Oral History of Kathleen and Dan Spracklen

Interviewed by:
Gardner Hendrie

Recorded: March 2, 2005
Eugene, Oregon

Total Running Time: 2:01:43

CHM Reference number: X3108.2005

Q: Kathy and Dan Spracklen, here, today, very graciously agreed to be interviewed for the Computer History Museum. And we thank you right at the beginning for doing this. What I think I'd like to do first is possibly get a little bit of family background, on the two of you. Maybe, Kathy, would you be willing to go first?

Kathleen Spracklen: If you give me some guidelines.

Q: Well yes, where were you born, what did your mother and father do, do you have any siblings- just a little bit of background.

Kathleen Spracklen: I was born in Grand Rapids, Michigan. My mother is Margaret Dumas, maiden name. My father is Vern Shannon. My father was an electronics foreman, in electronics assembly. My mother worked for the school board. I majored in mathematics, in college.

Q: Okay. When you were in high school, what is the first recollection you have of what you thought you might want to do when you grew up?

Kathleen Spracklen: Oh okay. I loved math, and I always thought that I would do something in mathematics, maybe teach mathematics- or actually, at the age that I was growing up, mathematicians were needed to be computers. It was before computers were widely prevalent, and so actuarial calculations were all done in math and banking calculations were done by mathematicians. And so I just assumed that that would be the type of job that I would have- that I would work in business, being a mathematician.

Q: Yes. That there would be plenty of jobs, in business.

Kathleen Spracklen: Yes, a statistician.

Q: Working with numbers, and being a mathematician.

Kathleen Spracklen: Yes. Yes, and I always loved numbers, from the time I was a little bitty child. My mother tells me the first ten words out of my mouth were the numbers from 1 to 10, but that was mostly because I just mumbled before I knew anything else.

Q: Oh my goodness. That's a wonderful story.

Kathleen Spracklen: My brother taught me the decimal number system when I was a toddler, on a set of beads. He was two years older than I am, and he's probably the real genius in the family. He's also a computer programmer- Gary Shannon. My sister is a mother. She has two wonderful kids. My nephew, Mark, is disabled, and she does a wonderful, wonderful job parenting him.

Q: That's wonderful. Very good. Dan, a little bit about your background?

Danny Spracklen: Well, let's see. I was born in Decatur, Illinois. My father was in the Navy, when I was little, and he was in World War Two and then after that, he was a- put himself through college and was an electrical engineer.

Q: On the G.I. Bill, yes. Okay.

Danny Spracklen: And I majored in mathematics, in college. And in high school, I loved mathematics, and it's always been my favorite thing. But, having realized that I wasn't going to become a Ph.D. in math, I kind of turned towards computer programming, to earn a living. And that's what I've been doing, my whole life, basically- just computer programming.

Q: All right. Do you remember what your earliest thoughts were about what you might want to be when you grew up?

Danny Spracklen: Well, earliest thoughts, like when I was really little, I wanted to be a jet pilot.

Q: Yes. That's okay- yes.

Danny Spracklen: What kid doesn't?

Q: Yes, exactly.

Danny Spracklen: But when I got into high school, I really truly started loving mathematics.

Q: Now math, as opposed to science? You were really more interested in the math.

Danny Spracklen: I really got into the math more than the science, although I did like science too. I liked astronomy quite a bit, and it was one of my favorites.

Q: Now how far did math go, in high school, when you--?

A: Actually, when I was in high school, I attended a special community college course where we took calculus. So, I think back then that was pretty unique. Not too many kids learned calculus in high school back then. Now it's pretty common, I think. But, yes.

Q: All right. Good. Well, why don't we just keep going with you? When you decided to go to college, what were the options you considered?

Danny Spracklen: Well, I just wanted to stay close to home, I think, at the time. I'm not very daring, so I just went to our local state college- San Diego State College- where I majored in math there. And, at the time, they didn't really have too many computer courses. So I didn't really learn too much about computers, in college. It was mostly something I learned on the job, after I got out of college.

Q: So you didn't have a lot of computer experiences?

Danny Spracklen: Not in college.

Q: In college?

Danny Spracklen: No.

Q: Okay, that's interesting. Now, Kathy did you have any computer experience? Where did you go to college?

Kathleen Spracklen: I went to- well, at the time it was San Fernando Valley State College, and it became Cal-State Northridge, after I graduated.

Q: Now, had your parents moved to--?

Kathleen Spracklen: Yes. When I was 12-years-old, our- the family moved to California, and so I did all of my junior high and high school in California. And like Dan, I also took calculus in high school. But by that point in time, they actually taught a class in calculus, on the high school campus, whereas Dan went off to campus, to the university, to take his calculus.

Q: Yes. It had to be a very special thing for Dan.

Kathleen Spracklen: Yes. That's right. So then I majored in math, at San Fernando Valley State, at the time, and I was fascinated by computers. My brother was already a computer programmer, working in industry.

Q: Now how much older was your brother than you?

Kathleen Spracklen: Two years older than I was.

Q: He was two years older.

Kathleen Spracklen: But he dropped out of college, due to boredom, and went right to work. Later he was admitted to a Master's degree program, and dropped out of that, in boredom, without ever having gotten a Bachelor's degree.

Q: Well, I have to tell you, Richard Greenblat, never finished his degree at MIT, just so you know that your brother was in good company.

Kathleen Spracklen: So, I was interested in computers very much at the time. But I took both computer classes that were offered in under-graduate, at the time, and there was a half a unit class in Fortran and a half a unit class in Cobol, and I took them both. And then I had to take the rest of the classes- by that- in graduate school. And by then, Dan and I had met and married and I was going to San Diego State, where Dan graduated, and I entered in a Master's Degree program, and that's where I took all my computer science classes.

Q: I see. Okay. So what computers did you actually work on in college?

Kathleen Spracklen: In college it was the IBM- I think it was an 1170.

Danny Spracklen: The 1620, or was it the--?

Kathleen Spracklen: Yes, I don't remember the numbers.

Q: Yes. Probably, yes, an 1130, if it's an IBM. It was probably an 1130 or a 1620.

Danny Spracklen: Could be, yes.

Kathleen Spracklen: When I started, it was the traditional thing. You keypunched into the punch cards and you took your program and you checked it in on cards, and then the next day you got your listing and you got your cards back. It was a 24-hour run.

Q: And then you could start searching for your mistakes.

Kathleen Spracklen: Yes, right. And just as I was finishing up, in my computer classes, they were installing terminals, and you could type your program right on the screen. And that was like, ah, delightful

Q: Very good. So tell me about how you met.

Danny Spracklen: Go ahead.

Q: Either one. We accept two versions.

Kathleen Spracklen: It's probably pretty much the same.

Danny Spracklen: Well, we met at Southland Distributors, in what city?

Kathleen Spracklen: Los Angeles.

Danny Spracklen: Burbank.

Kathleen Spracklen: Burbank, yes.

Danny Spracklen: Burbank, California. I was working there- at the time I was working for Univac, Sperry-Univac, as a programmer.

Q: Now how long had you been out of school, by this time?

Danny Spracklen: Oh, by that time? That was like, what?- the '70's.

Kathleen Spracklen: It was- yes, about 1974, '75.

Danny Spracklen: So I'd been out of school since '65.

Q: Oh yes, so you'd been--.

Danny Spracklen: So I'd been out of school for quite some time. And I was- we were installing a new program system for their warehouse, and I was on site there, and we met there.

Q: Ah. Okay.

Kathleen Spracklen: Yes. And I was not yet a programmer, had not yet had- other than the two half-unit classes, in programming. I was working as a- working on reconciling accounts, that- fortunately not Dan's module- but one of the other modules had a certain hiccup, shall we say, and all this data was damaged. And so my job was reconstructing the data. So, once again, from the time I graduated from college until Dan and I met and married, I was a computer. In fact, I worked out- one of the ITT system companies- I was an Excel Spreadsheet.

Q: Okay. <inaudible>. That's a wonderful metaphor.

Kathleen Spracklen: Taking it to them, with the adding machine- cross footing. I think, oh, my gosh, my job that I had then could be totally replaced with an Excel Spreadsheet today. It was in the Budgets and Forecast Department. There were four of us. The other three people who were doing the job had MBAs. So, if you wanted to talk about- three MBAs and a statistician, and our task was to be an Excel Spreadsheet.

Q: My goodness. Exactly.

Kathleen Spracklen: It was a fun time.

Q: Yes, that was. That was fun. But it could get a little boring.

Kathleen Spracklen: Yes, yes.

Danny Spracklen: Yes.

Kathleen Spracklen: So, when Dan I met, we- mutual friends- we didn't know each other but mutual friends on the job knew that we were both interested in chess, and both had chess as a hobby. And so they arranged to introduce us.

Danny Spracklen: Yes, the first time I saw Kathleen, she was hunched over a chess program, or a chessboard, in the cafeteria, studying a chess position. And I go, wow, that's interesting. The young lady likes chess.

Q: You wandered over and looked at the position and said, what do you think about this? Okay.

Danny Spracklen: I'd always been interested in chess. I'd played chess in college and- although at that point, I'd never written a chess program. So.

Kathleen Spracklen: And it should be noted that Dan and I have played- as opponents in chess, we've played two games of chess. I won one and he won one, and we said, okay, good enough.

Q: Very good. Excellent. All right. Well, do you know, Dan, I think I jumped ahead a little bit, because I didn't know your history, and I missed something, because I got to when you two had gotten together. Maybe you could tell me a little bit more about when you- what did you do in college?

Danny Spracklen: Well, I majored in math. And then when I got out of college, I looked for a job. And McDonald-Douglas in Santa Monica, offered me a position there, as a beginning computer programmer. So I moved up there and started learning how to program in Fortran. And I worked for them for three years.

Q: Now, what kinds of things were you working on there?

Danny Spracklen: It was all scientific programming. We were doing trajectory analysis and we were doing- I was working with a bunch of engineers who were designing an external burning type program that would guide rockets. Just by ejecting gasses from the read end of the rocket, they would ignite spontaneously, and guide the rocket. So they were studying that, and I was helping them with their program that would model the behavior of that rocket. So that was quite interesting work. It was like some of the most interesting work I've ever had in my life was at McDonald-Douglas.

Q: All right. That does sound interesting.

Danny Spracklen: After about three years, I left that and went to work for Univac, in San Diego.

Q: Now, were you using Univac computers, at McDonald- Douglas?

Danny Spracklen: Yes, we were. We were using 1108's, basically. It was a very fine computer. I was really impressed with it at the time. I liked it a lot better than the 360- the IBM 360 which only had a 32-bit word size, at the time. And I think that the 1108 had a longer word size- a 36-bit.

Q: Yes, it was a 36-bit machine.

Danny Spracklen: Yes, and it was more accurate, and it was better for math, and scientific clicking.

Q: Yes, you didn't have to do- it was better for--.

Danny Spracklen: Scientific type calculations, and whatnot.

Q: Exactly Okay. Good. And so how did you get to Univac? Did somebody recruit you, that you meet somebody?

Danny Spracklen: Well, I had grown up in San Diego and I kind of wanted to move back there. And so I was kind of motivated to look for a job back in San Diego again. And so I saw ads in the paper for--.

Q: It wasn't directly through your work with McDonald- Douglas?

Danny Spracklen: That you met somebody, or--.

Danny Spracklen: No. No, no. So I just got the job on my own.

Q: All right. And so what did you do at Univac?

Danny Spracklen: Oh, I did a lot of different type positions, for them. I worked on military type installations, out at Point Loma.

Q: Now, this was contracts that Univac had gotten to supply the computers.

Danny Spracklen: With the Navy- yes. _____.

Q: And then they got an additional contract to do some of the programming?

Danny Spracklen: Yes. We worked on IBM- not 1620's. I can't remember the number right now. But there was a YUK-7, AN/YUK-7 computer that we worked on. And so we did a lot of contract work, basically, for the Navy. And then we did some commercial applications too, which Southland Distributor was one of them, where I met Kathleen.

Q: Very good. Okay, so that sort of- so you must have worked there for quite awhile.

Danny Spracklen: Yes, I worked for McDonald-Douglas for about three years, and then Univac was about 10 years- a little over 10 years.

Q: Oh, my goodness. You met Kathleen partway through the--.

Danny Spracklen: Partway through that, towards the end of that.

Q: All right. Well, we ought to maybe roll back, and talk about chess. When each of you first learned anything about chess- who taught you? I've got both of you on screen. So, you can take your choice.

Danny Spracklen: Well, let's see. I learned how to play chess when I got into college. I had a friend who played it, and he taught me how to play it. And we used to spend a lot of hours together, playing chess. And we thought we were pretty good. It turns out, we weren't that good- which I found out much later.

Q: Yes, exactly.

Danny Spracklen: So- I always enjoyed playing chess. It was a great game.

Q: Yes, once you learn how to play it.

Danny Spracklen: And being interested in mathematics, I was always interested in it's mathematical aspects.

Q: Okay. And analyzing different moves.

Danny Spracklen: Yes. And, in fact, it was- I had- didn't know that anybody had actually programmed a computer to play chess, till I was working at McDonald-Douglas. And then I think I checked some books out of the library, that had discussed computer chess, and read those, and thought, well, it'd be cool to write a computer chess program some day, but I just never had the time, really. And it was kind of tucked away in the back of my mind, at the time.

Q: All right. So, that was the first time that you remember it crossing your mind?

Danny Spracklen: Right.

Q: Oh, maybe a computer could do this.

