make new marketing programs, whatever it is.

I know I might be a little hard to get on with, but this is the most fun I've had in my life. I'm having a blast.

I don't know what a corporate lifestyle is, but Apple is a corporation and we are very conscious of that. We are very driven to make money so that we can continue to invest in the things we love. But it has a few very big differences to other corporate lifestyles that I've seen. The main one is a real belief that there isn't a hierarchy of ideas that map into the hierarchy of the organization. In another words great ideas can come from anywhere and that we better treat people in a much more egalitarian sense in terms of where the ideas come from.

Apple is a very bottoms up company when it comes to a lot of it's great ideas. We hire truly great people and give them the room to do great work. A lot of companies, I know it sounds crazy, but a lot of companies don't do that. They hire people to tell them what to do, we hired people to tell us what to do. And that led to a very different corporate culture and one that's really much more collegial then hierarchical.

I get asked a lot why Apple's customers are so loyal. It's not because they belong to the Church of Mac! That's ridiculous. It's because when you buy our products, and three months later you get stuck on something, you quickly figure out how to get past it. And you think, "Wow, someone over there at Apple actually thought of this!" And then three months later you try to do something you hadn't tried before, and it works, and you think, "Hey, they thought of that too." And then six months later it happens again. There's almost no product in the world that you have that experience with, but you have it with a Mac.

The reason is because you can't do what you can do at Apple anywhere else. The engineering is long gone in most PC companies. In the consumer electronics companies, they don't understand the software parts of it. You really can't make the products that you can make at Apple anywhere else right now. Apple's the only company that has everything under one roof.

There's no other company that could make a MacBook Air. It is the intimate interaction between the operating system and the hardware that allows us to do that. There is no intimate interaction between Windows and a Dell notebook.

You know if the hardware is the brain and the sinew of our products, the software in them is their soul. Again if you look at an iPhone, iPad, or an iPod, it is software wrapped in really wonderful hardware. It's software in the device itself, it's software on the PC or the Mac, and it's software in the cloud. It's in a beautiful box, but it's software.

If you look at what a Mac is, it's OS X, it's in a beautiful box, but it's OS X. So the big secret about Apple, or not so big secret maybe, is that Apple views itself as a software company. And we think that our job is to take responsibility for the complete user experience. And if it's not up to par, it's our fault, plain and simply.

We've always had a very different view of privacy than some of our colleagues in the valley. We take privacy extremely seriously. We worry a lot about location in phones, and we worry that some 14-year-old is going to get stalked, and something terrible is gonna happen because of our phone. As an example: before any app can get location data, we don't make it a rule that they have to put up a panel and ask, because they might not follow that rule. They call our location services, and we put up the panel saying, "this app wants to use your location data is that okay with you" every time they want to use it. We do a lot of things like that to ensure that people understand what these apps are doing. That's one of the reasons we have the curated App Store.

We have rejected a lot of apps that want to take a lot of your personal data and suck it up into the cloud, a lot. A lot of people in the valley think we're really old-fashioned about this, and maybe we are, but we worry about stuff like this. Privacy means people know what they're signing up for in plain english and repeatedly, that's what it means. I am an optimist I believe people are smart and some people want to share more data than other people do, ask them, ask them every time, make them tell you to stop asking them if they get tired of you asking them. Let them know precisely what you're going to do with their data, that's what we think.

To me, Apple exists in the spirit of the people that work here, and the sort of philosophies and purpose by which they go about their business. If Apple just

becomes a place where computers are a commodity item and where the romance is gone, and where people forget that computers are the most incredible invention that man has ever invented, then I'll feel I have lost Apple. But if I'm a million miles away and all those people still feel those things and they're still working to make the next great product, then I will feel that my genes are still in there.

iPad

Was there room for something between a laptop and a smartphone? we pondered this question for years. It had to be far better at doing some really important things, better than the laptop, better than the smartphone. Some people had thought that's a netbook. The problem was that netbooks weren't better at anything. They were slow, they had low-quality displays, and they ran clunky old PC software. They were not better than a laptop at anything they were just cheaper, they were just cheap laptops. We didn't think they were a category at all. In order to create a new category of devices, those devices had to be far better at doing some key tasks. Things like browsing the web, doing email, enjoying and sharing photographs, watching videos, enjoying your music collection, playing games, reading eBooks. If there was going to be a third category device it was gonna have to be better at these kinds of tasks than a laptop or a smart phone otherwise it had no reason for being.

