Oral History of Carl Bass

Interviewed by:
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Douglas Fairbairn: It's October 18th, 2022. We're at the Computer History Museum in Mountain View, California. My name is Doug Fairbairn, and I'm here to interview Carl Bass. Carl, welcome, and we're delighted to have you here.

Carl Bass: Thanks. It's a pleasure to be here.

Fairbairn: So, the way that we normally proceed is that we start from the beginning and go through your life story. The major focus in the end is going to be on your work in Autodesk and related areas, but we always find it to be interesting and sometimes very elucidating to understand sort of where you came from and what influences steered you in the direction that you have gone; and I know you have some other rather interesting, completely different forks in your life in terms of things you're active in and people are always very interested to hear the non-business part of people's lives, so we'll explore that as well.

Bass: Sure.

Family History and Education

Fairbairn: So, let's just start. When and where were you born? Tell me little bit about your family growing up. What was the environment that you grew up in?

Bass: I grew up in New York City. I was born in Brooklyn. I was raised in Queens. My mom was a New York City school teacher and my dad ran a small business. He was a chemist who did flavors and perfumes.

Fairbairn: Who would he sell to?

Bass: Bigger companies that were making food and beverage, and to perfume companies. But it was kind of like the science behind it of how do you mix it, how do you get something that tastes like this but not like that? It was totally interesting, and he had a series of small companies,

Fairbairn: So, he was an entrepreneur himself.

Bass: He was. He was an entrepreneur his whole life. I think he did what's now common. He went and worked for the big company in the industry for a handful of years and then said, you know, "We can do this better," and he went off with a bunch of friends he worked with and they started the first company, and most of them stayed together and started multiple companies together.

Fairbairn: Sounds familiar.

Bass: Exactly. Everything that we think is new is not really that new.

Fairbairn: So did he involve you in any way in the business or think you were going to take it over or anything like that?

Bass: No, not really in the business, but I did work there a lot during the summers, or days off from school, which was totally fun, because there's a little bit of the science part, in trying to decode what's in something, is it a known product; and then trying to figure it out and using various tools to analyze it. But what I really did a lot of was mixing stuff. So you take five gallons of this and five gallons of that and you pump it into that thing or you distill it into that and then you fill a 55-gallon drum and you put a label on it and you move it around with drum trucks and stuff like that, which was, for a kid, totally fun.

Fairbairn: So, what were the driving forces in the family? Were they dedicated that you would go to college and that sort of thing?

Bass: Yeah. I mean, I think it was very typical. The most important thing was education, and like I said, I came from a family of educators. My mom was a New York City schoolteacher. Both her sisters were New York City schoolteachers, and so the most important thing was education.

Fairbairn: What about siblings?

Bass: I have a sister who's younger than me, about seven years younger, and, and we grew up mostly in Queens. I grew up in a place called Bayside.

Fairbairn: This was a Jewish community?

Bass: It was a Jewish ghetto. I went to elementary school and like seven grades, six classes per grade, whatever that turns out to be in number of students, and I think there was one kid who wasn't Jewish in the entire school. Even the one African American kid was named Howie Goldstein.

Fairbairn: Got to fit in some way, huh? <laughs>

Bass: I mean, it was totally a Jewish ghetto, but, you know, as we went to junior high school and then high school there were all these ethnic communities that got mixed together; so that by high school it was a real mixture.

Fairbairn: So as you went perhaps into high school were there any teachers who were particularly influential in terms of your work, your dedication, your direction?

Bass: You know, it wasn't really high school. High school for me was in the 1970s, and there was a little bit of a dropout. What actually got me interested is I had some great elementary school teachers, and then in my junior year of high school I went off for the summer; I went to a summer program at Cornell and studied chemistry and a bunch of other stuff, and that kind of got me kind of turned around, and into what came next, and I eventually went to school at Cornell a year later.

Fairbairn: So, were you most interested in math or science or whatever?

Bass: Yes, I was definitely interested in math and science, and I went there not quite knowing what I was going to do. I ended up getting a degree in math. It was the thing I gravitated towards the most, but the interesting thing when I went it was in 1974, something like that. I spent a year or two at school. I was studying math. At the time the math department was seriously uninterested in computers, and that's probably even more polite. I mean, they just thought that any problem that you couldn't solve with a yellow pad of paper and a pencil wasn't worth solving and that these computers were kind of way below their intellects or something like that. And what was interesting, I dropped out of school for five years and when I came back, all of a sudden just to get my degree in math it had all these requirements in computers. The thing had turned upside down in that period between like 1975 and 1980, and so when I came back all of pt was after I had spent most of the last two years taking computer classes.

Fairbairn: We'll get to that five-year diversion in a minute. Had you had any introduction to computers before going to Cornell?

Bass: No.

Fairbairn: And they didn't steer you in that direction?

Bass: No, I didn't grow up with computers. It was fairly early, so computers at this time, there's not a PC quite yet. There are not the early things, and so when we start working with computers it's like we were talking about, it's digital equipment. You know, it's PDP-8s and PDP-10s and 11s and, and eventually VAXes and then it moves into the whole workstation era.

Fairbairn: So computers were not part of your interest, life, consideration, whatever.

Bass: Didn't know a thing about them.

Fairbairn: All right. So you're a year into Cornell. One year in or year and a half or something?

Bass: Year and a half.

Fairbairn: And something happens.

A Change in Direction: Building Things

Bass: As my friend describes it, I had breakfast with him, told him I'd meet him for lunch and then saw him four years later. I was young when I went to school. I didn't have a good reason for being in school, and so I decided there were more interesting things to do. I didn't quite know what those more interesting things were, but I was determined to go find them out,

Fairbairn: So, you got there early. You had skipped a grade?

Bass: Yes, yes.

Fairbairn: So, you were 17 or something going into college.

Bass: Yes, I was 17 and didn't have a real reason that I knew why to be there, and so I took off. I'd always had a small interest in building things, and so I kind of started driving across the country, picked up odd jobs doing carpentry. I worked on renovating an old theater in North Carolina. I then went to South Dakota.

Fairbairn: You just drove into a town and looked for jobs?

Bass: I wish it was that orderly. It's things like your truck breaks down, you run out of gas, you have no money. You're sitting at the bar, you look at the guy and he says, "Oh, I have a construction company. You want to work?" It's closer to that. And so I would get a job. I worked at Wounded Knee on the Navajo reservation building houses, which was for me a great experience. But I think sociologically it was an utter disaster. Taking people who had lived fairly far apart and putting them into suburban housing. It looked like Levittown. I don't think it really ended well, but I spent like six or nine months there and gathered up enough money and then made it to Seattle, and again, my truck broke down and I ended up in Seattle for a number of years.

Fairbairn: Now, were you on your own? You just set out on your own to do this?

Bass: Yes, there were different parts. I went with a friend for a part of this and a girlfriend for another part, but mostly I was just wandering around by myself.

Fairbairn: And how did your education-focused parents react?

Bass: They were remarkably tolerant. Let's put it this way. I don't think I could ever describe them as happy about it, but they were certainly tolerant, and they didn't give me a hard time about it. I went to Seattle and I kind of doubled down on learning how to build things; so I worked welding some big steel ships and I learned how to forge hand tools like chisels and swords and stuff like that. I worked in a woodshop and kind of attached myself to anything I wanted to learn how to do, and I built a bunch of stuff. I built a handful of boats and a number of other things. I took an occasional course or two at the University of Washington, but just mostly built things. And then I spent my summers working on rivers, being a river guide. So using kayaks and doing whitewater rafting.

Fairbairn: So when you were building boats, we talking little personal watercraft or were you talking big ships?

Bass: I did some work on some really big ships, like the big steel things, but the ones I built were mostly wood or wood and epoxy composites; and the biggest one was about a 36-footer. The smallest was like an 18-foot canoe. So somewhere between an 18-foot canoe and a 36-foot, various sailboats, and I sailed a bunch around Puget Sound and Lake Union and Lake Washington and stuff like that. After I spent my summers working on the rivers, I got this invite to go to a place back East which was up in Maine and it was a little bit like an Outward Bound program. During the winter a handful of people would build a boat, and during the summer kids would come up and you'd take them out and sail around the islands and eventually they'd have to do a solo and go to their own island by themselves, which for many of these kids who came from the city was the scariest thing possible. It was like, "You got to go sleep out there by yourself." So I did that for a handful of years and found my way. I went back to visit some friends in Ithaca, and somebody pointed out to me like, "When you drop out of college, after five years, if you don't go back you have to reapply," and I was like, "Oh, shit. I don't think they'll let me in." And I did have parents who really would've liked to see me finish, and I kind of finished up building this house, and I was like, "Okay. This seems like it's good a time as any," and so I went back to school, and I finished my degree then.

Back to Cornell

Fairbairn: So just in terms of time frame, what year did you enter?

Bass: I entered in 1974.

Fairbairn: And you left in 1975 or 1976?

Bass: Something like that.

Fairbairn: And you came back in 1981?

Bass: I think I came back in 1980. I've tried to reconstruct this but it's a little vague. I remember in 1976 I was in Boston. It was memorable because it was 1976, and I worked in a number of restaurants, and I cooked there and then I took off and did the carpentry and then the boat building and some of the metalworking and stuff like that.

Fairbairn: Boy, you got a whole raft of personal handcrafting skills, didn't you?