Danny Spracklen: Yes.

Q: All right. Kathy?

Kathleen Spracklen: Let's see. I first encountered the idea of computer chess at a time before I was actually a chess player.

Q: Oh, before you were a chess player.

Kathleen Spracklen: Before I was a chess player.

Q: Oh, my goodness.

Kathleen Spracklen: It was again, I- when I was in high school, and I discovered a Time/Life book that had a big discussion of Claude Shannon's work, and which was very interesting to me. But I wasn't a chess player at the time, so it was only a passing interest. The thing that really struck me about Claude Shannon was when I looked at the picture of him, it was like, what's my dad's picture doing in this book? My father is an identical twin, and Claude Shannon looked more like my dad than his identical twin brother- but I don't know of any blood relationship. I've never met Claude Shannon. My maiden name is Shannon, and my father's Vern Shannon. So there may be some biological link.

Q: You've never done the genealogy to dig back and see--?

Kathleen Spracklen: No, never have, to see whether we were actually related or not. So, that was my first hint of computer chess. But I didn't learn to play chess until the big wave of publicity that followed the Bobby Fischer, performance. I was married previously to Dan and I getting together, and was subsequently divorced. And my husband at the time was very interested in chess, and he got- rekindled his interest in chess, following the Bobby Fischer world championship. And so we began to go to chess tournaments. And so I was sitting next to him, watching him play, weekend after weekend after weekend. And finally I decided, well, I'm going to play. They don't make you swear you're any good.

Q: Yes.

Kathleen Spracklen: So I had figured out how the pieces moved.

Q: Yes, you knew the- you had figured out the rules.

Kathleen Spracklen: Why not? They didn't tell you that it's not really common for people's- probably the first 100 games of chess I played, probably well over half of them were tournament games.

Q: My goodness.

Kathleen Spracklen: Certainly the first- of the first 10 games I played, the first 6 were tournament games, which is a little weird.

Q: Yes, that is.

Kathleen Spracklen: I came by my 1103 rating honestly.

Q: Okay. Very good. The hard way.

Kathleen Spracklen: And then I crawled up to about C-level, after playing in just a- kind of an insane number of tournament games.

Q: Now, did you play your former husband? Did the two of you play?

Kathleen Spracklen: No, we had- we didn't play. We just had a- it didn't seem to be very good for the relationship.

Q: Yes, exactly.

Kathleen Spracklen: As it turned out, it didn't last anyway. So then I put chess aside. After my ex-husband and I broke up, I didn't do any more chess at all, for quite a length of time, and then I never played in another tournament game again, as a person. But I started- I just was interested in chess, and so I read chess books and- in fact, that's how Dan and I met, was through chess.

Q: Yes, you were studying--.

Danny Spracklen: The chess woman.

Q: Okay, you were reading- you were looking at a position, on the--.

Kathleen Spracklen: Yes. And so after Dan and I met, and I relocated to San Diego, and it was- I couldn't get a job as a statistician in San Diego. At the time, San Diego was something of a backwater. And I would go to talk to companies and they'd say, oh, well, you know I could get you in, in our home office in L.A. But there wasn't any of the kind of work that I was doing, in San Diego.

Q: I see. Now, what year would this be?

Kathleen Spracklen: 1975. Okay? So, what I did to get a job was I just concealed my college degree and went to work as an accounting clerk, basically, and then enrolled in- at San Diego State, to study computers. And I needed to get a redirection. And so at that point in time, I was working all day and going to school four nights a week, and Dan was kind of left.

Danny Spracklen: Yes.

Kathleen Spracklen: All alone, poor fellow.

Danny Spracklen: That's when I got the idea to write a computer program, to play chess- just for the fun of it, in my spare time.

Q: Yes, while Kathy was in school, you--.

Danny Spracklen: This was a little before microcomputers were popular, or anything. I think the MITZ Altair computer was out about then. I remember attending a lecture- or not a lecture- a sales pitch, in

Mission Valley, in San Diego, by the MITZ people. I went down there and it was a hotel room, just- and like 100 people were in there, all just watching- listening to this guy pitch this computer. And I thought that was fascinating. A computer- and you can have a computer of your own. That's unheard of. But it was still a little expensive, at that time, and I just kind of thought about it, well it'd be nice to have one of those someday. So, then when I got the idea of writing a computer chess program, I decided, well, I'll just do it on paper, at first, because I don't have a computer. So I just started to write. I made up my own little language- it was kind of a generalized language- and started writing this chess program in that language, and with no computer at all, at the time.

Q: My goodness. So, it wasn't an assembly language, first, because you didn't know what a computer was. You couldn't write an assembler.

Danny Spracklen: It was a assembly language- like language, that I kind of made up, that had instructions that used the--.

Q: Moves things to registers.

Kathleen Spracklen: Pseudo code. Pseudo code.

Danny Spracklen: Right. Kind of a pseudo code.

Q: With bits of memory in it. Yes. Okay. But it was at that level. It wasn't like Fortran? Yes, yes.

Danny Spracklen: No. Not a high level at all.

Q: Not high level at all.

Danny Spracklen: So, I started working on that, and, I don't know. What happened next?

Kathleen Spracklen: Well then we learned about the existence of a personal computer that was pre-built. We weren't interested in buying a kit. And there were no commercial computers on the market yet. So we heard of this computer called the Wavemate Jupiter II. Basically, it was a personal computer, but it wasn't designed for home use. It was all wire wrapped, and it was designed for- as an industrial control computer.

Q: Ah yes, okay.

Kathleen Spracklen: It had no hard drives. That was a way before hard drives. It had no external disc drives. The only thing it had for- it had two tape players. And the reason why this was really wonderful, to have two, was that you could have one as an input medium and one as the output medium, and that gave you the ability to have a two-pass assembler. So you could have a symbolic assembler.

Q: Oh, my goodness. All right.

Kathleen Spracklen: So we emptied our bank account.

Danny Spracklen: And this was kind of weird, at the time. I must have been crazy, because now I wouldn't do this. But times were different back then I think. We were just more daring, I guess.

Q: Yes.

Danny Spracklen: So we thought, wow, this is really cool. We can buy our own computer. And I think we ended up spending 3 or 4 thousand dollars on it, which was like way more than an Altair MIDZ kit cost, even. And when we came home, we thought, wow, we really- maybe we did the wrong thing, spending all our money on this. We were having second thoughts about it, but we stuck with it, and we finally took delivery of it, because it took about- oh, 3 or 4 months for them to build it, after we ordered it.

Q: Oh, my goodness.

Danny Spracklen: And we were wondering, gee, did we- is this even for real? Or are we going to get a computer when this is all done, or are they just going to take our money and disappear? But no, we got the computer, and it worked. We brought it home, and started programming it. I started putting my chess program on it. And we finally got it going. And Kathy started doing the graphics for it.

Kathleen Spracklen: Yes. Oh, the most exciting thing was that when the computer finally arrived, we deposited it on our kitchen table and, guess what? Dan had to go away, out of town, for a week.

Danny Spracklen: Oh yes.

Kathleen Spracklen: The minute the computer had arrived, finally arrived, at our home, Dan was gone, and I had the machine to myself, for a solid week. So, I gave myself the task of figuring how the graphics worked, because it supposedly had graphics. So I just played monkey on the keyboard, in various regions of memory, until something graphic happened on the screen.

Q: Oh my goodness.

Kathleen Spracklen: And I just plunked and plunked and plunked and plunked, and finally I figured out how the graphics were mapped. And so I wrote a little article on the- doing this XY plotter, because the graphics were controlled- like 6 bits were controlled to a byte. And then you had to know where the memory was mapped. So I wrote little routines that could- if you took all of the dots on the screen, all the pixels on the screen, you could give it the XY coordinate of the pixel, and it would turn that pixel on, which was, of course, putting a given bit, into the right byte.   So that was the most core program necessary to begin to do anything graphic. So I created the program, and then I wrote an article. They were doing a--.

Danny Spracklen: Wasn't that later? You didn't write the article until later, right?

Kathleen Spracklen: That same- within the few- next few months.

Danny Spracklen: Was it?

Kathleen Spracklen: Yes.

Danny Spracklen: Really?

L: But anyway. So I did the graphics of it. That got me going. That began to involve me in a chess program. Up until then, it had been Dan's baby.

Q: It was your project.

Kathleen Spracklen: Yes.

Danny Spracklen: It was my project originally.

Q: Yes, exactly.

Kathleen Spracklen: Yes.

Danny Spracklen: So eventually we got the computer so it would actually play chess.

Q: Yes. Well, now you wrote this in- did an assembler come with this?

Danny Spracklen: Yes, we got an assembler with the computer.

Q: Okay. Yes. So you didn't have to do that.

Danny Spracklen: It was a Z-80 based machine.

Q: I was going to- the next thing I was going to ask is, what was the--?

Danny Spracklen: So it was a Z-80 assembler.

Q: Okay.

Kathleen Spracklen: It had it's weird mnemonics, for the Z-80 language, not like other mnemonics.

Danny Spracklen: They were called TDL mnemonics, I think.

Kathleen Spracklen: Yes. And of course we had no printer, and no printer drivers, no printer software.

Danny Spracklen: Oh yes.

Kathleen Spracklen: We did, however, have a symbol table. So at the end of the assembly, when you did an assembly, it would print out all of your symbols and give you the address of the symbols.

Q: And this just prints it out on the--.

Kathleen Spracklen: On the screen.

Q: On the screen, yes.

Kathleen Spracklen: With pagination. And so that was the one thing that you had to do. Every time you did a new compile of the chess program is you'd have to copy the symbol table out, so that you'd know where your stuff was.

Q: By hand.

Danny Spracklen: By hand.

Kathleen Spracklen: By hand. Otherwise, you wouldn't know where to go to start debugging.

Danny Spracklen: And I kept all my listings by hand too.

Kathleen Spracklen: Yes.

Danny Spracklen: Of the program.

Q: Oh my goodness. Yes. All right.

Danny Spracklen: So, it was quite a chore.

Q: It was fairly primitive.

Danny Spracklen: It was very--.

Q: It was a primitive environment, I think is--.

Danny Spracklen: Very primitive, but it was fun.

Q: Yes. Okay. And so you learned a program in Z-80. Well, you were an experienced programmer.

Danny Spracklen: I was- yes.

Q: So you had done assembly language programming probably, at some point.

Danny Spracklen: Yes.

Q: So if you were doing real time kinds of things.

Danny Spracklen: Right. So this assembly language was like baby stuff to me. It was just really simple.

Q: Yes, really simple.

Danny Spracklen: So we got the computer chess program running on it, and it was just barely playing chess. It didn't do everything, like it didn't promote Queens and stuff like that- Pawns to Queens. But nevertheless, I don't- that was about the time you discovered that there was a tournament for computer chess programs.

Kathleen Spracklen: Yes.

Danny Spracklen: In San Jose, California.

Q: Okay. Oh, that's a long way away.

Kathleen Spracklen: The 2nd West Coast Computer Fair was going to have a tournament, for microcomputers. It was unheard of, of course, at the time. But there were enough people creating computer chess programs. And so I said, "Dan, take your program, take your program." And I had given it graphics, so you- and a user interface, because Dan didn't have a user interface.

Danny Spracklen: Right.

Kathleen Spracklen: If you wanted to do a move in Dan's machine, you had to poke it in, to the right memory address.

Q: Did it have toggle switches on it, or what was the- how did you get things into it?

Danny Spracklen: No, it had a small operating system where you could actually enter into memory.

Q: But what did you physically do, to enter something into memory?

Danny Spracklen: Just type on the keyboard.

Q: It had a keyboard?

Kathleen Spracklen: Yes, it did.

Danny Spracklen: Yes, it did have a keyboard, yes.

Q: It did have a keyboard. _____.

Danny Spracklen: It was not that primitive. It was like- some of the early ones only had toggle switches.

Q: Yes, exactly. That's why I was wondering whether it was beyond the toggle switch.

Danny Spracklen: It was beyond that. Yes, we definitely had a keyboard and a monitor.

Kathleen Spracklen: Yes. I gave it a graphics interface and I gave it the ability to- it recorded the list, of the moves, on the screen- and I gave it the ability to type in your move from a- you- from a cursor, rather than having to poke your move into a memory location. So at that point in time, with Sargon 1, that was just about really the only thing that I did, for the program. The rest of it was all Dan's.

Q: Okay. But you learned to program, in the process of doing this- of course.

Kathleen Spracklen: Yes, of course. And I did all my computer work- from then on, any of my classroom assignments, I did on my home computer, because I had one.

Q: Oh, very good.

Kathleen Spracklen: So of course I was learning the Z-80 language.

Q: So you're taking computer courses.

Kathleen Spracklen: Yes.

Q: And learning about computers at the same time. You have something to practice on.

Kathleen Spracklen: Right. Yes.

Q: Well, that's pretty interesting.

Kathleen Spracklen: So this tournament came up, for the West Coast Computer Chess- the West Coast Computer Fair was having the first computer chess tournament, strictly for microcomputers. The first time it had ever happened.

Q: I have to pause you for a minute. How did you debug this program? Did you play against it?

Danny Spracklen: Both.

Q: Did one of your play?

Danny Spracklen: Yes, we played against it, just to make sure it made legal moves and whatnot, and try to improve it. We gave it rudimentary thing. The best thing that it had was- we didn't- this was before the advent of capture searches. We weren't doing anything like that. We just had an exchange evaluator that we figured out how to make work, and programmed that into it. So it had that, and it had mobility. And I don't even think it had pond structure, in its evaluation function at the time.