The iPhone was a revolution, and we learned so much from it and developed so many amazing technologies, all the applications, the multitouch user interface. It was truly an incredible breakthrough product. We wanted to take all of that and apply that to a whole new class of product.

I'll actually tell you kind of a secret, I actually started on the tablet first. I had this idea of being able to get rid of the keyboard and type on a multitouch glass display. Handwriting was probably the slowest input method ever invented and it was doomed to failure. So I asked our folks could we come up with a multitouch display that I could type on, rest my hands and actually type on. This was in the early 2000s. About six months later they called me in and showed me this prototype display, and it was amazing. I gave it to one of our other really brilliant UI-folks, and he call me back a few weeks later and he had inertial scrolling working and a few other things. Now we were thinking about building a phone at that time, and when I saw the rubber band, inertial scrolling and a few of the other things, I thought, "my God we can build a phone out of this." I put the tablet project on the shelf, because the phone was more important, and we went took the next several years and did the iPhone. And when we got our wind back and thought we could take on something next, we pulled the tablet off the shelf, took everything we'd learn from the phone, and went back to work on the tablet.

Microsoft did a lot of interesting work on the tablet. What we've done is not compete with what they did, what we tried to do was re-imagine the tablet. What we were doing was completely different than what they did. They were completely stylus based. What we said at the very beginning was, if you need a stylus you've already failed. God gave us ten styluses. Let's not invent another. And that drove everything. Their Tablet PC was based on a PC, had all the expense of the PC, had the battery life of the PC, had the weight of the PC. It used a PC operating system that really needed the precision of the tip of an arrow of the cursor. The minute you throw a stylus out, you cannot get that precision you have the precision of a finger. Which is much cruder therefore you need to have totally different software. So you can't use a PC operating system and you have to bite the bullet and say we have to create this from scratch. Because all the PC apps won't work without having to be rewritten anyway.

We built a very different animal. We looked at the device and we decided, let's redesign it all. Let's redesign, re-imagine and rebuild every single app from the ground up, specifically for the iPad. The iPad is the most advanced piece of technology that I've ever worked on at Apple. The innovation of the product really starts with multitouch itself. This multitouch is the largest that we've ever built in a product. And it's on multitouch of this size that you really feel the power and performance that multitouch can offer.

One of the most important features we designed in the iPad was an affordable price. Usually when you get the brand-new latest technology it starts at a high price, and over time it gets more affordable, works its way down. We wanted to do it differently. We wanted to take all this advanced technology of hardware and software, and do everything we could to get it into the hands of as many people as possible right from the start.

Even though we had been using these internally for some time and working on it for a few years, you still have butterflies in your stomach the night before the launch. You never know until you get it into your customers' hands and they tell you what they think. There's nothing that makes my day more than getting an e-mail from some random person in the universe who just bought an iPad over in the UK and tells me the story about how it's the coolest product they've ever brought home in their lives. That's what keeps me going. The feedback we got has been off the charts. We think this is a profound game-changer. We think when people look back some number of years from now, they'll see this as a major event in personal computation devices. What's been really great for me is how quickly people have got it.

The iPad is the best web surfing experience, the best e-mail experience, the best photo and movie watching experience. It's going to change the way we do the things we do every day.

The more time that passes, the more I am convinced that we've got a tiger by the tail here, and this is a new model of computing which, you know, we've got tens of millions of people already trained on how to use it with the iPhone. And that lends itself to lots of different aspects of life, both personal, educational, and business. I see it as very general purpose, and I see it as really big.

You know, it's true, when something exceeds your ability to understand how it works, it sort of becomes magical. And that's exactly what the iPad is. It's hard to see how something so simple, so thin and so light could possibly be so capable. Our most advanced technology in a magical and revolutionary device.