Bass: Yes, I totally did. And when I got back to school one of the things I did most days of the week I ended up playing basketball at lunchtime in the university gym. And the most meaningful acquaintance was one of the people who played basketball with me every day at lunchtime. He was a professor who was one of the pioneers in computer graphics. His name's Don Greenberg, and Don was one of the early, I'd say, you know, half dozen people who really pioneered the field. You go back and look, like the first cover with a computer graphic on it of Scientific American is Don and his students are e using it to render buildings. So doing architectural rendering with a computer, which at the time seemed as magical as crypto or whatever. But I was sitting there one day after we had played basketball and it was summertime and I had a terrible summer job. I was picking rocks out of a cornfield for some agricultural experiment, but we would just pick rocks all day because there wasn't that much science to it. Like you plant the plant. It's going to take eight weeks or whatever to grow and so in between you pick rocks, and so it was a miserable job at minimum wage, and I was sitting there with Don, and he said that he was working on this paper and then said, "You're studying math." I said, "Yes." He says, "Well, there's nobody really in my lab who can do this. It was a paper that had been published by NASA on some algorithm and he said, "Would you like a job doing it?" and it was inside; it was air-conditioned, and it paid five times as much.

Fairbairn: Pick rocks. You do the math. Pick rocks. Do math.

Bass: There was no comparison. And so I was like, "Yeah, sure," and it was interesting, and this was at the time a state of the art lab and it had all this digital equipment stuff ;the Computer History Museum must have bunches of these old frame buffers and stuff.

Fairbairn: So this is 1980? So do you solve his problem?

Bass: Yes, it was 1980 and I solved his problem. We implemented it on the PDP, and in doing it I actually got to know one of the guys who was a staff member at the lab, and he and I became friends. I graduated about a year later and then my friend Gary said he wanted me to do computer stuff with him, and at first I was reluctant. I wanted to go back to building things.

I was like, "I got my degree. I'm good," and the last things I ended up doing was a lot of math and a lot of sculpture. Just to get out of school I think like the last six weeks, was just doing all the sculptures that I had procrastinated on. I remember there was a big party at the end.

Fairbairn: So were you taking art classes, sculpting classes?

Flying Moose and Ithaca Software Graphics

Bass: Yes, it was classes, and I just remember going to the slope at Cornell and there was a big band and everyone celebrating. I laid down against the tree and slept for like eight hours because I probably hadn't slept much in the six weeks leading up to that, But I met my friend Gary and he kept trying to convince me to work with him, and first I did a little bit part-time but within a year we said, "Okay, let's do this." And it was the time all kinds of departments and businesses first getting their hands on some kind of minicomputer and trying to figure out, "What does it mean?" Our bias was to all those things that had some real scientific or engineering underpinnings and so we started a company, and we mostly did research. I mean, it's the things that now are typical, but at the time these were novel things. We did some on architectural design, some on oil and gas exploration. We did a big project on biomedical research for implanting prosthetics. So it was analyzing CAT scans. At the time, the procedure was pretty primitive. They'd kind of open you up, run down the hall and see if they had a piece of metal that fit and somebody figured out, "You could do an actual 3D physical reconstruction. You could do finite element analysis." There were lots of tools you had to make this whole procedure go more smoothly.

Fairbairn: So did you bootstrap this company? Did you get financing? ...

Bass: We totally bootstrapped it.

Fairbairn: So you went out and got jobs. People hired you to do this, that or the other thing?

Bass: It was a combination of we knew how to run computers and we knew how to administer it. Plus, we knew a bunch about the graphic side, and so everyone's trying to do scientific computing of one form of another. What we really first started to build the business about was taking research that had been done at the university, and most of the professors would have some corporate partners, corporate sponsors. They'd want to commercialize it. So, for example, the work we did on the prosthetics was work done with a professor at Cornell, but it was with the Hospital for Special Surgery in New York and Johnson & Johnson, and many of the other things were with big, well-known companies, and it was just commercializing research that came come out of the university.

Fairbairn: And you did this in Cornell?

Bass: Yes, in Upstate New York. It's in Ithaca.

Fairbairn: So what was the name of the company when you started it?

Bass: It was called Flying Moose Systems and Graphics Ltd, which lasted until we changed our business model. What happened is we did consulting for about half a dozen years, maybe five years, and we'd grown into a company with a large number of consultants. But like any small consulting business what we eventually found is that me and my partner did less and less of the work and more administering clients and hiring and firing people and it was not really what we wanted to do. We'd really done this as a way to stay in a town we loved to live in and it was more of a lifestyle; and it turned into something else, and then we realized like, "Okay. The way this works is if you build a product, it's really much better than selling your hours," and so at that point we took the money that we had made doing consulting and we realized that there was a need for commercial products and so we built tools for developers to do computer graphics…from simple interactive computer graphics up to photo realistic rendering.

Fairbairn: And you renamed the company?

Bass: Yeah, we renamed it. In a brilliant flash of insight we renamed it Ithaca Software. I still remember when this guy tried out our software, loved it. He was actually a researcher with DuPont and he called me and a day later this guy from GE Corporate Research called and said, "We'd really like to buy your software, but I really can't go to my boss and say, 'I need a check for however many thousands of dollars for Flying Moose.'" And so I said, "Okay," and we talked. We eventually came up with Ithaca Software. Yes, a real spurt of creativity. The good news is URLs were really easy to get back then. For years afterwards we owned Ithaca.com, until in some show of benevolence, we gave it to the city of Ithaca.

They really wanted it. But we were Ithaca.com forever, and I still also remember when a customer called and placed their first order and the guy said, "What's the order number?" and I'm like... I put the phone on hold, and I looked and I went, "Ah, I need a number," and our first order became 747 and my partner says to me, "Why'd you come up with that?" "Well, I could remember it," you know, because of the airplane. I really didn't want to tell him he was number one, that we'd never sold anything before.

Fairbairn: You couldn't use 0001.

Bass: That just seemed like the wrong thing to do. But that was kind of how our business learning went. It was like this little bit of intuition. But not a lot of experience, and we spent a lot of time, because this is early 1980s and there's not a lot of experience with software; people didn't even understand you could make money with software, and all of the surrounding support, like accountants and lawyers, really didn't understand software, they didn't understand the intellectual property.

Fairbairn: Especially in Ithaca, New York.

Bass: Especially in the middle of nowhere. The accountants didn't understand it, and not the finance people, and so we were kind of in the middle of nowhere and I think for better or worse we did what Silicon Valley has done with entrepreneurs all the time. We just tried to invent everything from scratch. And the good news when you do that is that some fraction of the things you really have some ideas about and you do better, and then there's tons of things you screw up on and everyone had already done it better than you, but you think your unique, novel way is good, and to this day I think founders are still doing that.

Fairbairn: So how big did Ithaca Software become?

Bass: It got to be about 75 people.

Fairbairn: It was a real company.

Bass: Yeah, millions of dollars. Somewhere in the middle, I think it was right around 1990, we'd gone from the first half dozen years doing consulting. Now we're building a product. The place where we're mostly selling it is to companies who are doing scientific research, engineering software or a little bit in the entertainment, which is mostly where computer graphics had gone. There were two paths, one on the entertainment, one on the science side, and at that point we realized that we probably needed to raise some money, and so it was a combination of things. We were, you know, we'd bootstrapped the entire business. We were also living in Upstate New York. There's a bumper sticker for Ithaca that says, "Centrally Isolated," and it's totally true. It's two or three hops to fly anywhere, and all of our customers were software companies, and so they were almost entirely in California or in Boston.

Moving Ithaca Software to California

So, we had to raise money. I was spending way too much time spending nights in the Pittsburgh airport when flights got canceled back to Ithaca. One of the guys who joined, his wife felt like Ithaca-- she was fifth-generation San Francisco-- and she thought that was some kind of prison being sent to Upstate New York, it was the Gulag, and so all that kind of conspired to say, "Let's go raise some money. Let's go move." We started looking for money. We were involved with a number of companies who were on the verge of buying. It was this chicken and egg. They were a little afraid to use software that came from a company that had no funding, and eventually we went in this roundabout way and I remember talking one day to the folks at Autodesk and all the venture capitalists we were talking to were very excited about the possibility that Autodesk would become a big customer They were waiting to hear that and we were just going around in the circle and eventually one of the guys who was a VP at Autodesk

said, "How much money you looking to raise?" and it was a handful of million dollars, which at the time seemed like real money.

Fairbairn: Yes, that's real money. Absolutely.

Bass: And he said, "Is that all you want? We'll invest," and so in 1990, Autodesk bought 20 percent of Ithaca Software.

Fairbairn: Okay. Twenty percent.

Bass: And then we spent most of the money in three more years or so working independently, and by then we were starting to do better. We were funded and we were starting to provide software to all of Autodesk's competitors. They didn't particularly like it, and so it kind of got awkward and then they came to us one day and said, "What about if we buy you;" this is 1993. Computer graphics is getting more interesting, so at the time we entertained offers to sell the company to Silicon Graphics, Sun Microsystems, Microsoft and Autodesk, and in the end we decided that Autodesk was a good group, especially at the time, and it just seemed like the right fit at the time, so in 1993 we sold Ithaca Software to Autodesk.

Fairbairn: So how did that work geographically?

Bass: In 1990, as part of the investment, we had moved to California.

Fairbairn: But you had all these employees embedded in New York, right?

Bass: In 1990, we took the core group, and everyone moved to California.

Fairbairn: Wow.

Bass: A handful of people stayed behind, a handful of people didn't join us, and then we kind of recruited lots of people in California. We moved to the Bay area. We hooked up with a couple people who were already here, and we ended up setting up headquarters in Alameda, and we worked out of Alameda for a number of years.

Fairbairn: Well, that must've been a shock for everybody. Most of the new people you recruited from the local area, right?

Bass: Yes. But you know what also worked? There were two guys I can think of right now who we'd been very close to. We always were really close with Cornell University. We knew who the good students were and a bunch of them really wanted to work with us. None of

them really wanted to stay in Ithaca, so we had a number of people who had never worked with us but joined us when we moved.