Kathleen Spracklen: Not Sargon I.

Danny Spracklen: It was pretty crude.

Q: Yes. Well, the most important things though were the ability to do good evaluations.

Danny Spracklen: Yes. And it was doing like, what?- a one-ply search, I think- a one or two-ply search, was all it was doing.

Q: A one- okay- oh.

Danny Spracklen: And we were amazed it could do that.

Q: Yes. How much memory did it have?

Danny Spracklen: Oh, I think we had about 4K, if I remember right, initially, and then later we got some more. I think eventually we got 8 or 16K, on it.

Q: Yes. Eventually you added what you could, what you could buy, on it.

Danny Spracklen: Right.

Q: And do you remember how, that first program, that you're going to take up to San Diego, how big was the program and how much was data space?

Danny Spracklen: It was very small. It was just like 1 or 2K, at the most.

Q: All right. It was pretty simple.

Danny Spracklen: A pretty simple program, yes. It wasn't very sophisticated at all.

A: All right. So then you--.

Kathleen Spracklen: So I suggested that we- to Dan, that we ought- that he ought to take his computer up and try it out. There's all this- a tournament going on, just for microcomputers. And so, we were kind of young and adventurous, so we packed the computer in the car, on a very, very wet and rainy day, and drove up the Bay area, for the tournament.

Q: All right.

Danny Spracklen: We entered the computer tournament, and there was a lot of other people there. And we had no hopes of winning at the time.

Q: But you thought it would just be fun, to try it.

Danny Spracklen: Yes, right, right- just for the fun of it. And lo and behold, we ended up winning the tournament. We won all of our games. Although I'm not real proud of the games, we did win them though.

Kathleen Spracklen: Particularly the- was it the last one, with the pawn promotion?

Danny Spracklen: One of the games we- our opponents- was it us or--?

Kathleen Spracklen: Our opponent had a pawn on the 7th rank, that it could queen at will. And, whereupon, we had a couple of pawns and a king, and we'd have lost the game, no question. However- and I don't remember who we were playing- he hadn't gotten the pawn promotion completed, on his program. So his pawn just continued to sit on the 7th rank. And so our` king just gradually walked across the board, ate his pawn, then walked over to our pawn and shepherded it down and we queened it.

Q: Yes, but the program figured that out.

Kathleen Spracklen: Yes.

Danny Spracklen: Yes. Well, we had finally- I guess before we went to the tournament, we got the pawn promotion logic in there.

Kathleen Spracklen: Yes. And we had king to pass pawn tropism. That was my first contribution to the position.

Danny Spracklen: Yes.

Kathleen Spracklen: That I put a tiny bit into the _____, at that point in time.

Danny Spracklen: Otherwise, the king would have wandered around aimlessly.

Kathleen Spracklen: So that was the first piece of position.

Q: So, let's continue with the story. Now you've gone up and you- oh, my goodness, we've won the tournament. Now what happens?

Danny Spracklen: Well, at that point I think, at some point in time, a person from Byte magazine contacted us, and wanted to know if we wanted to write an article for his magazine. And so we said, sure.

Q: Yes, because this is a major- this is a really good thing to--.

Kathleen Spracklen: Yes.

Danny Spracklen: And also, at that time I was started to think about, well, gee, this is a- maybe I can sell this program to somebody- if other people are buying microcomputers and whatnot. And so the fellow from Byte magazine said he'd put a plug in for our program, along with our article. And so we wrote a couple of articles for Byte magazine on some simple aspects of the program.

Kathleen Spracklen: Exchange evaluator.

Danny Spracklen: Exchange evaluator, and what else?

Kathleen Spracklen: A move generator.

Danny Spracklen: A move generator- the basics of. And when we got back, we started thinking, well, how can we sell our program? We don't- how can we deliver it to somebody? And there was really no way we could because the wave- nobody else had a Wavemate Jupiter III computer.

Q: A few people did, but they probably weren't interested in chess.

Danny Spracklen: Right, exactly.

Kathleen Spracklen: And at that stage, problems were not distributed in magnetic media. If you wanted to distribute a program, you typed it in out of a magazine article or out of a book.

Danny Spracklen: Right. So, that's what we decided to do was just create a listing, of the program, and sell the listing, and then the people could get the code and put it into their computers however they wanted, or could. And so we got the plug in Byte magazine, and pretty soon, orders started coming in to our house, and we were selling the whole thing for $15.00. We were putting it into a bound copy and Xeroxing it, and just selling that for $15.00.

Q: Basically, selling a listing.

Kathleen Spracklen: Yes.

Danny Spracklen: Yes.

Q: And, of course, it would work on- presumably, with a little bit of tweaking- would work on any Z80.

Kathleen Spracklen: That's right.

Danny Spracklen: Right, any Z80 based machine.

Q: And there were a lot of them. There were quite a lot of Z80 machines.

Danny Spracklen: Yes. So we had- oh, before we stopped selling it in that- out of our home, we had orders for about 300, I think.

Kathleen Spracklen: Right.

Danny Spracklen: Copies. And we were just getting totally busy- go into the Xerox store and doing all this mailing and stuff. It was starting to take up all of our time.

Kathleen Spracklen: Getting to be too much bother.

Danny Spracklen: Yes.

Kathleen Spracklen: And at the same time, Doug Penrod was talking to us and saying, "Well, you know what you really need to do? You need to put an introduction on it, you need to give it a table of contents, you need to give it an index, and then it'll be a real book." And so we did do that, at his suggestion, and then we were contacted by Hayden Book Company, and they wanted to publish it.

Danny Spracklen: Right.

Kathleen Spracklen: And about that time, we were sick of running to the Xerox distributor.

Danny Spracklen: So we were just glad to have him come over.

Q: For your $15.00.

Kathleen Spracklen: Yes.

Danny Spracklen: So we were very glad to have them come along and publish the thing for us.

Q: Yes. And you both are still- you had your jobs.

Kathleen Spracklen: Right.

Danny Spracklen: We both still had our jobs- right.

Kathleen Spracklen: By this time I was done with school.

Q: Yes, I was going to say. You had been in school, at this time.

Kathleen Spracklen: Yes. I went to work for Burroughs Advanced System Development Organization-ASDO, we called it. And it was a- kind of a research, leading edge, cutting edge development house for Burroughs, to do projects that were very unusual, and stretched the capabilities of computers. And in particular, the project that I was working on when I- shortly after I joined them, was one that I couldn't quite picture how it could possibly work, but if they thought so, well, maybe. They had this idea of putting a machine on the- it would be accessible from the street, and you would take this plastic card, that was going to have a magnetic stripe on it, and you were going to put it in this machine, and put in a pass code, and the machine was going to spit out money. And I thought, right, this is really going to work.

Q: You didn't buy it- exactly.

Kathleen Spracklen: No. Who's going to want one of those?

Q: Right. Okay. It was called an automatic teller machine, and it was really quite fun, and it was being developed at a time before the network theory was very- network was just theory. It wasn't really- you couldn't buy any network processor program. And so the ASDO group created a- there was some wonderfully brilliant people, I enjoyed working with, very much- created a packet switching network, between these various teller machines and a central computer. And then the individual teller machines were going to run on a stand-alone processor, and it was down to two. It was either going to be the 80-no, the 80/86, or the Motorola 68,000. And Motorola slipped on their delivery date, so they went with the Intel processor. And so it was- they were both announced, just announced, when we began to do the work. And my own part of it was in a little bitty 4-bit processor that sat on the- sat and watched the network for a packet, and only pulled off the packets that belonged to the terminal, and then it communicated with the bigger processor, that was running Intel- the big Intel.

Q: Yes, the big- the 80's.

Kathleen Spracklen: Yes. So, I was working for them.

Q: Oh, very good. Now where was this Burroughs lab?

Kathleen Spracklen: San Diego.

Q: In San Diego?

Kathleen Spracklen: Yes, we were both living in San Diego.

Q: Wow. All right. Very interesting. So now what year did you- you graduated in?

Kathleen Spracklen: I didn't graduate. I didn't finish my Master's program, because I got the job offer.

Q: And you said, oh--.

Kathleen Spracklen: I said, well, that's why I went back to school.

Q: Is to get a job.

Kathleen Spracklen: Was to get retrained for a career. So I thought, I'm going to be a little silly if I say, no thank you, to the career, that I was training for.

Q: Yes, exactly.

Kathleen Spracklen: It seemed like a really wonderful opportunity, to go work for them. So I took the job, and had one class left, of a Master's program. So, that was in 1978, or 9?

Danny Spracklen: Probably 9.

Kathleen Spracklen: Probably 1979. Yes.

Q: All right. And you're still working for--?

Danny Spracklen: Still working for Sperry-Univac.

Q: Doing whatever the latest project is.

Danny Spracklen: Yes, I think at that time I was out in Point Loma, working for- on the Navy contracts, for Univac.

Q: All right. So, let's continue on the story of what happens with Sargon.

Kathleen Spracklen: Okay. By that time, the Z80, TRS-80 came out, and the Apple 2 came out. And so now we had two potential machines that were going into homes that could actually take a commercial program. And Hayden came- approached us, and said, we've got your book- would you like to do your program on magnetic media?- because we're going to start selling computer software, on tape.

Q: Now had the book come out yet?

Kathleen Spracklen: Oh yes.

Danny Spracklen: The book had come out.

Kathleen Spracklen: It was already out.

Q: The book had come out. And you bought the book, and that's how you got the listing?

Kathleen Spracklen: Right. That's right. And at the time, when the book first came out, we were so excited, we went down to our local Barnes & Noble, to see our book on the shelf. And so we asked them, "Well, where's the computer section?" And they pointed us to an area, and there it was. It was about- less than two feet, of one shelf, was the computer section. And there was a How to Build Your Own Robot, and our book.

Q: Really?

Kathleen Spracklen: Yes, and just a handful of others.

Q: Oh, that's wonderful. Now, do you still have copies of the book?

Kathleen Spracklen: We do.

Danny Spracklen: I still have one, at least.

Kathleen Spracklen: And we plan to get one down for you.

Q: Okay, that'd be great.

Kathleen Spracklen: I think we have- hopefully we have two.

Q: I'd love to see that. All right. So, the same company that published the book is now thinking about publishing some software.

Kathleen Spracklen: That's right.

Danny Spracklen: Right. So, I think we- the next step was to get it going on the Tandy Radio Shack, TRS-80. So that's what we did. We got it going on that machine.

Q: Did you have to recode much of it?

Danny Spracklen: Just mostly the graphics.

Q: Yes. Of course, the graphics were all different.

Danny Spracklen: The graphics were quite a bit different- so, basically.

Kathleen Spracklen: And the mnemonics.

Danny Spracklen: The mnemonics. We had to re-punch it all in, by hand, and all that kind of stuff.

Q: Yes, it was close enough. There was an operating system for it?

Danny Spracklen: It had an operating system, yes- minimal.

Q: Yes, minimal but not a lot of- because there wasn't a lot of IO. Once you got the graphics--.

Danny Spracklen: Right.

Q: That's what you're doing, so. All right.

Kathleen Spracklen: And then shortly after that, when the Apple 2 came out, that was a complete re-write.

Q: Because?

Kathleen Spracklen: Because it's a--.

Q: 6502.

Kathleen Spracklen: A 6502.

Danny Spracklen: Yes.

Kathleen Spracklen: And so my brother, Gary Shannon, did the first rewrite, of Sargon I.

Q: Oh really?

Kathleen Spracklen: Yes. And it actually came out briefly. But, in the meantime, Dan and I were already working on a new version, Sargon II.

Danny Spracklen: Yes, we were working on II at the time- the next improvement.

Kathleen Spracklen: And by this time we had kind of- Dan had entrusted me with the positional analysis. And so I was actually doing my own little module, in the program. It was still mostly Dan's program. But it fell to us to translate it to a 6502. And when we did that, we were quite amazed. We thought that the 65- that the Apple, running at one megahertz, was going to be weaker than the TRS-80.

Q: Which was running at?

Danny Spracklen: What was it running at?

Kathleen Spracklen: Two, wasn't it.

Danny Spracklen: Two, or--.

Q: It was running significantly faster.

Kathleen Spracklen: Yes, faster.

Danny Spracklen: 2 or 3 megahertz, I think. But it turns out, the Apple, running at 1, was- the program- in that assembly language, just ran a lot faster, and it was at least the equivalent, or better.

Q: Oh, so it must have had to do with the processor, the instruction set.

Danny Spracklen: Yes, the instruction set was a little more efficient, I think, and more- it was more, if you could say, risk like.

Q: Well, it didn't have those high and low registers.

Danny Spracklen: Yes.

Q: That came from the original 8008.

Danny Spracklen: It was a simpler instruction set, but it actually- the cycle times on the individual instructions were very fast, like one microsecond, instead of like 4 or 5 microseconds, on the Z-80.

Kathleen Spracklen: Yes. And it had the short branch. You can't underestimate the value that the short branch offered. They had the ability- if you could branch within a one byte distance of where you were, and using it as a sign number, positive or negative, you had an extremely fast branching instruction. So if you could make loops very, very small and tight, you could really run with high, high speed.

Q: Ah, yes, and you'd just go roaring through the loops. Okay.

Kathleen Spracklen: So, that was when- but at that time, we had Sargon II came out, and so then after that, we even started another version, another whole _____, Sargon III.

Q: But you're still both working?

Kathleen Spracklen: Yes.