A lot of folks in this tablet market are rushing in and they're looking at this as the next PC. The hardware and the software are done by different companies. And they're talking about speeds and feeds just like they did with PCs. And our experience and every bone in our body says that that is not the right approach to this.

The reason that Apple is able to create products like the iPad is because we always tried to be at the intersection of technology and liberal arts. To be able to get the best of both. To get extremely advanced products from a technology point of view but also have them be intuitive, easy-to-use, fun to use, so that they really fit the users, the users don't have to come to them, they come to the user.

It's the combination of these two things that I think let's us make the kind of creative products like the iPad.

Post PC

The personal computer has been a pretty amazing thing in that is has morphed into these different things over the years and decades. First it was a hobbyist tool. Then Bricklin and Frankston invented the first spreadsheet, and that kicked off the whole age of productivity. Then the Internet came along and all of a sudden the next great age of the personal computer started. The PC has proved to be very resilient, I mean, the death of the PC has been predicted every few years.

Now there's an explosion that's starting to happen in what you call post-PC devices. You can call the iPod one of them. There's just a category of devices that aren't as general purpose, that are really more focused on specific functions. I think that category of devices is going to continue to be very innovative and we're going to see lots of them. We're getting to the point where everything's a computer in a different form factor. So what, right? So what if it's built with a computer inside it? It doesn't matter. It's, what is it? How do you use it? You know, how does the consumer approach it? And so who cares what's inside it anymore? I think the art of it is balancing what's on there and what's not on there, is the editing function. Clearly, most things you carry with you are communications devices. You want to do some entertainment with them as well, but they're primarily communications devices and that's what they're going to be.

The PC has taken us a long ways, it's brilliant, and we like to talk about the post PC era, but when it really starts to happen I think it's uncomfortable for a lot of people, because it's change and a lot of vested interests are going to change and it's going to be different. And this transformation is going to make some people uneasy.

When we were an agrarian nation, all cars were trucks because that's what you needed on the farm. But as vehicles started to be used in urban centers, and America started to move into those urban and then suburban centers, cars got more popular. And innovations like automatic transmission and power steering and things, you didn't care about in the truck as much, started to become paramount in cars. And now probably, I don't know what the statistics are, maybe one out of every 25 or 30 vehicles is a truck, where it used to be a 100%. PCs are going to be like trucks. They're still gonna be around, and they're still gonna have a lot of value, but they're going to be used by one out of X people.

Of course, PCs are going mobile in an ever greater degree. So I think the PC is going to continue. This general purpose device is going to continue to be with us and morph with us. Whether it's a tablet or a notebook, or a big curved desktop that you have at your house, or whatever it might be.

Post-PC devices need to be even easier to use than a PC. They need to be even more intuitive than a PC. And the software and the hardware and the applications need to intertwine in an even more seamless way than they do on a PC. We think we're on the right track with this. We think we have the right architecture not just in silicon, but in the organization to build these kinds of products. I think we stand a pretty good chance of being pretty competitive in this market.

I've said this before, but thought it is worth repeating: It's in Apple's DNA that technology alone is not enough. That it's technology married with liberal arts, married with the humanities, that yields us the result that makes our hearts sing. And nowhere is that more true than in these post-PC devices.

I think the question is a very simple one, which is how much of the really revolutionary things people are going to do are done on the PC, or how much of it is really focused on the post-PC devices. And there's a real temptation to focus it on the post-PC devices because it's a clean slate, and because they're more focused devices. I think that we're embarked on that, is it the iPad? who knows?

One could argue about the timing endlessly, but I don't think one could argue that it's gonna happen anymore. Will it happen in the next year, five years, or seven years from now? who knows? But I think there's going to be tremendous revolution, you know, in the experiences of the post-PC devices.

Life Lessons

I believe life is an intelligent thing--that things aren't random. You can't connect the dots looking forward. You can only connect them looking backwards, so you have to trust that the dots will somehow connect in your future. You have to trust in something: your gut, destiny, life, karma, whatever. Because believing that the dots will connect down the road will give you the confidence to follow your heart, even when it leads you off the well-worn path, and that will make all the difference.