Fairbairn: So, California was actually a recruiting tool.

Bass: It totally was. So it ended up working well, and so when we got here, we had other connections in the industry and so it was way easier to hire people here. It was also easier, like I said, all that infrastructure of legal advice and financial advice was available.

Fairbairn: Everybody knows the drill here.

Bass: Yes. Even in 1990.

Fairbairn: I was starting a software company in 1990 and it was like, "Oh, yes, everybody knows this drill. You do this for startups," and, yes, "Here's how you lease the spaces," and "These are the lawyers, and these are the accountants." Everybody knows the drill, so you don't have to explain it. You don't have to convince them that startups can be successful or anything. It's just like, "Oh, yes, let's go."

Bass: It was totally easy, and it felt, in comparison, where everything else up until that point was this self-learning, and like I said, we made plenty of mistakes teaching ourselves how to do this stuff, and there was lots of value in it, but it was nice occasionally, particularly as the company was growing, like, "Okay. I don't have to read every contract. I don't have to do every one of these things, Someone else knows how to do it and knows how to do it way better than I know how to do it,"

Autodesk Buys Ithaca Software

Fairbairn: So how did that integration go, integration of you and integration of the company? And the software, and the business?

Bass: So the integration of the company went reasonably well. We had a bunch of expertise in something that was, this kind of growing field of computer graphics and up until then Autodesk had had an interest, but that wasn't -- as I think you've heard other parts of the story, I can't remember, is it 17 or 19 founders? They were mostly coming from a big computer systems background and they kind of latched on to this one product that they called AutoCAD, which its nature was graphical.

Fairbairn: It was like this communist commune that came together ....

Bass: Everyone thought it was kind of communism, but most of the people were certainly not of that political persuasion. It was more like this crazy, smart engineering, libertarian thing and they all threw in bunches of money, and the crazy part was, you know, some people had $500, and some people had $5,000 and the difference that it made later on was night and day as the company became successful.

Fairbairn: So who was CEO coming in?

Bass: So when we joined, Carol Bartz had just become the CEO. She'd taken over in '1993, and that was the year the company was bought. So, that first 10 or plus years one of the founders, John Walker, who was by all accounts the leader of the gang, he was the CEO and then turned it over to Al Green and then from Al it went to Carol who had just been hired and she'd previously worked at Digital Equipment and then Sun Microsystems and she'd come from running sales there, and so the integration with the company went fine.

It was never my goal or intention to work at a big company or stay at a big company, but since we had sold the company, I had committed to stay for two years and make sure that everybody, all the employees had a good home, and there's a funny story, it's been retold now a number of times, where we got to the second-year anniversary and Carol and I had an interesting relationship. I mean, here's the interesting part of the story. But it kind of typifies who Carol was and our relationship. First thing was even to sell the company to it, I had to go to this meeting. So at the time, you know, my hair's down to here. I have shorts and Birkenstocks on or some kind of flip-flops and I go into her office. Remember, she's comes from a much more corporate background and she's taking this motley group of 17 founders and trying to turn it into a company, and so another one of similar looking creepy guys shows up in her office and she starts out with a, "Okay. I hear you have stuff we don't have. What makes you so smart?"

Fairbairn: That's Carol.

Bass: So I said, "Nice to meet you too," and then she goes, "Yeah, I hear you're kind of hot shit, so tell me what you know that we don't." But what really endeared Carol to me was at the time, so this is PC software. AutoCAD's 10 years old at this point and they decide they need to redo it, and they start on this massive rewrite and, as you know, the Valley is filled with people who try to do massive rewrites on big chunks of software that don't go well. The usual thing they do is to keep adding more people and adding more money and nothing's helping. And anyhow, at one point, Carol, who has a technical background, but has mostly been on the commercial side, she calls this meeting of all the founders and engineers, and she says to me, "Why don't you come along." And I'm pretty new to this and I'm sitting there, and I spend a couple hours, and this is probably early summer, and they're talking about this release of software, and they've gone through all the problems and project managed it.

Fairbairn: Are you involved in this release or just sort of on the periphery?

Bass: We're on the periphery. We're trying to help upgrade the graphic system, and there's some people rewriting the database components and other people rewriting the UI, and it's moving from DOS to Windows and all that entails, and it's June or whatever and Carol in her inimitable style pounds the table at some point and says, "Okay. I've heard what everyone has to say. This thing's going to ship by Thanksgiving." I start laughing. Okay. Now she has to make an example of me in front of everybody. What's so funny is that this thing isn't shipping this Thanksgiving. I said, "It may ship next Thanksgiving, but it's definitely not shipping this Thanksgiving," and she's like, "You sure?" I said, "You want to bet?"

So this is a meeting with 25 technical people there. And she said like, "How do you know?" I said, "Look, because for a number of years we've been around helping other software companies ship products, integrate new graphics into it, change their databases. I'd watched dozens of these projects, and say, "Okay. It's June or whatever. There's not a single working copy of all these pieces coming together. Each of the components is barely built. There's no way by November you're going to ship this to millions of people." So, we go through this whole thing and out of that kind of adversity we become friendlier, and as it turns out, the product eventually ships about a year later, the following Thanksgiving, and that was this infamous release 13 of AutoCAD, which, you know, nearly killed the company. Then I and a bunch of people I worked with became in charge of the next release of AutoCAD and worked on release 14 of AutoCAD and a couple of subsequent releases and then started working on some of the other products.

Fairbairn: But didn't you leave and then come back?

Leaving Autodesk -Temporarily

Bass: Well, yes. So this is what happened. So after the two years-- and Carol's outspoken, I'm outspoken. We tolerate each other for a while. It's about the two-year anniversary and I guess I'm in a bad mood one morning, and Carol's also in a bad mood, and she says something, and I say how screwed up the company is. She just looks at me, says, "You're never going to be happy here, are you?" I said, "No," and she says, "You're fired." I go, "I quit," and she says, "You can't quit. I just fired you."

And I remember she walks out to her assistant, and she says, "Carl's fired." I'm like, "Okay," and I'm already, you know, kind of plotting my exit because it's my two-year anniversary and everybody else is well situated; and in just this crazy twist of fate, I had a bunch of personal stuff going on at the time. My dad was dying from cancer in a hospital in New York and my first son was being born but there were lots of complications with his pregnancy, so my wife spent, I don't know, six, eight weeks in a hospital in Berkeley and my dad was in the hospital in Manhattan. So, I get fired or I quit or whatever you want to say happens and I can care less, you know. I'm going off and my wife's one place and my dad's the other place and so I just shuttle back and forth between the hospitals for a number of months and then just as my son's being

born and my dad's passing away, somebody calls me from Autodesk and says, "We're starting the next release of AutoCAD and we would like you to work on it," and I said, "Well, that's interesting, but I don't think it's really up to me." So despite thinking I quit, you know, I was fired.

And as it turned out, Carol had fired me, but it was more in name only. Nobody did any paperwork. She just wanted to yell at me, and so I was still like kind of an employee, so I said, "Look, I'll call Carol." I mean, I'd be interested in doing it. One of the reasons that truly motivated me was that my son was born, and he weighed just over two pounds, two and a half pounds, and so he was 10 weeks early, and even at the time, he was like a multi-million-dollar baby. The neonatal intensive care is incredibly expensive. I had no other way to have health insurance, so all of a sudden when they called and said, "Would you work on this next release of software?" I'm thinking, "This sounds pretty good."

Fairbairn: So were you actually technically still an employee during all this time? You weren't getting paid?

Bass: I had never gone to work. Carol would've never let me in the building. But like nobody had really followed through. After being fired, I never expected to go back until that phone call came and said, "Would you do it?" and I said, "Look, I'll call Carol or you can call Carol. If she's okay with it, this would really scratch my itch." So, I had one of those meetings with her where she told me essentially that I was suffering from the equivalent of idle hands. That when I'm working, doing stuff, I'm really a good employee, but otherwise I'm the absolute worst, and she said, "So if you agree to come here and work and behave yourself, I'd love to have you. But otherwise don't step foot in the building," but that was only years later... She didn't know at this point why I wanted to come back to work, that I really need healthcare. She knew all about my son being born. She knew all about Jake, but she didn't put two and two together, and so like years later we're at some event and I'm sitting there talking to her husband and I'm telling the story, and he's laughing hysterically because he realizes why I really came back. And then he says, "Carol, do you know--" and she comes over and she says, "You little shit. I can't believe the only reason we've worked together all these years is because you needed health insurance."

Fairbairn: Well, things worked out.

Bass: There's some truth in that. That's sometimes the way life works out. So I worked there from when the company was bought in 1993, and I stayed until about 1999 or 2000, which was about six years and I worked on a lot of things.

Fairbairn: Was that better in that six years? Had you mellowed or had they mellowed?

Bass: Carol and I had a perfectly good working…I mean, we had a great working relationship.

Fairbairn: Lot of mutual respect.

Bass: Yes, and I worked with my cousin and a couple of other people, and we took over this project and release 13 had almost killed the company. Release 14 was a huge commercial success. Carol was just making the place more professional. There was huge skepticism from the salesforce that the engineering team could build anything, so she was the lead blocker on everything, making the salesforce come around and cooperate and the marketing group and so she did all that and we worked on the software and then we had a number of really successful commercial releases in a short time and then, you know, it's 1999, 2000, dot-com thing is starting, and I, who had never really planned on staying that long, thought, "Okay. It's time to go do the next thing,"

Starting Buzzsaw and Selling it to Autodesk

Fairbairn: Which was what?

Bass: So I did this thing, which was way ahead of its time, which was managing construction projects online. It was a company called Buzzsaw, and that was 2000. It's now 2022, and there are now companies going public doing the exact same thing. So, we only missed that one by a couple decades. It was a great idea at the time. It needed to be done, and like many things in the Valley, the third time around it was successful.