Q: Okay, you're just doing this on nights and weekends?

Kathleen Spracklen: Yes. And then Sargon III was a total rewrite, from the ground up. Sargon II was some significant improvements over Sargon I, but Sargon III was take out a fresh sheet of paper.

Q: What sorts of things did you do with Sargon II, to improve it? What do you remember that you--?

Danny Spracklen: Well, we speeded it up, so we were getting like 4-ply, instead of 2.

Q: Okay.

Danny Spracklen: Let's see. We still had an exchange evaluator, instead of a capture search. We had a much better pond structure, and basically analysis of a position, in there.

Q: Okay. So positional analysis, was improved. So, fundamentally, lots of improved work on what might be viewed, as- broadly- as the evaluation part of the- so you could tell, which are the good positions, and which ones you don't want to go to.

Danny Spracklen: Right.

Kathleen Spracklen: Right.

Q: All right.

Danny Spracklen: So when did we go to our first ACM tournament? That was with Sargon II, I think, on the Wavemate Jupiter.

Kathleen Spracklen: Oh, that's right.

Danny Spracklen: We packaged it all up. In fact, the people from Wavemate helped us pack up our computer and send it Washington, D.C., where the computer tournament was being held that year.

Q: Oh, my goodness.

Danny Spracklen: And, in fact, you were in a conference in Miami, at the time. So, Kathleen was flying from Miami to Washington, D.C., and I was flying from San Diego.

Kathleen Spracklen: Through Chicago.

Danny Spracklen: Through Chicago, to Washington, D.C. And so, when I got to Chicago, who got on the plane but Larry Atkins and David Slate.

Q: Is that right?

Danny Spracklen: And I'm going, wow.

Q: You've met them before.

Danny Spracklen: No, I'd never met them before.

Q: Did you recognize them?

Danny Spracklen: Yes, I recognized them, but--.

Q: From pictures and--?

Danny Spracklen: Well, heck, they were talking about computer chess and my ears perked up.

Kathleen Spracklen: Weren't they sitting in the row right in front of you?

Danny Spracklen: The were sitting across the aisle, a few seats down. Yes. So, anyway, when we got there, we- and Kathy got at the airport, and then we all introduced ourselves and we told them who we were.

Q: You had a grand old time.

Danny Spracklen: They were really cordial to us. We thought, geez, these guys have been in computer chess for a long time, and we're just newbies. But they were really nice to us.

Q: That's very good.

Danny Spracklen: It was great. It made us feel like part of the crowd. So, we went to that tournament, and we were playing against big machines- Amdahl's and Craze [ph?], kind of like--.

Q: Yes, because there were all sorts of- this was not just a microcomputer.

Kathleen Spracklen: Right.

Danny Spracklen: Plus Ken Thompson had his Bell, at the time.

Q: He had Bell there?

Kathleen Spracklen: Yes. He wore a T-shirt, in our honor. He loved these character T-shirts. His idea of dressing up is put on a clean pain of jeans, as you probably know.

Q: Yes.

Kathleen Spracklen: And so he had this T-shirt, with a cat on it, with a mouse, kind of hanging out of its mouth, and it said, How I'd love to eat the miceies, eat them every one, nibble on their tiny feet- bite their little heads off. It was really gross but he thought- he had figured that we were going to be paired in the first round. He did the Swiss on it and figured that's where we would probably end it.

Q: Oh, he'd done the calculations?

Kathleen Spracklen: Yes. And so he had his big chess machine, was going to play our little microcomputer, and that was going to be nibbling on their tiny feet.

Q: Oh, I see. And you were the tiny feet, to nibble on.

Kathleen Spracklen: Yes.

Danny Spracklen: Kind of an allegory thing.

Kathleen Spracklen: It turns out when we met, he wasn't wearing the T-shirt, but he definitely nibbled on our tiny feet.

Q: Yes, he did.

Danny Spracklen: Yes.

Kathleen Spracklen: I think the most exciting part for us was the last round of the tournament.

Danny Spracklen: Yes, that was when we played Tony Marsland's program- AWIT.

Kathleen Spracklen: Yes. It was a 6 million dollar Amdahl computer.

Q: It was on an Amdahl?

Kathleen Spracklen: Yes.

Danny Spracklen: And we won the game.

Q: Oh my goodness.

Danny Spracklen: And we were just amazed.

Q: Exactly. Think how many plies he can go back, during the allotted time.

Danny Spracklen: I remember, at the time, we won it. And there was a huge audience there. There was like a hundred people sitting out there, watching it, and they just all started cheering and clapping.

Q: Really?

Danny Spracklen: Yes.

Kathleen Spracklen: Yes.

Q: As they watched your position improve, relative to--?

Danny Spracklen: No, when we actually won.

Q: Oh, when you actually won.

Danny Spracklen: Then they just like broke out into- because everybody had been really quiet, up until then.

Q: Oh, okay.

Danny Spracklen: And then when we won, they just started cheering and applauding, and I was just amazed. I was overwhelmed by it, the experience.

Q: I'll bet. Oh, that's great.

Danny Spracklen: Yes, it was.

Q: That's a wonderful story.

Kathleen Spracklen: And then we woke up the following morning to a big article in the Washington Post that says, Microcomputer Beats 6 Million Dollar Machine, or something like that.

Q: Oh, the press would have a field day with that.

Danny Spracklen: Well, there was a story behind that too. Right? You want to tell it?

Kathleen Spracklen: Well, as it turns out, Dan's trip to Washington, D.C. wasn't the only one that was a little bit eventful. I was- let's see, I'm going to get the name wrong and then I'm going to be very embarrassed. So, should I get the article out, and make sure I don't get it wrong?

Danny Spracklen: Oh, well, it's up in the attic, isn't it?

Kathleen Spracklen: Oh okay, well then I don't want to tell the story, and maybe get the names wrong.

Q: Oh, you got to tell the story. Come on.

Kathleen Spracklen: Well, but I have to get the name right, or I can't tell it.

Q: Well, can you say A and B?

Kathleen Spracklen: All right. You might know, because I have no- my problem is I don't have much of a memory. The reporter who did the- broke the story on Watergate, was that--?

Q: Oh, Bernstein.

Kathleen Spracklen: No.

Q: A different one. Okay, there were two of them.

Kathleen Spracklen: Wood--?

Q: Woodward.

Kathleen Spracklen: Woodward- is it Bob?

Q: Bob Woodward.

Kathleen Spracklen: Bob Woodward. Okay, as it happened, Dan's trip to Washington, D.C. wasn't the only eventful one. I traveled from Florida, up to Washington, D.C., and my seatmate was Bob Woodward's wife. And his little daughter was a toddler. As it turns out, I had the window seat and she was fascinated with looking out the window. So, I had Bob Woodward's 2-year-old daughter on my lap, most of the trip. And so I was chatting with his wife and we were talking and she was asking me what brought me to Washington, and I told her about the chess tournament. And so, lo and behold, on the very exciting moment where we beat the Amdahl computer, Bob Woodward happened to be in the audience. And he's the one who wrote the story.

Danny Spracklen: So that's how the story got in there.

Q: Is that right? Oh, that's wonderful. Oh, that's great. That's a great story. Good. All right. So, this is pretty heady stuff.

Kathleen Spracklen: Yes.

Q: Well this is, you've updated the program some. But it's still on a, is it a faster TR?

Kathleen Spracklen: It's still our very first machine.

Q: It's still your very first machine?

Kathleen Spracklen: Yes.

Danny Spracklen: But we took it back to the people that built it and they souped it up a little bit for us, so it was running a couple of megahertz faster than it originally was.

Q: Okay. They may have put a new Z-80, that just ran faster.

Danny Spracklen: Yes. He swapped out the chips.

Q: I know there all sorts of graded speeds.

Danny Spracklen: He tweaked it.

Q: He tweaked it.

Danny Spracklen: Until it ran a couple of megahertz faster- played around with the clock and stretched some of the cycles.

Q: Oh, he really tweaked. Yes, he really fooled around with it.

Danny Spracklen: Yes. So, he knew what he was doing and--.

Q: Well, he thought this would be wonderful publicity.

Danny Spracklen: Sure, for him. Yes.

Q: For him, yes, and everybody would ask, "So, what was your program running on?" Okay. So what happens next in the story?

Kathleen Spracklen: Well, the next thing was that we got out a fresh sheet of paper and we decided we wanted to rewrite the program, from the ground up. And it was sort of like the Sargon I and II were a good training exercise, but now we really wanted to incorporate a number of new things. We wanted to put in a full exchange evaluator, and I wanted to do a lot more with--.

Danny Spracklen: Capture search.

Kathleen Spracklen: Pardon me, a full capture- quiescent search. And I wanted to put in a more sophisticated positional analysis. And so we rewrote the program, from the ground up. And we rewrote it for the 6502, because, by now, we knew that that machine was a lot more powerful.

Q: The Apple was- yes, was more powerful, and was a huge seller.

Kathleen Spracklen: Yes.

Danny Spracklen: Right- a real popular machine.

Kathleen Spracklen: And the other thing that Apple had, by then, was a two-pass assembler. By that point in time, they had a disc drive and you could- and a full symbolic assembler, which they hadn't had, up till then.

Q: So, actually, your original machine, in some sense, had better software in it, than the Apple did.

Danny Spracklen: It had more sophisticated software than the Apple first did.

Q: A more sophisticated assembler.

Danny Spracklen: Yes.

Q: Okay.

Kathleen Spracklen: And the Apple had something else that was just a wonderful luxury item. It had a printer.

Q: You don't have to copy, the listing.

Kathleen Spracklen: Right.

Q: Okay.

Kathleen Spracklen: Of course, you didn't wait- it was a dot matrix and slow, so you didn't do a new printout, every time you changed something. You'd do a fresh printout, and then you'd write your changes into the listing and correct your symbol table. And 4 or 5 or 6 iterations later, eventually it would get so cumbersome to work with that old listing, that you'd make a new listing. And you didn't have the ability to print a piece of a listing. You either printed the listing, or you didn't.

Q: Yes, I see. Okay. Now were the graphics any better on this?

Kathleen Spracklen: Oh yes.

Danny Spracklen: The graphics were much better on the Apple, yes.

Kathleen Spracklen: Yes.

Danny Spracklen: Well, we didn't use colored graphics to begin with because you lost a lot of your detail, in color, in the early Apple. So we stuck to black and white.

Kathleen Spracklen: That's right, for a long time.

Danny Spracklen: For a long time.

Q: What was the basic interface? Was there a chessboard on the--?

Danny Spracklen: Just a 2-D chessboard.

Q: A 2-D chessboard, and a place to--.

Danny Spracklen: A move list on the side, and a place to put in your move and--.

Q: Yes, okay. All right.

Danny Spracklen: Basically.

Kathleen Spracklen: And the other thing, that Sargon III had, was we had an opening book. First of all, Dan and I did the first one, and then we met a chess master, Boris Baczynski [ph?], who contributed some opening repertoire, for our program. And he also contributed a set of famous games, that you- that came along on the disc. So you could use the Sargon interface to replay some famous historical chess games. So that was the first time we brought- another person involved in it.

Q: Okay. And then you could watch the--?

Kathleen Spracklen: Yes.

Danny Spracklen: And that was- I think with Sargon III. Right?

Kathleen Spracklen: Yes, Sargon III.

Q: Okay, at this stage, had the program been published, and was it selling?

Kathleen Spracklen: Yes.

Q: Tell me a little bit about the commercialization. We stopped when- who was your publisher?

Kathleen Spracklen: Hayden Books.

Q: Hayden said, yes, they wanted to do it.

Kathleen Spracklen: Yes.

Q: Let's roll back and do a little bit about--.

Danny Spracklen: Yes, they had Sargon I and then Sargon II and then Sargon III. And all during that time, they continued to sell it, as part of their software. And during that time though, we also looked into writing the program for Fidelity Electronics- the makers of the Chess Challenger. And eventually we went to work for them, full-time. And, in fact, we spent ten years working for them, doing all their--.

Q: But this was after- this was at a later time. But you had started--.

Danny Spracklen: Well, this kind of overlapped, actually.

Q: Overlapped.

Kathleen Spracklen: And it was after Sargon III was created. They saw Sargon 2.2, and then later 2.5, they used on a program called the- they had something called the Boris Chess Machine. Actually, it was a multi-purpose game machine, and they had--.

Danny Spracklen: That wasn't Fidelity though. That was Applied Concepts.

Kathleen Spracklen: Okay. Pardon me. Yes.

Danny Spracklen: Yes. Applied Concepts. They were a Texas-based company, and they came out with the Boris in a box, originally. And then they came out with a modular game system. And that had our Sargon 2.5 program on it.

Q: All right. So you sold it.

Danny Spracklen: And that was before we became associated with Fidelity.

Q: Okay. Now were you doing all the business part of- negotiating the--?

Danny Spracklen: Yes, we did pretty much that all ourselves- although we had an attorney, but he didn't really help us that much. But we did most of the negotiation ourself.

Q: Now, by the time Sargon II was out on the Apple, what are they charging for it?

Kathleen Spracklen: I'm going to say $29.00. I'm not sure.

Danny Spracklen: Yes, $29.95 rings a bell. That was like the going price for small software packages, back then.

Q: Yes. And so how much of that did they keep and how much did they give to you?

Danny Spracklen: Oh, we got 10% royalties, and I think eventually we got 15% royalty, basically on the- was that on the net price, or the profit?

Kathleen Spracklen: Yes, on the- I'm not sure how it was calculated. I'm sorry.