When you grow up you tend to get told that the world is the way it is, and your life is just to live your life inside the world. Try not to bash into the walls too much. Try to have a nice family life, have fun, save a little money. That's a very limited life. Life can be much broader once you discover one simple fact. And that is that everything around you that you call Life was made up by people that were no smarter than you. And you can change it, you can influence it, you can build your own things that other people can use. The minute that you understand that you can poke life and actually something will, you know if you push in, something will pop out the other side.

That you can change it, you can mold it. That's maybe the most important thing. It's to shake off this erroneous notion that life is there and you're just gonna live in it, versus embrace it, change it, improve it, make your mark upon it. I think that's very important and however you learn that, once you learn it, you'll want to change life and make it better, cause it's kind of messed up, in a lot of ways. Once you learn that, you'll never be the same again.

I felt it the first time when I visited a school. It had like third and fourth graders in this classroom and they had a whole classroom full of Apple ll's. And I spend a few hours there and I saw these 3th and 4th graders growing up completely different than I grew up because of this machine.

What hit me about it was, here was this machine that a very few people designed, about 4 in the case of the Apple ll. And they gave it to some people who didn't know how to design it, but they knew how to make it, to manufacture it. And they made a whole bunch of them. Then they gave it to some people who didn't know how to design it or manufacture it, but knew how to distribute it. They gave it to some people who didn't know how to design it, manufacture and distribute it, but knew how they had to write software for it. And gradually this

sort of inverse pyramid grew and when it finally got into the hands of a lot of people it blossomed out of this tiny little seed. It seemed like an incredible amount of leverage, and it all started with just an idea. Here was this idea taken through all of these stages, resulting in a classroom full of kids growing up with some insights and some fundamentally different experiences which I thought might be very beneficial to their lives. Because of this germ of an idea years ago. That's an incredible feeling A: that you know that you had something to do with it and B: to know that it can be done, to know that you can plant something in the world and it will grow and change the world ever so slightly.

I think you have a responsibility to do really good stuff and get it out there for people to use and let them build on the shoulders of it and keep making better stuff.

Have you ever thought about what it means to be intelligent? Like you meet your friend and he's pretty dumb and maybe you think you're smarter, and you wonder what the difference is? I've thought about this a little bit myself and one of the things it seems to me is memory, but a lot of it is the ability to sort of zoom out. Like you're in a city and you could look at the whole thing from about the eightieths floor down at the city, while other people are trying to figure out how to get from point A to point B reading these stupid little maps. You can just see it all out in front of you, you see the whole thing, you can make connections that just seem obvious because you can see the whole thing.

I think the artistry is in having an insight into what one sees around them. Generally putting things together in a way no one else has, and finding a way to express that to other people who don't have that same insight. So they can get some of the advantage of that insight that makes them feel a certain way, or allows them to do a certain thing. That's why bright people feel guilty a lot, cause they come up with stuff and say, "hey look at this" and than people give them dumb awards and they feel funny.

You can go hear stories about all these people, and the key thing that comes through is that they had a variety of experiences which they could draw upon in order to try to solve a problem, or attack a particular dilemma in a kind of unique way. The key thing is that if you're going to make connections which are innovative, to connect two experiences together, you have to not have the same bag of experiences as everyone else does, or else you are going to make the same connections. The only thing you really have in your life is time, and if you invest that time in yourself to have great experiences, that are going to enrich you, than you can't possibly lose.

I've always found something to be very true which is that most people don't get those experiences because they don't ask. I've never found anybody that didn't want to help me if I asked them for help. I've never found anyone who hung up the phone or said no when I called, I just asked. And when people ask me I try to be as responsive, I try to give that debt of gratitude back. Most people never pick up the phone and call, most people never ask. That's what separates sometimes the people that do things from the people that just dream about them. You got to act, and you have got to be willing to fail, to crash and burn. If you're afraid of failing you won't get very far.

There's a lot of forces in life that tend to funnel us down into this institutionalized path. And where people sometimes forget that they are very unique and that they have very unique feelings and perspectives. One of the things that you'll get a lot of pressure to do is to go in one very clear direction and believe in God and all that other stuff, and that's great, but don't ever walk by a Zen Buddhist because of that, sit down and talk and buy him lunch. There are a lot of people that have been real successful in other terms that didn't make a lot of money that you want to listen to very carefully. What you got to do is get different experiences then the normal course of events.