Fairbairn: I was at Xerox PARC in the 1970s and everybody said, "Well, why didn't you get this commercially successful?" I said, "We were 20 years too early." It's not hard to miss by 20 years when you're doing really advanced stuff.

Bass: It really wasn't, and particularly as you start going out to like more traditional industries, I mean, just having the connectivity, the bandwidth, it just wasn't there. You know, the portable devices, the ruggedized portable devices, enough computing power on the outside. I mean, you just have to put all the things together. You know, in retrospect, it's not that crazy that you were that far ahead, but even at the time it had modest commercial success, people saw what the value was. But it wasn't enough, and then two, three years later-- and this has got to be like 2002, I guess, Autodesk buys my business [Buzzsaw] again. So this is the second company I sold to Autodesk.

Fairbairn: And you were back again.

COO of Autodesk

Bass: Yes, I was back again. Same old thing, but by then it was different, to answer your question more directly. I'd probably mellowed a lot more by then.

Fairbairn: You understood more dimensions of the problems of managing a company.

Bass: Yes. And it was the same conceit that many founders have, like, "Okay, we're small and there's a handful of really smart people, and we can kind of do anything," and all of a sudden you have this big, bloated bureaucracy and everything seems to take forever, and nobody can decide anything and everything you do costs 10 times more than it needs to. But it's no different today. You walk into any of the places down the street here and, those same arguments are going on. but I'd begun to appreciate that you couldn't do some of the same things like pull the PCP board and solder something together and write some software. When you're managing thousands of people around the world, and having something standard, you don't have to build your own copy machine, you can buy a copy machine from companies like Xerox. It's kind of that mentality, "Well, we're smart. We can do whatever the heck we need to do. And on the other hand it's like, "No, your business is not really doing this, let's take advantage of all the infrastructure that's out there." So I came back in this is 2002 and it's slightly more with a different eye. Carol's getting to the end of her tenure at Autodesk and while not publicly known at the time, that was kind of the conversations we were having. She wants me to take over from her and start doing more of that, and it was a combination of she wasn't quite ready to leave. The board certainly trusted her. She was very well-known and very well regarded in the industry, and I'm an obnoxious upstart and the board's not so sure that I can take over the company. So, we work out this kind of transition over a handful of years after I come back.

I actually spent the first year was-- it was really interesting-- I'd been out of the company, but had been serving the same kind of industries, kind of observing where there were opportunities. I just spent the first 6 to 12 months kind of figuring out what had changed inside the company, trying to convince Autodesk that its ability to do certain things was way more than they saw and that there were way more opportunities than they appreciated. And that Autodesk's influence in the market was way greater than they thought, and the inside people undervalued many of its assets. I think before I left ,I had been the CTO. I came back and it was like some kind of strategy job and then I became in charge of a number of product divisions and then the marketing group and then the sales group and then I became the COO and then eventually there was an official handoff at some point.

Fairbairn: So when did you become COO?

Bass: Probably 2003 or 2004, somewhere in there. Pretty soon after I came back. I mean, there was a gradual thing where I just got more and more responsibility, but Carol and I worked hand in hand for this period between like 2002 and 2006.

Fairbairn: And by then the dot-com ripples, waves had subsided?

Bass: Golfballs.com was gone along with all the other ones.

Fairbairn: Things had settled down and business was back. Did the business take a huge dip in the 2001 period?

Bass: You know, the business didn't take a dip but the financial market's interest in the business disappeared. Everybody wanted to be interested in these new businesses. Some of them were well worth being interested in but then there were others that were complete nonsense. But if in 2001 you're a traditional company, an Autodesk an Adobe, or Microsoft, you're pretty irrelevant. Certainly to the financial markets. By 2004, 2005, things were back on track. The business had stayed healthy all through it.

Fairbairn: And you take over as CEO in 2006?

Bass: Yes, yes.

Fairbairn: And then in 2008, the shit hits the fan again.

Bass: It's miserable.

Fairbairn: Tell me about the lead-up to that and sort of how it played out.

Backdated Options

Bass: Well, the first thing is that I take over in 2006 officially. In 2005, Carol and I are really dividing a lot of responsibility; and in 2006 I take over. The first thing is that the company gets caught up in the stock option scandal of that period, the backdating of stock options. I think I was in the job only two months when I realized that Autodesk had been backdating stock options at the advice of its outside counsel and its auditors. And I go through this crazy thing. This was no way to become a first-time public company CEO, but two employees come to me and tell me, "I think this thing I've been reading about in the magazines and Wall Street Journal, this backdating, I think we've been doing it." I'm like, "What?"

Fairbairn: Their thoughts, huh?

Bass: And I'm like, "Huh. What do I do about this?" So I remember I go home that night, I'm in the basement and I'm sitting there and as a student of math I go, "How would I figure this out?" So, at the time you download Yahoo! Finance to get the closing stock price and

I rank each day of the month and figure that we should average out at, you know, if there's 20 working days, we should average out at about 10, and there's a period where we're the 17th lowest price or the 3rd lowest price, and then all of a sudden we hit this period and it's the lowest price in the month. The options are handed out and next month it's handed out at the second-lowest price, and I'm doing this month by month and with each one I'm yelling, "Shit. Shit," and it goes on for like four years, and then all of a sudden it goes back to not backdating options.

Fairbairn: You mean, before you took over as CEO it had changed back?

Bass: It had already changed back. Again, at the advice of outside counsel and the auditors.

Fairbairn: Right. "Oops. This isn't what we should be doing, so we'll quietly revert."

Bass: Exactly. So we find out we're doing it. I go, "Oh, shit." I remember going to Carol and saying, "Carol, we need to go to the board." Turns into a fiasco in which essentially for over a year the company couldn't report earnings because you couldn't account for the expense of the stock options, so you couldn't fully do an income statement and so you couldn't actually report earnings.

Fairbairn: You couldn't sort of do the calculations, figure it out quickly what the difference was?

Bass: No. It turned into a whole thing. I don't know how involved you were at the time.

Fairbairn: I was not in an executive position at that time, so it didn't directly affect me.

Bass: You are so fortunate. We went to board meetings that had more attorneys there than board members. Everybody was pointing fingers at each other. As I came to learn it was our outside counsel and our auditors who had given the go ahead. They started ducking. They were trying to avoid any responsibility for this, so it just turned into a thing and the SEC said, "You don't have your expenses; but because it's not illegal to back-date the options, you just have to account for it." And you have to go back and do all these calculations.

Fairbairn: So it took a year to go back and redo all the calculations?

Bass: And to work through all the various interests that didn't want certain things to come to light. And one of the people working on the case said, "Look. Your case is no worse than any other." It was famous in the Apple case, and the entire Valley said, "Your situation was no worse than any other. Your board was way worse." So I had quarter after quarter where I

had to do my initial earnings calls, but I couldn't report earnings. And I had to kind of give hints and it was awful.

Fairbairn: Wall Street does not like uncertainty or lack of transparency.

CEO of Autodesk: 2008 Financial Downturn

Bass: Wall Street did not like it, and we had such acrimony on the board because everybody's interests had diverged at that point and people were busy covering their ass. But we got through that period. I said to myself, "we're finally out of the woods." Business is picking up. We're doing well, and then the global financial crisis hits in 2008, and that tanked the business. I mean, Autodesk is in the business of building software so people can build physical things, and I still remember crazy scenes, and I'm sure you do too, where I had employees who were hoarding gold or going out and buying guns and building vaults in their garage, because people thought the world's coming to an end, and in that environment, nobody's buying software. Who's going to build the next bridge or build the next airplane.

Fairbairn: Or house. I understand you actually had some foreshadowing of this, but you didn't know it.

Bass: Yes. The interesting thing about a business like Autodesk and some of the other companies, like Microsoft and Adobe, even though we don't sell the same kind of software, we always had the same kind of feelers in the market, because there was the enterprise side of it where big companies buy from you. But we also had this other business where small machine shops and landscape architecture buy our software, and so you have hundreds of thousands of these customers and that statistical part was a great indicator of what's going on in the market. So we had a great kind of statistical look at the beginning of that year, the year that Lehman Brothers collapsed. All of a sudden, the head of sales comes to me and says, "Our business is off, but our enterprise business where salespeople are standing in front of customers is still doing fine," and all through this year we're going, "It's going down. We're going down." The stock market's not happy about it because we see it and we're telling them something that's not being reflected everywhere.

Fairbairn: Something's wrong with you.

Bass: Yes. And then Lehman Brothers hits and all of a sudden, the Fed announces, "We're in a recession." and we're like, "Oh, thank God." We've only known this for nine months, but we did see it coming with your kind of run-rate business and being able just to do the math on it. It was a very good finger into the wind of what's going on.

Fairbairn: Had you begun any cutbacks, or anything based on that?

Bass: We hadn't really, but we knew it was coming and so when Lehman Brothers hit, right around then we say, "Look, we got to take a bunch of cost out of the business," and so we reduced almost a quarter of the cost of the business. I remember like reducing the budget, the expense budget, by about $400 million at the time.

Fairbairn: Does that mean 25 percent of the employees?

Bass: Something like that.

Fairbairn: Pretty much where all the expense is, right?

Bass: Well, there's all the other things you can do that make you, as an executive, really unpopular. You know, like take away the free food and drinks, but that only gets you so far. So we cut way back. It was, you know, a really difficult time but I think as many people have done these things, the company came out of it way stronger, way more purposeful, way more determined, way more focused on what it needed to do, and so when we came out of it the company was fine.

Fairbairn: So, were you losing money during that period?

Bass: No. We didn't lose money because we cut enough.

Fairbairn: And you cut soon enough.