Danny Spracklen: I think it was on the net price.

Kathleen Spracklen: Yes. Every time we got a royalty statement, it was for more, and we were continually astounded.

Danny Spracklen: Yes.

Q: How much it- yes.

Kathleen Spracklen: It was like, oh my gosh, by- certainly within the first six months, we had paid for our computer system, and it continued to grow. So, it was like, wow.

Q: This is pretty good.

Kathleen Spracklen: Yes.

Danny Spracklen: Yes, it was about that time I decided to quit my job at Univac and just go into this stuff full-time.

Q: Is that right? Okay.

Kathleen Spracklen: Well, that's when we had the modular game system, contract.

Danny Spracklen: Yes.

Kathleen Spracklen: Because they were really talking some big dollars, and waving them in front of our face. But it would take- necessitate quite an effort, to get it up and going, and that wouldn't be something that- Dan had to take the risk, to leave his job, to be able to get the product to market in time. So, I kept my job and--.

Danny Spracklen: I quit my job and--.

Kathleen Spracklen: Dan launched into getting a modular game system out.

Danny Spracklen: It was pretty daring, at the time.

Q: Yes. You felt a little, oh-oh-oh.

Danny Spracklen: Yes, it was scary. So. And then when things didn't go really well with Applied Concepts- they didn't come through for us, like they had promised- didn't sell as many.

Q: In what sense?

Danny Spracklen: Well, they didn't sell as many, and then they got in a lawsuit with their distributor, Shafett's [ph?]. And actually, our contract was with Shafett's, and they were the people that marketed the product. The people that actually built the thing were Applied Concepts. Those two guys got in it, and so the whole thing kind of just fell apart. And eventually Applied Concepts just sold off all their units and kind of went out of the business.

Kathleen Spracklen: Yes. And we essentially got nothing for it. So this risk, that Dan took, leaving his job to develop this.

Danny Spracklen: We got a little bit, but not nearly what we had thought we'd get.

Kathleen Spracklen: Yes. And not enough to replace your salary.

Danny Spracklen: No, no.

Q: No. Oh, oh.

Kathleen Spracklen: And so now it was like, oh no.

Q: Yes, now we're stuck.

Danny Spracklen: So, that's about the time we started looking at Fidelity again. We got in contact with Sid Semole [ph?], who was the President of the company, and he said, "Well, come out and see us and bring your- what you got out there and show it to us." And so we got on a plane and flew out to Miami, and showed off our program to him. And they had their chief engineer, Ron Nelson, look at it, and they were impressed. And so they offered us a big contract, basically, to go to work for them, basically, full-time. And we didn't have to go to Miami. We could stay in San Diego.

Q: And you would just- the contract was to develop the software for another- they already had a chess challenger yet?

Danny Spracklen: They had the Chess Challenger 1, I think, out at the time, or 2, and they were looking for something better.

Q: Yes. And it didn't play wonderful chess.

Danny Spracklen: Our program, that we brought with us, just shellacked their program.

Q: Is that right? Did they have a little--?

Danny Spracklen: We had a little tournament there, in Miami, just a little, between us, on our- the one we brought with us. And they were impressed.

Q: Yes, well of course.

Danny Spracklen: So they wrote up a contract with us and--. So, we were with them for another 10 years.

Kathleen Spracklen: 10 years.

Danny Spracklen: 10 years. And we worked out of San Diego.

Q: Okay. Now, you were still working at Burroughs?

Kathleen Spracklen: No, when- I had taken a job as a games programmer for another games company, who had thought that they were going to do a computer chess videogame. And then that also never really went anywhere. So, we were both kind of in a tenuous employment situation, when we talked to Fidelity. So we both went to work full-time, for Fidelity.

Q: So both of you?

Danny Spracklen: We both did.

Kathleen Spracklen: Yes.

Danny Spracklen: And we continued to sell book through- or Sargon, through Hayden. So Fidelity didn't mind that. The said that's cool. So we--.

Q: Yes. They knew that it was sort of a different market. It was stand-alone chess.

Danny Spracklen: They didn't see it as a competition with them. Yes.

Q: Yes. As opposed to just playing chess on a computer.

Danny Spracklen: Right. So that was great, and it worked out well for us.

Q: Okay, good. So tell me a little bit about the story of working for Fidelity. What did you do first and what were some of the challenges?

Kathleen Spracklen: Well, the real challenge that I recall, working with Fidelity was, they were on a very tight calendar. The program is a stand-alone unit. You took it out of the box, you plugged it into the wall, and you played chess with it. It was a chessboard. And the program was buried inside of it. So there was a technical challenge that you got control from what was called the power on interrupt. You knew the address, in the memory space, that the program would go to first. And in that address, you had to put the address of the starting address of your program, and from then on, it was- everything was up to your program. Nothing happened in that machine, that you didn't write the code for. There was no operating system.

Danny Spracklen: Right.

Kathleen Spracklen: None, whatsoever. Everything in there was yours.

Danny Spracklen: So we had to write the interrupt routine. We had to handle the interrupts. We had to do everything ourselves.

Kathleen Spracklen: Yes, if you wanted to make a beep, you had to toggle the membrane often enough for it to go beep.

Danny Spracklen: At the right rate.

Q: At the right frequency.

Danny Spracklen: Right.

Q: So you had to write a little sub-____ that went rah-rah-rah. And, knowing the clock frequency of the Apple, it would end up with the right tone.

Kathleen Spracklen: With the 6502 that was buried inside of it. And the cheap ones would run at one processor speed, and the more expensive ones would run at a different processor speed. So you'd have to have a slightly different version of the program, at least for the beeper, so it wouldn't go <high voice> beep, versus <low voice> beep.

Danny Spracklen: You just had to make it independent of the processor speed- the logic.

Kathleen Spracklen: Right. And the early programs didn't have- had just nothing- no window, nothing. You had to do all of your communication with lights. You had a light in every- each one of the 64 squares of the board. And so it was like, how are you going to put any features in that? And yet we put a- amazing number of features. Do you remember the name of that unit that sold so many? I can't remember what that was.

Danny Spracklen: Prestige?

Kathleen Spracklen: No, the early- the inexpensive one. Oh, it will come back to me later. We put an amazing number of features into it.

Q: Yes- what kinds of things?

Kathleen Spracklen: With board setup. You could set up a position on the board. You could set levels of play. You could set a little bit of styles of play, all with just touching keys- one of the 64 keys, and give you feedback to the user, in lights. It was extremely primitive. And yet we managed to do that. And that was a lot of fun.

Q: Oh, yes, so there are these lights, in each square, and they touched them.

Kathleen Spracklen: Yes, you touched a square and a light would- and you knew certain combinations of things, from the instruction booklet- and they had certain things. I think the levels were on the H-file.

Danny Spracklen: Yes.

Kathleen Spracklen: And then they were on a very tight production schedule. So they had- it was a very, very competitive time. We started working for them in 1980. And in the early '80's, ROMs were- ROM-based toys were huge, huge. And there was an enormous competitive fight for the production facilities, to get your chips produced. And you had to subscribe to when you were going to have your code at the ROM manufacturers by say- I'm going to say June 17th.

Q: Yes. This is all focused on Christmas.

Kathleen Spracklen: Right. And you had to have it in there by a certain date. If you missed that date, you missed your production schedule and your window was given to someone else and you wouldn't get your product out on time. So you had your date. And then your program was burned into, not EPROM's, but ROM's. The right ones.

Q: Yes. The right ones, and that's it.

Kathleen Spracklen: And it never changed. Yes.

Q: So, bugs would live forever.

Kathleen Spracklen: If you had a serious bug, you've lost Christmas. So, we had a debugging schedule that was just killer. We beat it and beat it and beat it and beat it. We had to be certain, that there weren't any bugs in it. That was really quite a lesson.

Q: Oh wow. How did you debug, at this stage?

Danny Spracklen: Well, debugging was a little more sophisticated by then and we had tools- some rudimentary tools- and you could separate points and stuff like that. Oh, we had a harness, so we could run on a regular computer, a regular Apple computer, and we had a harness that came out and plugged into one of the slots, and the harness went over to the board, so we could simulate running on the board, while we were running on the Apple. So we debugged on the Apple, basically. So, once we got the program the way we wanted, then we burned it into a test ROM and then we'd plug it into a stand-alone unit, and see if it worked- pray and turn it on and if it beeped and did everything, then we were happy then. Yes.

Kathleen Spracklen: And sometimes if-- your dread would be having a situation where the program, perfectly when it was in the Apple, and then you'd put it in the machine and nothing would happen.

Danny Spracklen: Yes.

Kathleen Spracklen: So, there where are you? So then you end up having to program your break points into ROMs. And in the worst case, you'd burn an EPROM that said, okay, if I get to this point in the code, light up these four squares on the chessboard. Okay, well we got that far.

Danny Spracklen: Fortunately, that didn't happen too often.

Q: You did have EPROMs that were compatible with the ROM slot?

Danny Spracklen: Oh yes.

Kathleen Spracklen: Yes. During debug, during debug. Right. And so you'd be plugging them in. And that was typically in the early days, when you first got the unit. The unit would first come from the hardware engineers, and you'd realize that you probably didn't understand something, in the documentation that they had given you- what--.

Q: As to how--.

Kathleen Spracklen: How it would really work.

Q: Yes. Oh.

<CREW talk>

Q: So, that was one of the things that happened in the--?

Kathleen Spracklen: Yes. That was one of the- and just knowing that it had to be absolutely- it had to be perfect.

Danny Spracklen: So, some of the exciting things about working for Fidelity is we got to see a lot of Europe- at least go to Europe- and participate in chess tournaments over there. So, we ended up going to Germany and France and England, Spain.

Q: And Fidelity would- you would enter the--?

Danny Spracklen: We'd enter our program there, the various tournaments.

Q: Okay. Using the hardware board?

Danny Spracklen: Using one of their hardware boards, usually, yes.

Q: Yes, just Chess Challenger.

Danny Spracklen: I think we ended up winning the world championship three times, I think.

Kathleen Spracklen: Outright, three times, and shared it once.

Danny Spracklen: Right.

Kathleen Spracklen: Yes. We won the first three microcomputer world championships of chess, with our program.

Danny Spracklen: Yes.

Q: With Chess Challenger.

Kathleen Spracklen: With our Chess Challenger machine.

Danny Spracklen: Right.

Kathleen Spracklen: And in the fourth one, we shared in a three-way tie.

Q: Wow. Wow. Now, this was Chess Challenger. Did it have a number? This was a particular version?

Kathleen Spracklen: Well, a different one. Year by year, it changed.

Q: Oh, you'd come out with a new version.

Kathleen Spracklen: Usually the Elite.

Danny Spracklen: It was usually their top of the line unit, because we'd have- we'd go with one that was tweaked, to play as fast as it could- naturally. So did everybody else.

Q: Cooperate. But everybody else did the same thing.

Danny Spracklen: Yes.

Q: Yes. You didn't have to go down to Toys R Us or whatever the store was, and pick one off the shelf, for the tournament?

Danny Spracklen: No, no. We didn't do that.

Q: It wasn't like racecars where they have to- you can't touch them.

Kathleen Spracklen: Yes.

Danny Spracklen: No. We'd play with tweaked up units.

Q: Very good. So, you continued to be very successful, playing with your program, at the microprocessor level. It was a 6502, in the Chess Challenger too?

Danny Spracklen: Yes. They used 6502's for a number of years. Eventually we switched to a Motorola 68,000. But for a large number of years, it was a 6502.

Kathleen Spracklen: The 68,000, we got into the 68,000 through the Macintosh. And it was an outgrowth of our software. Hayden was still selling basically our Sargon III program. We hadn't really done too much to develop it, since working with Fidelity, because we were so busy with them. But when the Apple Macintosh computer came out, Apple pre-released some development systems with people who had successful products, in the hopes that they would get their programs running, on the new Macintosh computer. Now, we weren't in the first round. But just a couple of weeks before they announced the Macintosh- or maybe a couple of months- late in this process, one of the developers, who had gotten- or one of the original development system- dropped out. And so Apple contacted us and said would we like to put our Sargon, on a pre-release Macintosh? So we took it on, and we did it. And we translated the entire program into 68,000.

Danny Spracklen: Yes.

Kathleen Spracklen: And we wrote the IO in Pascal. And this was a story in itself- in the early, early days of object-oriented programming. But we did it. And we were the first 3rd party executable software program for the Macintosh. Back in the early days, you- there was MacWrite, there was MacPaint, and there was Sargon. And that was it, for a long time, till the-- when the 128 came, Macintosh, that was it. It took the 256 K Macintosh before there was another--.

End of DVD 1

Q: Let's see, where were we?

Kathleen Spracklen: Well, we were talking about Sargon 3 coming out on the MacIntosh and we mentioned the fact that I met Steve Jobs as part of that and then Dan reminded me that we had met Steve Jobs earlier and you had wanted to roll back at that time...

Q: Yes, exactly.

Kathleen Spracklen: ...at the second west coast computer camp.

Danny Spracklen: That's right. We'd-- well, like you'd mentioned, your brother worked for Apple and so...

Q: Was he a very early employee of Apple?

Kathleen Spracklen: Yes, my...

Danny Spracklen: He was one of the early ones, yeah.

Kathleen Spracklen: He was an employee-- I think he was employee number 17.

Q: Oh, my goodness.

Kathleen Spracklen: And...

Q: How did he ever do that? <laughter> Ever find Apple?