If you want to live your life in a creative way, as an artist, you have to not look back too much.

You have to be willing to take whatever you've done and whoever you were and throw them away. What makes you become conservative is realizing that you have something to lose. What are we, anyway?

Most of what we think we are is just a collection of likes and dislikes, habits, patterns. There's an old Hindu saying that comes into my mind occasionally: "For the first 30 years of your life, you make your habits. For the last 30 years of your life, your habits make you."

At the core of what we are is our values, and what decisions and actions we make reflect those values.

Most people that are able to make a sustained contribution over time rather than just a peak are very internally driven. You have to be because in the ebb and tide of people's opinions and of fads there are going to be times when you are criticized. Criticism is very difficult, and when you are criticized you learn to pull back a little, and listen to your own drummer. To some extend that isolates you from the praise if you get that eventually to. The praise becomes a little less

important to you, and the criticism becomes a little less important to you in the same measure. And you become more internally driven. That is why it’s hard doing interviews and being visible: As you are growing and changing, the more the outside world tries to reinforce an image of you that it thinks you are, the harder it is to continue to be an artist. Which is why a lot of times, artists have to go, “Bye. I have to go. I’m going crazy and I’m getting out of here.” And they go and hibernate somewhere. Maybe later they re-emerge a little differently.

One of the funny things about being bright is everyone puts you on this path, go to high school, go to college. I’ve heard about some kid that’s 14 and on his way to Stanford and that's great that’s sorta out of the ordinary. But you might want to think about going to Paris and being a poet for a few years you know. Or you might want to go to a Third World country, I’d highly advise that, and see people and lepers with their hands falling off and all that stuff, it’s very much worth doing. Or fall in love with two people at once.

We’re always talking about following your passion. But we’re all part of the flow of history.

You’ve got to put something back into the flow of history that’s going to help your community. We all have a short period of time on this earth. We probably only have the opportunity to do a few things really great and do them well. None of us has any idea how long we’re going to be here. Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma - which is living with the results of other people's thinking. Don't let the noise of others' opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition.

They somehow already know what you truly want to become. Everything else is secondary.

Sometimes life's going to hit you in the head with a brick. Don't lose faith. You've got to find what you love, and that is as true for work as it is for your lovers.

Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work, and the only way to do great work is to love what you do. If you haven't found it yet, keep looking, and don't settle. As with all matters of the heart, you'll know when you find it, and like any great relationship it just gets better and better as the years roll on. So keep

looking. Don't settle.

There are a zillion things I wish I'd done differently. I’m just a guy who probably should have been a semi-talented poet on the Left Bank. I sort of got sidetracked here. But I think the things you most regret in life are things you didn't do. What you really regret was never asking that girl to dance. In business, if I knew earlier what I know now, I'd have probably done some things a lot better than I did, but I also would've probably done some other things a lot worse. But so what?.

It’s more important to be engaged in the present, to look at what's affecting you right now and be curious about it even if it's bad.

I'll tell you something that makes you look at things differently. Once you have kids, it doesn't take a very big leap to realize that everybody is a kid.

Everybody came out of their mother and was a baby, and hopefully everybody was loved by somebody as much as you love your kids. That may not sound profound, but a lot of people forget that.

When I was young, there was an amazing publication called The Whole Earth Catalog, which was one of the bibles of my generation. It was created by a fellow named Stuart Brand in Menlo Park, and he brought it to life with his poetic touch. This was in the late Sixties, before personal computers and desktop publishing, so it was all made with typewriters, scissors, and Polaroid cameras. it was sort of like Google in paperback form thirty-five years before Google came along. It was idealistic, overflowing with neat tools and great notions. Stuart and his team put out several issues of The Whole Earth Catalogue, and then when it had run its course, they put out a final issue. On the back cover there was a photograph of an early morning country road, the kind you might find yourself hitchhiking on if you were so adventurous. It was a beautiful shot, and it had a caption that really grabbed me. It said: ‘Stay hungry. Stay foolish.’ It wasn't an ad for anything--just one of Stewart Brand's profound statements. It was their farewell message as they signed off. I have always wished that for myself and now I wish that for you, ‘Stay hungry. Stay foolish.’