Bass: But it was a huge dip in revenue that the company probably hadn't ever seen in its life. It was a typical Silicon Valley success story. Autodesk had IPOs and everything's up and to the right every year.

Fairbairn: You had a long run.

Bass: Maybe there were some years of like nominal growth, but nothing like that drop, and then all of a sudden that hits, but we make it through it. And in some ways, those are great events for leadership teams and for companies as a whole and people recommit and double down and do everything that's necessary. And so, the company in the end came out of it stronger and-- but it wasn't-- it was certainly not a fun period.

Fairbairn: And then you continued on as CEO for another seven, eight years?

Bass: Six, seven, eight years, something like that.

Fairbairn: 2016? Somewhere along there?

Bass: Maybe 2016, 2017. So what we did is continued to do a bunch of interesting work. The Company continued to grow, and we did two things. We had a bunch of technical breakthroughs on one hand, and we initiated the start of the business model conversion of going from a package software company to a subscription business.

Fairbairn: I want to cover both of those, but let's go back to sort of looking at that whole period, when you were the CEO for 10 to 12 years. What were the major milestones or developments technically or from a product point of view that were most impactful, and how did those happen? Were those top down, bottoms up, market driven?

Autodesk CEO: Changing the Platform

Bass: You know, I think there's a number of things that happened during that period. The first is the change in the underlying platform, where you go from PCs with DOS and workstations with UNIX to PCs with Windows becoming the dominant platform for engineering work. All of a sudden there's very little distinction between the computational capabilities and the connectivity of a Windows machine and the workstations. And PC with Windows becomes the platform on which we deliver most of the software and that's towards the earlier part of this period.

Fairbairn: So, it became Windows, not UNIX.

Bass: Not quite. The company had for years kind of divided its efforts and had a little bit on the Mac and a little bit on the PC and a little bit on the UNIX workstations. As you're going through this period the UNIX workstations are falling by the wayside. They have their second life, if you will, as servers, and stuff starts moving to the cloud which takes over. But the workstations really lose their dominant position as a desktop computing tool, and Windows becomes good enough to take over and it's at a crazy low price point and all of the engineering software starts getting built for that. Eventually there's a 64-bit operating system, and because in the world of engineering software we were always at the limits of what these machines were doing, and you saw it in the VLSI stuff. For the stuff that you could do only on a workstation, you needed these huge memory spaces and there were all kinds of tricks and hacks.

Fairbairn: Memory disks, right?

Bass: And a million gimmicks. But eventually there was no reason why you didn't have a 64-bit processor sitting inside a Windows machine and a capable UI, and so eventually that's one of the migrations that happens, and that's certainly important. You know, the second one that comes about at a certain point is also then after Windows probably enjoys half a dozen

years of dominance, it suddenly becomes obvious that the next computing platform is going to be in the cloud, and that everything's going to be about these connected machines in one way or another. And what was good about that for Autodesk customers, it was the kind of thing that they needed naturally. They're working on distributed teams. They're on site. So whether they're on the tarmac, on a factory floor, on a construction site, that's the kind of computing they needed.

Yet, the other part, the design engineering is obviously an incredibly important component, but it's not the be all and end all. So, it really lined up that the next thing that happened is we realized that the cloud was going to be an incredibly important platform and it really provided two things that was important for this class of software. One was this naturally collaborative thing where you're just sitting there and you're all sitting at some IP address, and I can look at what you're doing, and you can look at what I'm doing and we can share and I can take pictures in the field and send them to you. But the second thing was this idea of the computational infrastructure changing, and really that was the insight that what had been historically called CAD or computer-aided design, never really was computer-aided. It was like computer-recorded design.

Fairbairn: Good description.

Bass: In the world of electronic design, there had already been some attempts to actually automate stuff and the computer was doing some of the work, but when you looked at mechanical engineering or architectural design, it was just a digital drafting board. Just like when you said you moved your checks online. No way. I had a thing on a screen, but it was really the same phenomenon, and so we began to realize that the cost of computing was going down and really even faster than Moore's law. If you looked at what you could rent an hour of CPU time at Amazon for, we started asking ourselves the question, "What if you had infinite amounts of computing?" What if the price of computing went to zero? What would you do and how would you design and engineer things differently? And so we spent certainly the last handful of years pioneering this field that became known as generative design, where you basically specify the outcomes you wish to the computer, as opposed to starting at a low level and saying, "I want a block and I want to drill some holes in it. I want to tap the holes and I want to do this to it and twist it and turn it." "Hold on, no. My real problem is an engineering problem. I'm designing something and it has to hold up this thing, and here are the loads on it and here's the materials and here's the space envelope it needs to fill." And we said, "Why don't we describe that problem to the computer and let the computer do the multiple iterations that are usually done in design?" So, it was those kind of computational things, which at the heart of it require huge degrees of simulation to do things like finite element analysis or computational fluid dynamics. As you start modeling the physics of the world closely, it becomes incredibly computationally intensive. But we saw that and that became the next step for the Company.

Autodesk CEO: Changing the Business Model

One of the threads that goes through this is Autodesk is a company that starts on DOS like all the other companies of the early 1980s, it has to go through the Windows transition; it has to go through other transitions as the market expands to the many new devices and then converges and expands again. These transitions are hugely resource consumptive in terms of, "We're making a run on this machine and this machine," and we eventually get to narrow down the platforms. Then we get to work a little bit more on the technology and kind of change the way people go about designing things, and then the last change in there is we realize that the business model needs to change.

Some of it was certainly motivated by the global financial crisis, where we recognized, we'd never seen this, but like the business could be off by a third in a year. You lose 30 percent of your business. We said, "There's got to be a more sustainable way to do this." We're starting to see companies that are emerging with subscription models and most of those at the time are tied to cloud-only offerings. And we realize we can really do the same thing with our software, and so we start down the road of what's a really large transition in the business model, and that involved a lot of moving pieces. It's getting your customers to see the value. While it may be good for the company, is it really good for the customers? It's also having the underlying foundation and kind of data infrastructure to do it.

Our software, the entire back office of the company at this point, is really designed around selling floppy disks with licenses and shrink wrap agreements. And now we're saying, "No. We'll send you this link in the mail and it's going to update automatically and you're going to pay us by the month." And everybody's head hurt, and we didn't get it right at first, but we made a number of attempts, and we slowly refined it and figured out how to do it. Wed figured out how to make it good for the customer and good for us.

Fairbairn: Now, was the company fully committed to that? Did you have a lot of internal tension or is everybody sort of on board and saying, "Yep, this is what we got to do?"

Bass: I am sure, like anything in a company, there are people hoping we would fail. But other people got it pretty easily. People had seen some of the SaaS companies, the early SaaS companies, do well with this. They'd also recognized the same thing we all did, that the two things were either the vulnerability to macroeconomic stuff like the GDP or just historically the company. If you go back to the years certainly when Carol [Bartz] was CEO and all the way back through Al [Green] and John [Walker], the graph of the stock looks sinusoidal, and it peaks when there's a release of software and then there's a trough on the rumor of a new release of software. It's a crazy way to run a business. Like your expenses and your revenue don't line up. It's very hard to predict anything.

Fairbairn: So the bigger customers were actually happy with this because it was sort of smoothed out? Did they like the way this matched their business?

Bass: It smoothed out theirs. There were a number of ways and we worked hard to find things that were really beneficial. So there were two things that helped. One was that Autodesk had a huge number of customers who were project-based in one way or another. Construction projects, making a movie, making a game. This gave them a way to use the software for 15 months and then get rid of it, whereas before there was this huge initial cost, a little bit of maintenance and then if you got off maintenance there was a huge penalty to get back on. This says, "No. This is just a project cost and for every employee I have on it who needs the software it's x-amount of dollars," and they could account in budget for it, and with large customers we did two things that I thought were interesting.

For the large customers, the thing they hated the most was software that went unused ,but was being paid for; and this was a way they could now monitor it, and all of the discussions inside a company when you're the CIO. You're coming to me and saying you need a bigger budget, and I'm going, "Why?" and now you say to me, "Well, you had 475 engineers last month using Autodesk software and our bill for software's this," and so you feel good, software you're paying for is being used. You can account for it and we're also making the whole portfolio of products available so people can use whatever, and they're going, "This is a better working relationship. I only pay for what I use. I pay for it when I want it." We have a steadier income, so, it became just a much more typical practice. At the time we did it, it was really just us and Adobe, and we took lots of slings and arrows from Wall Street. They hated it. They thought this was the dumbest idea. They thought it was a really dumb idea for about two years, until they congratulated us for following their great idea, and we were like, "Oh, yes. That was brilliant on your part."

But I remember talking at the time first to Bruce Chizen at Adobe and then Shantanu, and we were taking about it. Nobody believed that this would be a good solution, and what was interesting to us is that the economics of it made a huge amount of sense and we understood it. Like Wall Street doesn't like surprises. They knew how to think about our businesses before, and it really took almost two years before any of them really got behind us and understood it and said, "This is going to be a great new business model."

Fairbairn: So how about the huge number of smaller users that you have. Were they harder to convince?

Bass: Yes, some of them were, and some of them were, "I just never want to do it." We had the benefit of time on our side. We realized that we could really twist people's arms and make them do it, and we talked about that. This kind of software's pretty entrenched and switching costs are really high, but we decided, "These are still good customers. They're paying us every year. Let's just make it so that it becomes obvious." You know, this was like the Godfather moment, the offer you can't refuse. At a certain point we made it so obvious. "You can keep paying the old way, but now it should be obvious to you that the entire company's going this way and in the long run the old way is going to cost you way more." And so, we gave

them annual IQ tests for a few years and then eventually got a little more draconian in pushing people to the model that we wanted for everybody.