Kathleen Spracklen: I don't know because he was just quintessentially curious.

Q: Okay.

Kathleen Spracklen: And I think that's how he ended up getting started with it. He tells about the day that he was working at Apple and it was just-- you walked into this, like, it was-- they were out of the garage but not much else. They had a big, open room and everybody just had their desks in this big, open room. And he said one day, he was busily at work, working, working, he looked up and there were walls around him. <laughter> So he was working there when they put the first walls. <laughter>

Q: All right. Okay.

Kathleen Spracklen: Up at Apple. So he had created the-- he had produced the disc operating system. At the second west coast computer fair, Apple was announcing the disc drive for the Apple II.

Danny Spracklen: That's right, yeah.

Q: Yes. Okay.

Kathleen Spracklen: And he had written the disc operating system for that.

Q: Oh, wonderful. Very good.

Kathleen Spracklen: And he had also written a primitive word processor that might find its way into your word processor exhibit when the time comes. He wrote a program called Magic Window.

Q: Oh, my goodness.

Kathleen Spracklen: And so people don't realize that probably one of the very first word processing programs was actually a windows-based program.

Q: Isn't that-- that's fascinating. All right. Very good.

Danny Spracklen: Well, not the Windows but...

Kathleen Spracklen: No, but it was kind of-- the reason he called it magic window was the cursor was always on the center of the screen and so there was always a central window around your text. And, as you wrote, the-- what you produced spread out from where the cursor location was.

Q: I see. Oh, very good. Okay.

Danny Spracklen: Sounds whacky, doesn't it? <laughter> But it actually worked.

Q: Okay. <laughter> Very interesting. Good. Okay. Excellent.

Danny Spracklen: So, anyway, I just-- he introduced us to Steve Jobs, who was his boss and-- because we were wondering whether Steve Jobs or Apple would be interested in our program or, you know, the like and so he talked to us briefly and it was nice and I don't think he was ver-- he wasn't interested in our program at the time so...

Q: Now, had your program, you know, done anything significant? Had you won any of your...

Danny Spracklen: Just at that tournament.

Q: Just that tournament.

Danny Spracklen: That was at the west coast...

Q: Oh, that was the time...

Danny Spracklen: That was our very first tournament.

Q: ...that's when you were there. Yeah, okay.

Danny Spracklen: Right. And that was our first encounter with, you know, Steve Jobs and...

Q: Wow, okay.

Danny Spracklen: ...he probably doesn't remember us.

Q: <laughter> But you remember him.

Danny Spracklen: Oh, yeah.

Kathleen Spracklen: And then I met up with him again at what's called Matt College. They had sessions up at the-- actually located on the site of the MacIntosh development. They brought these prereleased software developers could come up to Apple and spend an intensive week. The idea was to round the corner and get your application ready for release on the MacIntosh. I wasn't in the first group of Mac college but I was in the second group. And so you had lectures where they talked about the internals of the operating system. You got-- Guy Kawasaki was there. He was there. He was kind of our cheerleader and you got assigned to a person at Apple who would help you answer your questions. And just this-- mostly, the whole-- every afternoon was spent on this magnificent development system that was twin MacIntoshes and so one version of the-- one copy of the MacIntosh ran your program and the other copy of the MacIntosh ran your code and your debugger.

Q: Okay.

Kathleen Spracklen: So the development system that we had at home was Lisa and there was no MacIntosh. We had-- before MacIntosh was born, we did our first development on the Lisa computer.

Q: Now, did you have to buy your Lisa or...

Kathleen Spracklen: No, they...

Danny Spracklen: No, they loaned it to us.

Kathleen Spracklen: ...they supplied it to us. That was this prerelease, the prerelease, part of the prerelease package. They supplied Lisa and all the software that we needed to develop that first Apple.

Q: Oh, very good.

Kathleen Spracklen: Because there were no applications yet for MacIntosh at all.

Q: Right.

Kathleen Spracklen: It was brand new.

Q: Yeah. And they understood that.

Kathleen Spracklen: Yeah, right. So I often say that I was introduced to the MacIntosh when Lisa was still pregnant with Mac. <laughter>

Q: Very good, very good. Oh, that's... <laughter> I like that. Okay.

Kathleen Spracklen: At MacIntosh college, I remember in particular the final assignment. On Friday of Mac college, you were supposed to identify all the objects on the heap because the thing that was so unique about the MacIntosh as opposed to anything else that was out there at the time was you-- when you programmed RAND, you did not know where your code was going to be located.

Q: Oh, okay. Yes.

Kathleen Spracklen: Code could be moved around at will by the operating system and, if you loaded another program while your code was running, your code could move. So you couldn't rely on this concept of a symbol table that meant, at, you know, A302, your program started was gone.

Q: Okay, yes.

Kathleen Spracklen: And you had to know what was operating-- what else shared your heap and subtle bugs would usually be because you had reference everything through a handle. A handle was a pointer to a pointer. And that was a brand new concept. And so, for most developers, your biggest problem would be that you'd-- this whole idea of, well, it's still a problem with C, the potential of de-referencing a pointer and having a pointer to a piece of memory and your code's gone. It moved somewhere else. So that was this challenging assignment that we had the last day of Mac college was to identify everything in the heap. And I remember working on it and working on it. Got several of the objects done. I was down to the last few and I couldn't get them and couldn't get them. And I was feeling very-- I was starting to tear up. And I was the only female in the group and I was darned well not going to let anybody see me cry because I couldn't identify the objects in the heap. <laughter> But the tears were starting to come <laughter> from frustration. So I got up from my desk and I went to the ladies room. Being the only lady there, I didn't have to worry about how much-- about being disturbed in the ladies room and I just spent 15 minutes having a very good cry and I just got it all out of me and I washed my face and I went back to my desk and darn it, I identified those last three objects in the heap. <laughter>

Q: Very good.

Kathleen Spracklen: Which made me feel very, very good and it made me even especially feel good when Steve Jobs took us out to dinner at a vegetarian restaurant nearby to celebrate the end of Mac college and he told me, he said that, of all of the first group at Mac college and the second group at Mac college, I was the only person to identify all my objects in the heap.

Q: You're kidding? Wow!

Kathleen Spracklen: So I attribute that to the fact that I could have-- be a female and go have a good cry. <laughter>

Q: And let the stress...

Kathleen Spracklen: Yeah.

Q: ...out.

Kathleen Spracklen: Whereas the other men were not allowed to have a good cry <laughter> and they couldn't do it. <laughter>

Q: And they couldn't do it. They just froze up. <laughter> Well, that's wonderful. I love it.

Kathleen Spracklen: And also we were the only one of the group to actually deliver a running program on the 128 K Mac.

Q: Wow. Okay.

Kathleen Spracklen: The only thing that was coming out-- there were a bunch of graphic things that put this image up and that image up but that goes back to the fact that the guts of our program was written by Dan in Assembly language.

Q: Okay. Yes. And you-- it was-- so the guts was you just moved the guts or, I mean, you had to rewrite it?

Danny Spracklen: Oh, I completely rewrote it.

Q: But you had...

Danny Spracklen: That's when we started-- we formed this concept of a Chess engine where you have one piece of Chess that does nothing but play Chess and another piece of code that does nothing but graphical interface and talk to the user. So you could say I did the Chess engine.

Q: Okay.

Danny Spracklen: Basically. I recoded it.

Q: And did you change-- but you didn't change the logic wildly when you recoded it?

Danny Spracklen: Not wildly.

Q: Oh, you have to...

Danny Spracklen: There was probably a few subtle changes here or there but, you know, because you think of new things when you're recoding something.

Q: Of course.

Danny Spracklen: But, yeah, basically, it was just a recoding job in Motorola Assembly language.

Q: Yeah. Okay. Well, that's still pretty good.

Kathleen Spracklen: And 128 K for an Assembly program is a huge amount of memory.

Q: Of course it is. <laughter>

Danny Spracklen: Yeah, that was a huge amount. <laughter> I think the whole program probably didn't take more than 8 or 16 K.

Kathleen Spracklen: Yeah.

Q: Yeah.

Kathleen Spracklen: And, of course, the challenging part was, in this environment where objects can move around in the heap, what do you do with an Assembly program that is expecting fixed locations and fixed addresses? So that was the real-- a very challenging part was to get the Pasquale-based user interface with a object-oriented program in an event loop to coordinate with an Assembly language program that actually drove the Chess engine.

Q: Yeah.

Kathleen Spracklen: And we, I think, I'm not-- at this moment, I don't even remember how we specifically solved it. Did we...

Q: I was thinking...

Kathleen Spracklen: ...declare a block of memory?

Q: ...yeah, what sort of techniques did you...

Danny Spracklen: I think we just declared a big block of memory.

Kathleen Spracklen: And then overlaid it with the code?

Danny Spracklen: Yeah.

Kathleen Spracklen: So, you know, just basically declared the code as data.

Q: Ah. Okay.

Kathleen Spracklen: So it wouldn't move. I'm not sure. I can't even...

Danny Spracklen: It's been awhile. <laughter>

Q: It's been awhile. <laughter>

Kathleen Spracklen: But I remember that was a really challenging...

Q: You agonized a little bit over that?

Kathleen Spracklen: Yeah. Yeah.

Danny Spracklen: Oh, yeah.

Kathleen Spracklen: I remember a particular weekend up in the mountains. We took our MacIntosh computer. By this time, it was a, you know, very nice portable little thing up to the mountains with us and spent a weekend in a mountain cabin agonizing how we were going to make this work. By the end of the weekend, we'd figured it out. But I don't remember... <laughter>

Q: Exactly what you did but it did work and...

Danny Spracklen: It worked. <laughter>

Q: ...<inaudible> Very good. Oh, that's great. Okay. And so you're doing all of this while you're still doing, you know, new revs for Fidelity?

Danny Spracklen: Right.

Q: So you were-- you're working full-time on...

Danny Spracklen: We were pretty busy.

Q: ...on Sargon and Chess Challenger?

Danny Spracklen: Yeah. Like, my whole 30s are, like, gone. <laughter> We worked so hard during those ten years that, you know, it was just unbelievable.

Kathleen Spracklen: Yeah. You'd get up in the morning and feet on the bed, go right to the computer room. We had a computer set up in the house. Work, work, work, work, work. Then you'd take a breakfast break. <laughter>

Q: Okay. Oh, wow.

Kathleen Spracklen: Then, you know, you just took meal breaks during the day and just basically we worked every waking moment for, probably, for ten years straight.

Danny Spracklen: Yeah.

Q: Really?

Danny Spracklen: Almost. Yeah.

Q: Wow. That's incredible.

Kathleen Spracklen: It was job, it was hobby.

Q: Yeah. But you must have enjoyed it enough that...

Danny Spracklen: Yeah.

Q: ...that you did it?

Danny Spracklen: Well, it was-- you know, then, after awhile, it was pretty rewarding, too, you know? We made a good living off of it.

Q: Yeah. Exactly.

Danny Spracklen: So we liked it, you know?

Q: And you didn't have to go to work at some company.

Danny Spracklen: Right, we had our office and...

Q: And you were-- yeah. Now, did you have the office in the home? In your house?

Kathleen Spracklen: At first.

Danny Spracklen: Initially, we did and then Fidelity suggested that we go rent an office, you know, and so we-- there was an office space-- condo office space in San Diego that was-- and we just bought a condo there, a condo office.

Q: Yeah.

Danny Spracklen: And that's where we stayed for ten years, working.

Kathleen Spracklen: Yeah, for awhile, we were our boss' landlord. <laughter>

Danny Spracklen: That was kind of weird.

Kathleen Spracklen: Fidelity rented the space from us and we owned the condominium office.

Q: And you owned it. Oh, I see.

Kathleen Spracklen: So that was kind of fun. <laughter> So <inaudible> for about ten years, they basically paid for the condo while we were there. <laughter>

Q: Nothing wrong with that. Very good. All right. Well, what-- you know, where does this story go? Now the MacIntosh is out and you have another platform. I'm sure Apples are still selling quite well in the initial period.

Kathleen Spracklen: Yeah.

Q: And?

Kathleen Spracklen: We translated that we'd convinced Fidelity of the advantage of the 68,000 processor and so, because our agreement with Hayden was always such that we had the hardware rights and our agreement with Fidelity was that we had the software rights, it was a very easy move to say, Fidelity, would you like to use this code that we created for Hayden in your products? And there was no legal conflicts of any kind...

Q: Yeah, there was no...

Kathleen Spracklen: ...in it. So we moved the Fidelity over to a 68,000 processor. And then, at that point in time, we did another round of positional development. In doing the original one, Dan had done all of the translation into 68,000 Assembly, I believe even including the positional code, which I had originally written in 6502. So now I had to learn my positional code over again in 68,000 because I had been focusing on the Pasquale and then came over-- a period of time when we were doing a lot of balancing. It was very hard to make improvements to the program. Dan would work on the search side and I was working on the positional side and then we would have these tournaments where we would, you know, beat the two programs. I would have the old search plus the new position...

Q: And he'd have...

Kathleen Spracklen: ...would play the new search versus the old plus the old positional code.

Q: Ah, very interesting. And then?

Kathleen Spracklen: Yeah, then we'd see, well, usually, you'd see-- try to see which one was better, which did more, the improvements to the search or the improvements to the position but, in the end result, of course, you would put a combination of the two into the code. But that gave it an element of competition, friendly rivalry, of course, because, every time you do a positional analysis and make a positional analysis more complex, you slow down the node rate.

Q: Yes. Of course.