One last thing…

I was diagnosed with cancer in 2003. I had a scan at 7:30 in the morning and it clearly showed a tumor on my pancreas. I didn't even know what a pancreas was. The doctors told me this was almost certainly a type of cancer that is incurable, and that I should expect to live no longer than three to six months.

My doctor advised me to go home and get my affairs in order, which is doctors code for "prepare to die." It means to try and tell your kids everything you thought you'd have the next ten years to tell them, in just a few months. It means to make sure that everything is buttoned up, so that it will be as easy as possible for your family. It means to say your goodbyes.

I lived with that diagnosis all day. Later that evening I had a biopsy where they stuck an endoscope down my throat, through my stomach into my intestines, put a needle into my pancreas and got a few cells from the tumor. I was sedated but my wife, who was there, told me that when they viewed the cells under a microscope, the doctor started crying, because it turned out to be a very rare form of pancreatic cancer that was curable with surgery.

I was very very lucky, and I got a very great lesson in the recuperative ability of the human body, which is way beyond anything I thought. I also got a wonderful experience of a lot of people sending really great wishes my way. And I will always remember that for the rest of my life.

I had been losing weight throughout 2008. The reason was a mystery to me and my doctors. I decided that getting to the root cause of this and reversing it needed to become my #1 priority. Fortunately, after further testing, my doctors thought they found the cause—a hormone imbalance that was “robbing” me of the proteins my body needs to be healthy. Sophisticated blood tests confirmed this diagnosis.

I learned that my health-related issues were more complex than I originally thought. In order to take myself out of the limelight and focus on my health I decided to take a medical leave of absence until the end of June.

One of the things that came out most clearly from this whole experience with cancer was that I realized that I love my life. I really do. When I was diagnosed with cancer, I made my deal with God or whatever, which was that I really wanted to see my son Reed graduate.

I've got the greatest family in the world, and I've got my work. And that's pretty much all I do. I don't socialize much or go to conferences. I love my family, and

I love running Apple, and I love Pixar. And I get to do that. I'm very lucky. So like anything like that it was pretty awful but it had a few blessings in disguise.

The last few years have reminded me that life is fragile. Having lived through it, I can now say this to you with a bit more certainty than when death was a useful but purely intellectual concept, no one wants to die. Even people who want to go to heaven don't want to die to get there. And yet death is the destination we all share. No one has ever escaped it.

I've always felt that death is the greatest invention of life. I'm sure that life evolved without death at first and found that without death, life didn't work very well because it didn't make room for the young. Who didn't know how the world was fifty years ago. Who didn't know how the world was twenty years ago. But who saw it as it is today, without any preconceptions, and saw and dreamed how it could be based on that. Without death there would be very little progress. It is life's change agent. It clears out the old to make way for the new. Right now, the new is you. But someday, not too long from now, you will gradually become the old and be cleared away. Sorry to be so dramatic, but it's quite true.

Remembering that I'll be dead soon is the most important thing I've ever encountered to help me make the big choices in life, because almost everything: all external expectations, all pride, all fear of embarrassment or failure, these things just fall away in the face of death, leaving only what is truly important. If you're going to leave anything behind its going to be your kids, a few friends and your work. So that's what I tend to worry about. Remembering that you are going to die is the best way I know to avoid the trap of thinking you have something to lose. You are already naked. There is no reason not to follow your heart.

When I was 17, I read a quote that went something like, "If you live each day as if it was your last, someday you'll most certainly be right." It made an impression on me. And since then, for the past 39 years, I have looked in the mirror every morning and asked myself, "If today were the last day of my life, would I want to do what I am about to do today?" And whenever the answer had been "no" for too many days in a row, I knew I needed to change something.

And now as I am looking back on my life, and reminisce about the things I have done, I can't help but think:

OH WOW. OH WOW. OH WOW.

***