Fairbairn: Yes. I'm a photographer on the side and use Adobe software and, you know, you look at the online stuff, and some people were just so glued to "I'm an owner. I bought this. I shouldn't have to pay more." There's a sort of a personal ownership thing that's going on.

Bass: Exactly. We had the exact same things and I remember many conversations with Bruce and Shantanu about this and we'd just go and stick to it, and then eventually the bigger players like Microsoft joined in the thing too. And then it becomes inevitable and all the bigger businesses are saying, "This makes sense. I can totally account for my cost. It's relative to my number of employees." The whole thing made a lot of sense. It's just surprising sometimes, so, you know, sometimes we can move the technical stuff way faster than you can move some of this business stuff. I mean, it's cultural, and like you said, there are people who don't want to change. I had people write me incredibly nasty letters.

Fairbairn: "I bought this. I should be able to use it forever."

Bass: I had one guy, he wrote me all the time. He said, "Have you seen what's happened to Kodak and what's happened to Xerox? That's what you're doing to Autodesk. It's a great American company and you single handedly are ruining it,"

Autodesk CEO: Changing the Technology: Revit

Fairbairn: All right. So you changed the platform. You changed the business model. What about from a technical or breadth point of view? What were the major changes?

Bass: I think in each case what we did is we looked at the opportunities. The core of this company had been around really documenting designs and then we said, "Okay. This has to go to first of all is to 3D design." So we're not just going to document this. Not putting lines on paper with known abbreviations and dashes and dots that signify all kinds of things to different practitioners. We're going to start allowing you to design everything in 3D, design things parametrically, be able to do things where you can visualize, and really the driving thing was anyone who's ever designed and built something knows more at the end than they know at the beginning and would do things differently, and so kind of the underlying mantra became is, "How can we bring that knowledge forward? How can we educate you as much about the thing you were going to design so you understand as much about it as possible from the beginning?"

And that might be a drop test. It might be a thermal test about heat management. It might be how the thing looks. You know, it's all kinds of performing characteristics. You walk around the corner of a building and the wind comes or the light shadow. Those are all analytical tools that

you can apply. After we went through the documentation and moved the design to 3D, we said we can really start to understand the performance of these objects in the real world and understand how they will behave, and then understand the implications of making design changes up front. We'll know what it'll mean either for the cost or the ongoing performance of these things that we're building, and so the company moved more into simulation.

It also moved what I would call downstream in some way to recognizing that almost all these endeavors, even when you talk about the small customers and the individual people practicing, almost nobody builds something of note by themselves. That's really the exception. You know, even if I'm here, I'm working with a contractor, I'm going to have this manufactured by someone, I'm going to send it to a custom manufacturer halfway across the world. And so the company got more into how to collaborate and communicate those kind of things and move that information around.

And then, and it continues to this day, it really moved into the downstream activities into the factory floor in manufacturing and out to the job site in construction, and so it went from purely documenting designs to how do we actually fabricate these things, how do we analyze the structures, how do we analyze the performance, how do we tally up the cost and the schedule? And so it became just much more complete software for the entire process, whereas before it had been pretty narrow.

I remember at one point there was a big article in The New York Times about our architectural piece of software called Revit, and it was a great PR event for the company, and that morning I was flying high from being in The New York Times and like one of my relatives would actually have an idea what I did for a living, and I went to lunch with one of the principals at the architectural firm that had designed the Freedom Tower, and that's what the article was about, and he comes and he has a big architectural roll and I figure he's going to show me the building. Instead he unrolls it on this table in this restaurant in New York and he says, "Yeah, Revit was really important. I saw the article and good for you, but I just want to tell you, we used like 127 pieces of software to build this building," and he had the entire flow chart of…

Fairbairn: Of how they all came together.

Bass: It was a very humbling experience. Like we're going, "Our software built the building," and he's like, "Well, not exactly."

Fairbairn: So, was there anything that was introduced, a new piece of software, an extension of the product, that has become a sort of major force or a major contributor to the company today? Or has everything kind of just evolved and gotten bigger?

Bass: No. I mean, we made a number of new things. Like the software I was talking about, this Revit software, started with an acquisition of a small company at the time, That was one of the hardest transitions. We had a market-leading product that was used for architectural design called AutoCAD and we bought a product that would directly compete with it, and those kind of changes, as I'm sure you know, are incredibly difficult. If you want to talk about the peanut gallery and everybody thinking this was a terrible idea, this was a perfect example. At the time, I was like the COO or something, but I was not the CEO. I remember going to the board and saying, "We're going to buy this company. It really is the future of how to do architectural design," and as is often true, many of the board members don't know the ins and outs of the business, and one guy who's on the board says to me, "Well, how much you going to pay?" and it was 133 million dollars. He says, "How many engineers?" and I say, "It's like 30 or 40," and he says, "Well, at my company," fill in the big no name Valley company, "We'll only pay a million dollars per engineer." And the bubble cloud above my head's going, "So what?" They'll sell their company for a $133 million; we're going to try to buy it for that much less. That is no kind of rebuttal. Let me go back and say, "Well, one of our board members' companies will only pay..."

And so it started with the board that thought this was not good, and at that time the company that we bought had no revenue and almost no customers, but it definitely had the right idea. And it was kind of that leap that you have to make where some amount of instinct or intuition and experience in the field where you know this is going to happen.

Fairbairn: That's the hardest thing in the world to do to obsolete your own core software, right?

Bass: It was unbelievably difficult and most of the people, I'd say, were not on board, and it was a combination. The board didn't want to pay that much for it. The engineers wanted to build it themselves, not buy something.

Fairbairn: Oh, absolutely. Yes, we can do that.

Bass: We can do it and we can do it better. The salespeople are like, "What are you doing? We know how to sell this. We don't even know what this thing is and it doesn't work," and, there were very few natural allies there. But that was one of the things you learn in these positions is there's a handful of things that you can push. People always think the CEOs are all-knowing, all-powerful, and they really are anything but. But there are a handful of things, a very limited number, you can insist on, and this was one of the ones where we just said, "No going back," and I remember putting up pictures like when you go rent a car at Hertz and it says, "Do not back up; severe tire damage"?

That's what I put up. I'm like, "Do not back up. We're not going back. We're not selling people this thing and then saying, "No, no, no, you can really use AutoCAD." You know, it's like, "No,

this is the change. Now this product, Revit is now by far the market leading product. Most every building you see built anywhere around here was designed with it.

Fairbairn: So did it really replace AutoCAD?

Bass: Yes, yes.

Fairbairn: I mean, sort of this core thing that everybody thinks you still have. You didn't rename it AutoCAD?

Bass: No. I mean, it doesn't work the same way. Really what it was, it was that first transition. AutoCAD was essentially a 2D drafting table. You could put down lines and fonts and make blueprints. And Revit was something that was made to do architectural modeling. When you put in a wall, and you put in a foundation, and you put in plumbing, and you put in HVAC. Remember, those other things are just graphical representation of the ducts or the lights that are in a room like this. This was actually the thing itself and again, that's what led to the national thing.

Fairbairn: These were objects you could put together.

Bass: Yes, and then you can do simulation. You could say, "How much energy is this building going to consume?" If I was to orient this building 20 degrees differently on its site, would it take more energy to heat and cool it? What happens in the case of an accident? How easy is it to get people in and out? None of that's possible with a set of blueprints. You have to kind of reconstruct a model and that's what experts did, and now this made it all accessible. Even just the simple thing of what became incredibly common of being able to have an architectural rendering or a walkthrough or go into VR [Virtual Reality] and see that all came about because you now had a 3D model of the thing. So that was really like that first transition from 2D to 3D and in some cases, we built some of these products ourselves and in other cases we acquired it, but it was obviously inevitable and with hindsight I can say that with absolute assurance.

But that was the transition that happened and that's what opened it up to really the next set of things. It's this weird thing on the one hand that there's a lot of technology that's been invented by not only Autodesk but its competitors to do this, and on the other hand it has been putting one foot in front of the other. You know, the whole [Computer History] Museum's kind of a testament to that. I did a podcast the other day with some of the guys from Epic and I was talking about the first SIGGraph meeting that I went to that was at a Holiday Inn with 40 people. This was at the time when computers could display six polygons on the screen. You'd put up a cube and you'd say, "Rotate it," and it would take like 12 seconds, and we'd all applaud. But you look today and so many of the techniques are still similar. It just does it at incredible speeds.

You get 10 orders of magnitude more computing power and now that thing looks fast, and I think in some ways just the history of the industry was a little bit like that. You know, there were definitely breakthroughs needed at points but some of it this idea of, "I'm going to give a designer, engineer and architect something that better allows them to understand the thing they want to build." That has been true for always and it's true today.

I still use software all the time, and when I'm building something, essentially what I say to myself is, "I wish while I was designing it, I could turn it on and see how it works." Do the lights do it? Is the thing in the right place? Does it sound right? And I'd not only like to turn it on, but I'd also like to run it for 50,000 hours, virtual hours, and see does it burn out? You know, be able to do those kind of things, and so it's still this quest of giving people much more knowledge about the thing they're building. In some ways for me that was probably my favorite part of the job. It certainly was one of them. When you're designing tools for people, particularly creative people, I always said it was like the relationship between like an instrument maker and a musician or a sword maker and a samurai.

Using Revit to Help Make a Movie: Avatar

Like the amount of creative confession that they come to you, with like, "If your software could only--" I've talked to many of the very famous designers, architects, people you'd all know who would say to me, "If the software could just do this, then I could do this thing." Like one of my favorite moments was I got a call from James Cameron, and he says, "We just saw 'Lord of the Rings' and there's finally enough technology to do this movie that we've always wanted to do. It's been written for years ,and we didn't think there was enough technology to do this and there's finally enough, so will you come down and talk to me about how we're going to collaborate?" and it was for "Avatar."