Danny Spracklen: Yeah, there's always that trade off.

Q: Exactly.

Kathleen Spracklen: So if I turned my back, he'd throw out the position to get his faster node rate.

Danny Spracklen: I didn't do that. <laughter> I wouldn't throw out your code. <laughter>

Q: That is funny.

Danny Spracklen: I'd just rewrite it more efficiently. <laughter>

Q: Yeah. Exactly. <laughter>

Kathleen Spracklen: Yeah.

Q: Well, in Assembly language, you can just keep doing that.

Kathleen Spracklen: Yeah.

Danny Spracklen: Well, up to a certain point.

Q: To a certain point. Yeah, then it gets really tight.

Danny Spracklen: Yeah. The next thing you start doing is unwinding your loops and just generating lots of inline code.

Q: And when you suddenly have, you know, are not constrained with memory...

Danny Spracklen: Yeah.

Q: ...you...

Danny Spracklen: You can get away with that.

Q: That's an opportunity.

Danny Spracklen: But then along comes the new computer, the modern computers, who have memory caches and that doesn't work any more because then you spread your code all over the place.

Q: Well, you spread it beyond the cache boundary.

Danny Spracklen: Beyond the cache boundary.

Q: So now it's slower.

Danny Spracklen: And you actually slow your code down then. <laughter>

Q: Right. <laughter> So then you have to go and roll it back up and...

Danny Spracklen: Right.

Q: ...space and cache. <laughter>

Danny Spracklen: So on today's computers, you know, it's really difficult to try to optimize.

Q: Yes. Okay.

Kathleen Spracklen: So, I think, from the period of when the MacIntosh came out, which I think was in 1983, about there, '84, I don't remember exactly, there were five or six years when the improvements were growing. It was hard work. And the gains were smaller.

Danny Spracklen: Right.

Q: Okay.

Kathleen Spracklen: And it was-- one of the big advances, I know, that you put into the program was the BCH random numbers.

Danny Spracklen: Oh, for the hash tables?

Kathleen Spracklen: Yeah. So that gets very technical but it gave the program a pretty good leap in strength. And I don't know if you want to go...

Q: Okay. Yeah. Could you...

Kathleen Spracklen: ...deep into tech...

Q: ...maybe explain that a little bit? We certainly have some technical audience.

Danny Spracklen: Well...

Q: I'd be curious to know what you did.

Kathleen Spracklen: Well, first explain what a hash table is.

Q: Yeah. Okay.

Danny Spracklen: You know what a hash table is?

Q: Yeah, I do know what a hash table is.

Danny Spracklen: Okay, well...

Q: But I don't-- I do not-- it doesn't suddenly dawn on me how you use hash tables in a Chess program.

Kathleen Spracklen: Okay.

Danny Spracklen: You want to spread your positions out over a large data area so you need random numbers that will distribute a Chess position over, you know, a lot of different, you know, memory maps or memory locations.

Q: Okay.

Danny Spracklen: So BCH random numbers were something that some people had developed in Mexico, at the University of New Mexico. Those people had a Chess program. They wrote an article on it and...

Q: Now, what does BCH stand for?

Danny Spracklen: It's the initials of somebody's name.

Q: Oh, all right.

Danny Spracklen: I think it's three different people that developed it. Anyway, it's a coding scheme that gives the maximal distance between...

Kathleen Spracklen: Bit adjacent numbers.

Danny Spracklen: Bit adjacent numbers so that you spread your positions over-- more uniformly over the hash table area. They don't tend to bunch up as much that way.

Q: Yeah, okay.

Danny Spracklen: So, anyway, they wrote an article on how to do that and I had-- in fact, I even got the book that they recommended and read it and figured it out how to do it because they didn't really tell you how to do it. They just said that they were using them and they were...

Q: And it was really good.

Danny Spracklen: So I tried it and, sure enough, they worked a lot better than the old method of getting random numbers.

Q: Yeah. Now, how did you-- how, you know, how do you-- if you always stored positional information, what the board looked at the same way or-- has that transitioned as you've gone and built these programs?

Danny Spracklen: Well, the computer programs, the computer chess programs of today use what's called bit boards because they have, you know, the newer machines have much longer word sizes so in the old 8-bit microcomputers, you really couldn't do that. So, throughout all our days, I think, our boards were pretty much stored the same way, you know? We used what was called an inner leaved board so that, instead of using 64 bytes, you actually used 128 bytes but 64 of them were just not used so you'd go, like, zero through eight and then-- or zero through seven and then eight through 15 wouldn't be used

and then one oh hex through one seven hex would be the next rank up. So, that way, every time you're going up a rank, you're going up one zero hex.

Q: Ah.

Danny Spracklen: Or to the left is minus one and to the right is plus one and so forth. The advantage of using an inner leaved board is that, when you do calculations along diagonal or a rank, you'd want to know when you went off the board or not. It's easy to figure out how you went off the board or when you went off the board.

Q: Okay.

Danny Spracklen: Because what happens is the bits go high, you either get an eight oh or an eight, eight hex. In other words, those two bits get set.

Q: Ah, okay.

Danny Spracklen: And you can test those two bits to tell whether you're off the board or not.

Q: Okay.

Danny Spracklen: Whereas, with just a zero to 64 board, you can't tell because you end up wrapping around into the legitimate square.

Q: Ah, okay.

Danny Spracklen: But that kind of technique's probably not used any more in most chess programs today.

Q: But that's what you used all through this...

Danny Spracklen: That's what we used back then because-- and we also used some bit mapping techniques that were not as sophisticated as the ones they use today but they worked extremely well for what we had at the time and what we did was we mapped the pieces into 32, 32 pieces and then, for each piece, we'd figure out which square was attacked by that piece and we could keep, you know, eight bits for each, eight bits for the pawns, eight bits for the pieces so-- for black and white. So you could tell

which square was being attacked and you'd have, like, 64 squares and so you'd have a bit map that was, like, 256, I think.

Q: Okay. But, yeah, very modest size.

Danny Spracklen: Yeah.

Q: For the amount of information.

Danny Spracklen: Compared to what they're using nowadays. Nowadays they have memory...

Q: More memory is free.

Danny Spracklen: Yeah, and so it's, like, they can just have tons and tons of stuff already precalculated. But we didn't have that memory luxury then. So that's all technical but...

Q: No, but-- no, but I think it's interesting to understand how you were able to efficient-- how the efficiency techniques that you used to manage to, you know...

Danny Spracklen: Right. There's-- one of our old competitors in the ACM was Robert Hyatt and he has a website that he has and he has published on his website his chess program written in C. And he explains all this. He's got papers on it and he explains all this to the novice if they're interested in going there and finding it.

Q: Okay. So many people used this sort of inter leaved statement.

Danny Spracklen: Yeah.

Q: I mean, just...

Danny Spracklen: So he kind of explains that all on his website.

Q: Okay. Now, did you read anything about chess programs before you, you know, started writing your first one or you just go figure it out?

Danny Spracklen: I had read a book a long time ago, about maybe five years before I wrote my first one. It just explained that there were chess programs out there. Some of the early ones. Didn't really tell you how to do it. It just explained, you know, that they existed.

Kathleen Spracklen: And, during the early days of the creation of Sargon I, a classmate of mine gave me an article that he thought I might be interested in that explained the alpha beta pruning process. And so I brought that home and Dan and I spent a weekend pouring over that article.

Danny Spracklen: Oh, yeah.

Q: Okay.

Kathleen Spracklen: And that-- it was, like, fortunately because we stumbled on that paper, Sargon I used an alpha beta printing method. Otherwise, it would not have.

Q: Oh, it wouldn't have. Okay.

Danny Spracklen: Yeah. Yeah, my first attempt was just to evaluate the position and pick the best move.

Q: Yes. Go down as many...

Danny Spracklen: But by the time we went to that first tournament in San Jose, we had alpha beta pruning actually in the program.

Q: Oh, you did? Oh, okay. And how far down did you tend to do it or was it variable?

Danny Spracklen: Initially, it was fixed.

Q: It was fixed.

Danny Spracklen: It was just a...

Q: Two ply?

Danny Spracklen: ...two ply, yeah.

Q: Yeah. Okay.

Kathleen Spracklen: And Sargon III got to three ply. And then, when it got to the faster machines, it got up to four ply.

Q: Oh, wow, all right.

Danny Spracklen: Yeah, four or five was about the best we ever did in tournaments in those early years.

Q: Okay. Yeah.

Danny Spracklen: But the same programs today could probably reach ten or more.

Q: Yeah. Wow. Okay.

Kathleen Spracklen: I think, after-- there is another set of information about what happened after Fidelity.

Q: Yes.

Kathleen Spracklen: Which is kind of a mystery because we've never really shared that with the world very much.

Q: Oh, well, of course. I want to continue the story.

Kathleen Spracklen: When Sid Tomolly[sp?] was ready to retire, he sold Fidelity.

Q: Okay.

Kathleen Spracklen: And he sold it to a German chess manufacturer who had, at the time, the then world champion program. Our program had slipped into second place and so...

Q: What was that program?

Kathleen Spracklen: It was...

Danny Spracklen: Mafisto.

Kathleen Spracklen: Mafisto.

Q: Mafisto. Oh, yes. Okay.

Kathleen Spracklen: So they had supplanted us as world champion and...

Danny Spracklen: It was Richard Lang's program we were using.

Kathleen Spracklen: Yes. And that company had bought Fidelity and so we're saying, well, they've got the world champion program and we're number two. What's our future? <laughter>

Q: What are we going to do?

Kathleen Spracklen: They're a German company and we're in California, you know, where are things going? And, at the same time, we were approached by...

Danny Spracklen: Eric Winkler.

Kathleen Spracklen: ...Eric Winkler.

Danny Spracklen: From Sci Tech.

Kathleen Spracklen: From Sci Tech. And he asked us if we would come to work for him and create a chess program for him. And we did work for three years for Sci Tech. and Eric Winkler had a dream of creating a chess program using the Spark processor, a risk-based processor. And we did do that.

Q: Really?

Kathleen Spracklen: We created it. We worked with a hardware company out of San Diego called Dr. Design, who designed the hardware module for the Spark program. We got Spark workstations and we coded an entire chess engine in Spark Assembly language.

Danny Spracklen: Yeah.

Q: Oh, my goodness. <laughter> People didn't expect that to be done with Spark, either.

Kathleen Spracklen: No. <laughter> When we met with the folks at Sun, the engineers at Sun, they assured us that we had the only application on planet Earth that was written entirely in Spark Assembly language. <laughter> They said, "We don't even write machine drivers in Spark Assembly language." <laughter> You know, you write the first, you know, you write four subroutines in Spark Assembly language and then you go to C. <laughter>

Q: Yes. Okay.

Kathleen Spracklen: So that turned out to be a really fascinating exercise.

Q: And so, yeah, so what did you-- what happened to this? Did you...

Kathleen Spracklen: Well, Sci Tech hoped to win a world championship and recapture the Royal Championship title and we took a program that almost won.

Danny Spracklen: We came very close to winning but...

Kathleen Spracklen: Yeah. We lost the final round.

Danny Spracklen: Yeah.

Kathleen Spracklen: We got into a terrible position out of the opening book.

Q: Oh, all right. I have read about the problems that, you know...

Danny Spracklen: Of opening books? <laughter>

Q: Well, opening books, that if they leave you in a place...

Danny Spracklen: In a bad position.

Q: Well...

Danny Spracklen: That you don't understand.

Q: Yeah. That there were more sequences in the opening book but...

Kathleen Spracklen: Ours stopped.

Q: Yours stopped. <laughter> And, you know, it's in a valley where you're not in such a good one. There are a whole bunch of positions that...

Kathleen Spracklen: And we didn't understand that...

Q: ...climb you to a mountain from there but, if your program can't climb that mountain...

Danny Spracklen: That's right.

Kathleen Spracklen: Right.

Q: Yeah.

Kathleen Spracklen: And we didn't understand the position and we just ourselves in a world of trouble.

Q: Oh, no.

Kathleen Spracklen: And did not win and so, at that point in time, Sci Tech said, "Oh, well, that was a good try. Good bye." <laughter>

Q: Okay. Now, was this a-- did you call this Sargon or...?

Kathleen Spracklen: No.

Danny Spracklen: No, they didn't call it Sargon. They used their own name.

Q: Okay.

Kathleen Spracklen: And I don't know if they ever even marketed the product.

Danny Spracklen: I'm not sure if they marketed it or not.

Q: I see.

Danny Spracklen: I know they came out with it. They did their own version of it that they manufactured in Hong Kong.

Q: And it was going to be like Fidelity? A board, a whole-- a dedicated...

Kathleen Spracklen: They already had the board...

Danny Spracklen: They already had their board and they had a weak program in it and they had a slot for a module to plug in so they put this on a module that could plug in. It was compatible with their existing boards.

Q: Okay. So power supply and the things that were inside.

Danny Spracklen: Yeah, they were already...

Q: It would all work and the IO that moved the-- did the lights or moved the pieces or however...

Kathleen Spracklen: Yeah, was already in there.

Q: ...however that was done, that was already in there.

Kathleen Spracklen: And there was a processor resident on the board that was responsible for the lights and the movements and the _____ set. And so you had to communicate with that processor but the module itself was just purely a chess engine.

Q: Yes. So all you did...

Kathleen Spracklen: So it was a pretty good design. Yeah.

Q: ...was do the chess.

Danny Spracklen: Mm hm.