Fairbairn: Oh, wow!

Bass: You know, and he finally realized that you could do this motion capture stuff and then that became the first feature length film that was entirely motion captured, and I remember going down there, and this kind of sums up like this relationship with everyone else. It turns out that these Hollywood studios or production companies when they're not making a movie are not doing much. So, I went down to see Jim and we're in this warehouse building in L.A. There's like four people in it. The idea was I'd get there around four o'clock and then we'd go to dinner. Around nine o'clock I'm still in this empty warehouse with Jim and he's been telling me about "Avatar," and I'm like, "Is there like a soda or an apple?" "Is there anything to eat?" I haven't eaten all day and you've had 10 years to prepare for this meeting.

I'm starting to lose my ability to concentrate. Around eleven thirty we went to dinner. But, I mean, we literally spent like six, seven, eight hours with him, super-excited and us showing him what the technology was. Jim not only is a moviemaker, but as you might know, he's made his

own cameras. He's done all kinds of mechanical invention just to make the storytelling possible, and so he was like a perfect example of, "Okay. You are going to help me tell the story I always wanted to tell, and this is what I need you to do." And the same thing has been true of many of the car designers, plane designers. That was always a really fun part of the job, when they kind of gave you their deep, dark design secrets and said, "Now, if the software could do this, it would make my life a lot easier."

Fairbairn: So you were wrapping things up. You had your own transition plan, to transition out of the company, transition out of the CEO position. Tell me about that process.

Transitioning to a New Autodesk CEO

Bass: You know, this is going to sound a little bit obnoxious, but I still believe it to be true. It's sometimes harder to leave these jobs than to get them. A lot of people want to aspire to be CEOs of companies, but it turns out that leaving at least in a responsible way is just not that easy, and particularly in a public company where the board who didn't think I could do the job 15 years before now thinks I'm the only one who can do the job, which is totally ridiculous. "So, I spent about three years just trying to work through, "How am I going to leave?" And every year I'd sit down with the chairman of the board and say, "This is really the year we're going to work on my leaving." We did the kind of succession planning that was done for me, and the transition that I had with Carol was well orchestrated. You know, at the time Carol was a fixture and a legend in Silicon Valley, and nobody thought anyone could take her place. That's why the board was in the position it was in, and it turned out I was able to take over, and the company didn't smash right into the side of a mountain. It did fine.

Fairbairn: So were you looking internally for candidates you could bring to the job?

Bass: Yes. I always thought as part of the job whenever I'd go to an industry show or go to a customer, I'd always look, "Is there anyone here who could do it?" It's just kind of an oddball thing that I'd landed on that it had to be someone internal, and I thought there were two candidates internally in the company who could do the job. I'd had this interesting conversation once, again, with Bruce Chizen from Adobe. I don't even know if he would remember it, but I took his words very seriously. Because he had just transitioned, and Shantanu and I became COOs respectively of Autodesk and Adobe around the same time, although maybe I was a year or two ahead of him. So we talked a number of times, but Bruce and I knew each other reasonably well, and one the things he said to me that I always took very seriously, he said, "Don't finish something and then just leave. "Don't row to the other side of the river and then say to your team, 'There you go. We made it to the other side.'" He said, "That's a bad way to do the transition,"

And so as I worked through this thing talking to the board and the chair, we'd begun this transition, that big business model transformation around the subscription business, and I said,

"I want to stay until we kind of get through the knothole, until we know what it'll be." It will take longer for it to fully materialize, but I want to make sure we get through that. That will be the place at which I know it, but I want to leave before it's done, back to Bruce's advice. Because the people who took over had been instrumental in constructing the plan, in turning the knobs and dials and they knew how to do it, but I know when you turn something over, somebody has to get comfortable in the new job. They have to build a new team, there's a lot of shuffling, there's all kinds of distractions, and so you let them do what they know how to do. And like all good people who work at a company, they often have better ideas of what can come next, but they're not in a position to do it on day one, so let them do what they know how to do. In the meantime, really let those plans mature for doing something differently. And so we went to the board. We eventually did an external search. We had a couple of really good candidates from the outside and two internal candidates, and the board settled on one of the internal candidates, and so a guy named Andrew Anagnost took over, although both of the internal people had worked there for years and years and years.

Fairbairn: But there was a delay in the transition?

Bass: Oh, yes. There was one delay in the transition. Right around as we were doing the subscription model transition, that was the first time that revenue cratered other than during the global financial crisis, but that was the double-edged sword. The revenue cratered predictably because of the changes we made, but of a magnitude that no one ever imagined, and it wasn't due to outside events, and Wall Street hated it, and the smart investors figured it out. The not smart investors took much longer to come to the party and realized, "This was a good idea," and so it's probably about a year and a half before I leave, we get a number of activist investors. And so these activists come in, and let me give you my opinion of many of the activists. They don't actually have better ideas for the company. They don't have strategic ideas. I think if you want to be fairly analytical and rational about it, what they do is change the time frame.

So, if you were running a company and I said to you, "Maximize the value for selling it in three months," there's a bunch of stuff you would do. But if I said to you, "Why don't you maximize the value in three years," you would do a different bunch of stuff. And if I said, "Maximize it in 10 years," you would do completely different stuff." Whatever you did, it would be a different kind of a company. If I want this to be really valuable in 10 years, I wouldn't do some things. In a 3-month time frame, I would cut jobs, I would cut expenses. For 10 years that's probably the opposite of what you want to do. So, they often change the time frame.

These guys came in and this is probably the third time we had activists at Autodesk, and so I was pretty dispassionate. One, I'm ready to leave. Two, I had already had a number of run-ins with activists. Back at that time when we bought Revit and we were exploring, we were building a product that was an equivalent on the mechanical design side called Inventor, a now very well-known activist came to us and said to me, "All these things you are doing are idiotic. And

Carol was still CEO, and we were in the transition. "You should sell every other thing. The only thing that matters in this company is AutoCAD." Put this in perspective, AutoCAD today is probably a half-a-billion-dollar business and the company's going to do four or five billion. So, it's 10 percent of the revenue now, but if you wanted the company to look incredibly valuable in three months, you would shut down everything and fire anyone who wasn't working on AutoCAD. It was obviously the optimal way to increase return on investment in the short term. So I dealt with that.

There was another period where they came and had the same kind of useful criticism. They came this time and said, "This subscription thing is ridiculous," dada-dada-dada. So we got into a thing where a number of activists and a number of the activists' acquaintances joined our board and we got into a funny situation where the activists really wanted us to change some of the things, but we were well underway. We were totally convinced that the transition would work, and it would be financially successful ,and the customers would be happier. And so we didn't ever really budge, but eventually, you know, I went to them and I said, "Look. This is getting annoying. The business is doing well. It's getting better every day. You should sell your stock. You don't really want to be here. You don't want to be on our board, and I'm not leaving until you're gone." And I said, "So this is a little bit of a mutual hostage situation. You want all this stuff; I want all this other stuff." So, we eventually made an agreement that the board would choose a new CEO and continue with the succession plans. The activists and their friends would get off the board and that took like 15 months longer than I would've liked it to take, and it was a hugely annoying end, because there was nothing fun about it.

I don't think it is universally true but a lot of times the dynamics in a board room become really bad when there are activists there. I've been in number of situations subsequently on the boards that I've been on and depending on your point of view it's disruptive for good or bad, but I think we'd all agree on the fact that it's disruptive. So it took a little bit longer and it was like an ugly punctuation mark on what was otherwise a really enjoyable time there, but it's not like the global financial crisis or the transition to subscription or the stock option thing, you know.

Fairbairn: Just annoying.

Bass: Yes. It's just annoying. And by the way, one the thing you learn in these jobs is that there's just a bunch of shit that goes along with the fun. That's why they call it work. Overall, I loved doing the job, and it was fun working with the people, it was fun working with the customers, but there were plenty of parts of it that, you know, were not fun.

Post-Autodesk Activities: Alphabet/Google

Fairbairn: Yes. So were you leaving a job or were you going to something else?

Bass: No. The idea was my kids were grown. My two boys including my two-pounder who is now 180 pounds and six feet tall, and he had just finished graduate school and was moving on. And my other kid was in college, and I had other things I wanted to do. One of the things I've always done is go back and forth; I worked at a relatively big company, and I worked at two small companies. And I was doing a fair amount of advising and on boards and investing with smaller startups. I saw a bunch of new opportunities and so I wanted to spend more time with some of these companies that I thought were really interesting, and mostly it was bringing together a couple of my interests, but it was the building of physical things and essentially making them digital.

I was getting involved with autonomous cars, autonomous construction equipment, putting small satellites in space and imaging the earth every day. It was that kind of company where the same thing I'd seen happen in the world of software as more computational connectivity occurred. I saw the same possibility for the physical world. Not only could we design things differently, but we could also make things differently. It was a lot about how we're going to fabricate things, the things we're going to do, how they're going to communicate. I'm going, "I'd rather work on that set of problems." So, it was really to go to that, and I wanted to go back to inventing things in my shop, and wanted to go work in my shop. And then just during that funny period, what I call the hostage standoff, Larry Page called. I had known Larry and a number of the people involved with Google and they had just bought a whole bunch of these robot companies, like 12 or 14 of them, and Larry called me and said, "Would you come? Would you come run these robots?" and it had been purchased by Andy Rubin, and Andy had left. And Larry said, "Figure out what we have and what we're going to do," and so I told him, "Well, I still actually have a day job. I'm working my way out of there. We're going to resolve the issues."

But as a favor to Larry I went around, and I looked at all the robot companies and told him what I thought of what they had bought and what was possible. I told him I really didn't want to do it, but I spent a lot of time looking and having a great time. These were the top-notch robotics companies like Boston Dynamics. And so, it was like, "Oh. Yes. I'll go to Boston for the day and take Big Dog and drive it up a snowy hillside and see what he can do." It was totally fun, and they'd really bought top talent and top-tier technology. That started this thing where I spent the next few years just advising Larry and the leadership team at Google, and it was really a fun period. The next few years, all the way up to Larry leaving and the pandemic, I spent a day a week down at Google, and to give Larry, Sergey [Brin] and, Eric [Schmidt] credit, they gave me totally unfettered access. I mostly was involved with the non-Google part of Google.

Fairbairn: There's a lot of parts of Google.

Bass: And that's particularly what Larry and Sergey were interested in. So, I spent a lot of time with them and Astro [Teller] and the team there, and many times, I'd look around the room and say, "Do you want me to leave?" It's the five people running Alphabet and me, and I'm just an advisor, friend, whatever you want to call me. But no, they wanted me to stay. It was

great seeing what was going on. It was great watching the company grow. I spent a lot of time with Astro and Larry and Sergey just talking about what they could do with the stuff there. That was a really fun period. I combined that with spending about a third of my time with a number of these startups that I thought were really interesting. One was Zoox, which eventually got bought by Amazon, and one is Planet Labs, which built these cube sets, and they put them up in space and takes images with them.

Fairbairn: Yes, they actually did a program here at the Museum, so I've seen them.

Bass: I've been involved with Will [Marshall] and Robbie [Schingler] for close to 10 years now and so I've gotten to spend more time on those things, and then I spend about half my time building things in my shop.

Post-Autodesk: Other Projects

Fairbairn: So what do you like building? What's your current project or what's your thing that you're happiest with recently?

Bass: So the truth is that I just got on this little jag in which we built two electric cars. We built an electric Cobra, so an electric racecar, and then I took a 1950 Chevy truck and I converted that to electric. I have a 1950 Chevy, which looks just like a 1950 Chevy, but...

Fairbairn: Doesn't accelerate or sound like a 1950 Chevy.

Bass: Yes. Some of the people, if you drive up to the stoplight, they give you the big thumbs up because you have this cool old truck. Then all of a sudden, they realize while the originals had like 95 horsepower, this one has like 300 horsepower, and it's got crazy acceleration. I've been building that. I continue to help out Alphabet. You know, I've built a lot of things for people putting things in space. So I've continued to work on the optimized design of this generatively designed stuff. How do you write computer algorithms that design things? So these are for making super lightweight parts and I work with a handful of people in my shop, and we've done some things for JPL and for some of the Formula 1 teams and for some other special groups.

Fairbairn: Wow. How great to be working with such a wide variety of really interesting people.

Bass: Yes. Yes. And we only work on this narrow thing usually as they go somewhere from idea to turning it into a thing, that's where we jump in. You know, it's usually all their expertise about the thing, but it's like, "Okay. How am I going to turn this into a thing that I can make that's going to be robust?" And what we really are is like this weird little place where it's

some combination of some days I'm welding, some days I'm writing software, some days I'm mopping the floor.

Fairbairn: Do you have employees?

Bass: Yes, there's a handful of us. There's like five of us who work together and we just kind of take on these slightly odd things. Sometimes I do it for just companies I'm involved with and invested in and sometimes we'll do it because it tickles our fancy. We get to go down the rabbit hole and go like, "How would you solve this problem?" It has to be a particularly interesting or unique problem and then we work on those.

Fairbairn: Anybody call you up about the James Webb Telescope when they were trying to figure out how to do all that?

Bass: No, but they were way more talented. That is an amazing achievement. But for example, during the pandemic, somebody associated with JPL called us when everyone thought we needed ventilators and they said, "We actually have a design for a ventilator because we've thought about having them on other planets. And we want to know if we could turn this into something because there seems to be a shortage." So we worked for a week on it and looked at their plans and tried to figure out how we would make more of these.

But we started talking locally to all the nurses and doctors, and essentially, they said what now has become common knowledge. They said, "Our problem isn't ventilators. By the time you're on a ventilator it's a last-ditch effort, and what we're really struggling with is this personal protective equipment, all the PPE." "We don't have gowns, we don't have masks, we don't have shields," and so, what I did, along with the gang at the shop and my whole family, is we built, and we organized building tens of thousands of face shields. We did this design where you had a plastic face shield that attached to a baseball cap, and we got people to donate thousands of baseball caps, companies, sports teams, and we got companies to donate the plastic. Coca-Cola uses the same plastic on those face masks that you'll see in like an operating room, and they use it for Coke bottles.

And we organized a whole network of people around the Bay area, high school students in Los Altos and the climbing gym down the street and companies and people would take home and make a hundred, two hundred a day, and we would make several thousand and we would cut the materials and make the tools and then we should ship them off to hospitals, and so we spent our time on that instead of working on the ventilators. This seemed like time better spent, and at least got us through the first four or six months of the pandemic until we realized like real companies should take it on. it's hard to believe, when I tell that story, that a ragtag bunch of people in a shop are building the PPE that is needed.

Fairbairn: Yes, it was such a bizarre situation where it's like, "How could you...?" And what the nurses and doctors had to live through or die from is just unbelievable.

Bass: Oh, and we encountered the full bureaucracy because we first thought, "We'll go through these state agencies that are saying 'We need donations.'" We found out it was all red tape, and so eventually we just set up a website and we had doctors and nurses sign up for what they wanted, and we mailed it to them directly, because our stuff wasn't OSHA approved and it was just a piece of plastic.

We got these heart-rending letters, just heartbreaking, saying, first of all, "The way we're using PPE today, if I had been doing this two months ago, I'd be fired." "I have the same face mask that I've used this N95 thing for two weeks now," "We're taking them out. I'm rotating two of them and sterilizing them. It's so wrong." So, we're sitting there going, "We're going to help these people," and so we mailed all of these directly and the only thing we asked in return is that they sent us a photograph, and so we got this incredible collection of photographs, and of course, letters of thanks and all of us felt pretty helpless. It was something to do.

Fairbairn: So what have I missed? What other things you're focused on or things you liked to be working on? Sounds like you have pretty exciting life in your post-CEO world. It sounds like you're really busy.

Bass: I am really busy, but in a different kind of way. One of the things I think people underappreciate is when people ask, "Why'd you want to leave?" it wasn't like I no longer liked the job. It's kind of the two things I found about the CEO job that I found draining was the constancy. Everyone who has a job filled with text and email and Slack and everything else knows the feeling. It just felt even worse. Like it was just 24/7/365, and I never felt like I could catch up. You could never catch your breath. Even when you say, "Okay. I'm going to take these two days off because I really need to sit and think," it's still in the context of and then I have to fly to Europe, and then I have to...

Fairbairn: Answer all these emails.

Bass: Yes. And then I have to go to three investor conferences and then... I do think there should be almost the equivalent of term limits for executives. There is a time in which you have new, fresh ideas and it's motivating, and I think after a while it is time for somebody else and I don't know what that time period is, but for me it felt like it was the right time. I also really like working with these small companies, and what was interesting is, and I didn't appreciate this fully, the companies I first got involved with were all companies who I thought were doing something interesting, important and something that I thought could be a real business. It was always on the technical part of the spectrum where I understood what was going on.

I confess, I know nothing about popular culture. I don't understand social networks. There are huge parts of the world I don't understand, I don't even attempt to, but there were things I understood. It turned out that what was interesting to me is almost none of the companies ever needed help with technical things. The reason they started these companies, they're really technically capable. Most of the kids I meet are way smarter than me. They have an entire network of people. They've just spent four or six or eight years in school learning exactly this. If they run into a problem, they have a whole Rolodex of people to call. But just as capable as they are on the technical side, they're just as incapable on the management and the business side and particularly on the people side. I think most of the people don't have a natural gift for it. Often, it's not what they want to do.

I often thought of myself as kind of an accidental executive. I see many of these people turning into accidental executives as well. It's like, "I'm here. I started it. I don't see anyone who can do this better than I can do it, so I'm going to keep doing it until I find someone who can do it better." So I like working with them and having been in their shoes it's easy to see some of the patterns. It is that thing with pattern recognition, a little bit experience, a little bit of wisdom. It's what seems easy. Someone comes to you and says, "Yes, if someone stole something, should I fire them?" "Yes. I don't think you need to think another second about it." That's obviously an exaggeration, but it's those kind of things where you go, "Look. This is not working. You've just spent an hour explaining to me why it's not working. You're not going to regret it. You're not going to fire someone." There's no one I ever fired, and I woke up three months later and said, 'I wish Doug still worked here today.'" Like when I was done with Doug, I was done with Doug.

Fairbairn: And often Doug is glad that he isn't working there anymore either.

Bass: By the way, some of my most gratifying things are the people who've come back and said, "I know you fired me. I was unhappy. It was a terrible period in my life. I didn't want to be doing this. I went out and I now have three bakeries and I get up at four o'clock in the morning and I've never been happier, and I make a fraction of what I made, and my kids love me, and my wife loves me, and thank you so much for firing me," and I'm like, "Great. It worked out for everyone."

These days I've got plenty to do and solving these problems in the shop is fun with one group of people and then working with these other companies that are doing new things, but many of the problems recur. It's kind of satisfying, and it feels a little bit like there were people who helped me along the way when it was way below their pay grade to be on the board of Flying Moose. But they were willing to help us figure out how to do it and how to grow a business and came to work for us. And so this feels like a small way to repay people.

Fairbairn: Well, thanks very much for spending the time with us and getting away from your shop for a couple of hours. We can record your story for posterity.

Bass: Yes. Thanks. It was a pleasure.

END OF THE INTERVIEW