Kathleen Spracklen: So that kind of led to-- ultimately, was the end of our involvement in computer chess when we didn't win that world title.

Danny Spracklen: That was the end of it, yeah. That was our last big effort. We didn't make it and Sci Tech lost interest in us and-- so we figured, well, it's been a good run, you know, let's do something else. <laughter>

Kathleen Spracklen: But, before we leave the story, we should tell about Dr. Mickey, about...

Danny Spracklen: Oh, okay. Go ahead, yeah.

Kathleen Spracklen: ...a really interesting experience.

Danny Spracklen: Yeah.

Kathleen Spracklen: One of the most thrilling times of my entire life was the month that Dr. Donald Mickey spent with us in San Diego. And he, of course, is-- was head of the computer science department at Oxford, I believe, for decades. He was on the original team with Touring that broke the Enigma code. And already he was quite an elderly gentleman when he came to work with us but that wasn't stopping him from having a very full schedule as the head of the-- I think it was the Touring Institute in Glasgow that headed up. Quite, totally an amazing human being.

Danny Spracklen: Oh, yeah.

Kathleen Spracklen: Delightful and totally amazing. And he had this concept that he wanted to try out that he thought might possibly solve computer chess. And we spent a month exploring it. It was the idea of reaching a steady state. The idea was that you would establish a number of parameters of positional analysis and your program would score, independently score vast arrays of positions using this set of known parameters. And then the program would basically perform a cluster analysis and so you'd do it on a number of positions and on game after game after game of Grand Master Chess. You submitted-- we just-- we used hundreds of thousands of positions.

Q: Oh, my goodness.

Kathleen Spracklen: And then what it did was it took the evaluation that known chess theories said this position is worth this much. So we had an external evaluation because it came out of known Master Chess games. And then we had all of these parameters that our program was capable of evaluating and then you used this data to tune your weighing of the parameters. And you could also tune the weighting for different stages of the game. So at the opening, you could use a certain weight, mid-game, you could use a certain weight, in the midst of your king being attacked, could use a set of weights, when you're pressing an attack, you could use a set of weights, when they're past pawns on the board, you know, there were several different stages of the game that could have different weightings. And we used a program called Knowledge Seeker that helped you to determine these relative weightings. And so after a month of training the program, what you basically did was you take your total set of positions and you would use something like 80% of them as a training set and then the last 20 as the test set. And you'd find out, well, how did the program do in evaluating these positions it had never seen based on these that it had seen. And it did just a breathtaking job of determining the correct worth of the positions. And so we were so excited. We were going to turn it loose on its first play a game of chess. We were going to use this as the positional evaluator.

Q: Yes. Because, I mean...

Kathleen Spracklen: Yeah. It was, like, oh, it was breathtaking. And we watched the program play chess. It was-- you could gasp for breath. No computer program ever played a game of chess like that. It looked like an incredibly promising seven-year-old. We lost the game in just a few moves but it lost it brilliantly. <laughter> It got its queen out there, it maneuvered its knight, it launched a king side attack, it sacrificed its queen. <laughter> Well, of course it sacrificed its queen. Do you realize, in every single Grand Master game of chess, when you sacrifice your queen, it's phenomenally brilliant. You are winning the game. So if you can find a way to get your queen out there and sacrifice her, well, you've won.

Q: Oh! No, wait a minute! <laughter!!>

Danny Spracklen: Exactly!! <laughter>

Q: I think there was a little hiccup in that logic there. <laughter> And that's what the computer didn't know.

Kathleen Spracklen: Because...

Danny Spracklen: That's right.

Kathleen Spracklen: ...you had trained it only on Grand Master moves. <laughter> And Grand Masters don't sacrifice their queen unless it's going to lead to a win.

Q: Yes, of course. <laughter>

Kathleen Spracklen: And it didn't understand that there was such a thing as a bad sacrifice of a queen. <laughter>

Q: Oh, that is really funny.

Kathleen Spracklen: But the play was exhilarating.

Q: Yes.

Danny Spracklen: Well, that's when we realized this might be a good method some day but it's going to take billions of games and billions of games of analysis, not just Grand Master play but just potser[sp?] play as well <laughter> to get a balanced idea of all the possibilities.

Q: Yes.

Danny Spracklen: And so it looked like a, you know, a job beyond the scope of our abilities to do, you know, at that point in time. So we kind of just kind of gave up on it.

Kathleen Spracklen: Yeah.

Q: But it sounds like it was a real fun experience.

Kathleen Spracklen: It was a tremendous experience.

Danny Spracklen: It was a great experience.

Q: To figure out and then work on.

Kathleen Spracklen: Yeah.

Danny Spracklen: Yeah.

Q: Okay.

Kathleen Spracklen: And Dr. Mickey is just a fascinating human being. I haven't communicated with him in a number of years so I hope and pray that he's well but he was working on a problem for, I believe it was for NASA on balancing the space station. And the problem was that, if the space station, you know, it gets perturbed a little bit, almost any regression type equation can get it back in balance. But if it gets perturbed too much like an asteroid zooming by a little too close, then the classical methods blow up. And you go into chaos.

Q: Uh oh. Yes.

Kathleen Spracklen: Which would be death.

Q: Yes.

Kathleen Spracklen: So any sufficiently severe close call and you're doomed. And that-- you couldn't put a space station-- you could not put a space station up there until you solved that problem. And this methodology solved that problem.

Q: Ah.

Kathleen Spracklen: And so he was fresh from quite a triumph and ready to tackle chess. <laughter> Turned out to be way harder than the space station. <laughter>

Q: Oh, that's funny. All right. Well, when you did the, you know, the Spark one, did you basically rewrite your program or you just took the ideas you'd already developed over many years in the chess engine and just sort of...

Danny Spracklen: Well, you know...

Q: You know, did a translation and worked some more.

Danny Spracklen: I did a translation and I did a lot of improvements after I got it translated or during the process as well.

Q: Well, what beat you? What was it? What program ended up beating you and not making it?

Danny Spracklen: I think it was...

Q: Back into...

Danny Spracklen: ...the Schroeder program, Rebel, or-- I believe it was.

Q: Okay.

Danny Spracklen: And he's still selling his program today, I think.

Q: Yeah. Wow. Okay. Yeah.

Danny Spracklen: And we're not. <laughter>

Q: You never know. I mean, that's just the way it happens.

Kathleen Spracklen: Well, what happened on the software side of it, I think we-- there was just a number of sales. Hayden's book sold off the Hayden Software to Spinnaker Software then Spinnaker Software sold it to Activision and then, you know, and it just kept-- the whole-- and they never had any other program besides Sargon so it just-- Sargon just kind of faded out.

Danny Spracklen: Yeah, Activision...

Kathleen Spracklen: You know, they stopped having...

Danny Spracklen: ...went into the more shoot 'em up games and exciting games and they kind of lost...

Q: Wasn't really it. They weren't really interested in it.

Danny Spracklen: Computer chess just wasn't selling any more, either, actually.

Q: Yeah. And you weren't updating it and, you know, making use of the capabilities of one gigahertz PCs.

Kathleen Spracklen: We did...

Danny Spracklen: No, we weren't.

Q: Did you ever translate it to the PC?

Kathleen Spracklen: We did do one update.

Danny Spracklen: No, I never did.

Q: Okay. So it was always a Mac game?

Danny Spracklen: No, we did have-- we do have a version of Sargon that runs on a PC that we had an associate that we know...

Kathleen Spracklen: Kevin LaBelle.

Danny Spracklen: ...Kevin LaBelle translated for us.

Q: Okay.

Danny Spracklen: And it came out-- Activision sold it.

Q: Okay.

Danny Spracklen: It was, what, Sargon IV, I believe, that runs on the PC. You can still buy it today, I guess.

Q: Okay. Did you-- when the MacIntosh switched to, you know, to the power PC, obviously, the Assembly-- at the Assembly-- at your level, things changed.

Kathleen Spracklen: Yeah.

Q: Did you...

Kathleen Spracklen: And we didn't follow along.

Q: You did not follow that, yeah. By this time, you had sort of said, all right, I think this was...

Kathleen Spracklen: Yeah. It was getting too hard to get the next level of improvement and we just...

Danny Spracklen: Well, now Intel has, what, the Exxon...

Kathleen Spracklen: Xenon.

Danny Spracklen: Xenon processor that's a 64 bit processor.

Q: Yeah.

Danny Spracklen: That should be ideal for computer chess.

Q: Exactly. I know.

Kathleen Spracklen: Do I see a twinkle in your eye? <laughter>

Q: My laptop in there in my case is 1.3 gigahertz. I think we could get through quite a few plies before the clock clicked.

Danny Spracklen: Yeah. <laughter> Definitely. Well, the program would be so powerful that, you know, the average person couldn't beat it at all.

Q: Yeah.

Danny Spracklen: So maybe most people lost interest because of that, I don't know.

Q: That could very well be.

Danny Spracklen: It's no longer a challenge or an interest for most people.

Q: Yeah, to go...

Danny Spracklen: It's a unique thing plus we've had the case where Deep Blue beat Casper off and so that was kind of a turning point in chess history.

Q: Yes. That it's over.

Danny Spracklen: Yeah.

Q: Computer programs just are better.

Danny Spracklen: Yeah. So, you know, it's like there's nothing left to prove, really.

Q: Well, now, I think you still have to do it all in software. I mean...

Kathleen Spracklen: Yeah.

Q: Yeah.

Kathleen Spracklen: It can be done. <laughter>

Q: You still have to do it all in software, no hardware, no big array of custom chips.

Danny Spracklen: Yeah. <laughter> There's still some challenge there to be found, you know?

Q: Exactly. But machines just keep getting faster.

Danny Spracklen: Yeah.

Q: Even Apple. It won't be the software, it'll be the faster machines that really do most of the work to get there. All right. So what did you-- so you stopped doing chess so what did you do? Did you decide to retire or...?

Danny Spracklen: No, I...

Q: We need to have a time frame. When did you sort of...

Danny Spracklen: It was, like, in '92 or '93.

Kathleen Spracklen: '93.

Q: Was the Sun-- yeah, was the-- Spark.

Kathleen Spracklen: Yes. That's when we said good bye to Sci Tech.

Danny Spracklen: I took about a year off and then I looked around town and I found a company in town that did computer games and I got a job with them. And I worked for them for about five years and, eventually, they got bought out by a French company, Vivendi[sp?], and then Vivendi decided to just shut down the Eugene operation entirely.

Q: Now, when did you move to Eugene? Had you done this in the middle of...

Kathleen Spracklen: While we worked for Sci Tech.

Danny Spracklen: While we worked for Sci Tech we did that.

Q: Okay.

Danny Spracklen: Towards the end of that.

Q: Toward the end of that. You switched from the San Diego.

Danny Spracklen: Right.

Kathleen Spracklen: Are youngest daughter was in college and so we had been wanting to leave San Diego for a long time because it was getting so crowded and we wanted to come up here and-- but we didn't want to disrupt or girls' lives while they were in high school and had friends and such so we waited until our youngest daughter was in college before we moved.

Q: Okay. And said now we can move.

Kathleen Spracklen: Yeah.

Q: Exactly. All right. So you did that up here.

Danny Spracklen: So I went to work for Dynamics here in town. I actually ended up working on a fishing program which was a lot of fun.

Q: Really?

Danny Spracklen: Yeah. So I got into the aspects of, you know, the AI for making fish look real and also the physics of making a fish grab onto a line and pull a line away from, you know, the pole, making the pole bend and all those aspects of game play that I got into.

Q: Oh, that's fascinating.

Danny Spracklen: Just a whole new...

[audio off then on]

Danny Spracklen: So you got the part where I went to work for Dynamics here in town.

Q: Yes.

Danny Spracklen: And...

Q: Yeah, so what were you working on?

Danny Spracklen: So I ended up working on their fishing program where I was kind of their AI guy and ended up making the fish, you know, modeling the fish behavior and also I got into the physics of, you know, catching a fish, the process that goes on where the line gets stretched and the pole bends and the fish jumps out of the water and twists and turns and falls back into the water and dives and pulls against the line. The whole game interaction between the game player and the fish, you know, became, you know, part of my job.

Q: Okay.

Danny Spracklen: And I really loved that. That was a lot of fun because I was able to, you know, do some of the math that I'd learned a long time ago and revive that and put it to work.

Q: And the new challenges of things to actually figure out.

Danny Spracklen: Yeah. Exactly. You know, it was...

Q: Instead of just coding.

Danny Spracklen: And computer chess was good but it was, like, the same thing for year after year after year. So it was kind of good to get into something else. And then, eventually, the company that bought out Dynamics closed the whole Eugene operation down, laid everybody off, about 100 people.

Q: Wow.

Danny Spracklen: Actually, they were originally a division of Sierra Online and Sierra Online still has a company up in Seattle which is open but they closed down the Eugene operation, sadly. After that, a group of us that were on the fishing project got together and formed our own company and we bought the rights to the fishing program from Vivendi and we produced one more program for Info Grams that

played-- that was a fishing program. And that lasted about a year and then we didn't get any more contracts so we just folded our company. So, since then, I've just been doing small contract work for local companies mostly, just doing commercial applications, you know?

Q: Where...

Danny Spracklen: Not very exciting but...

Q: Not very exciting but...

Danny Spracklen: ...I earn a little money doing that, you know? I'm almost about ready to retire so I'm not-- you know, I don't need a full-time job.

Q: Okay. You need something to be doing.

Danny Spracklen: Need something to be doing, right. Yeah.

Q: Exactly.

Danny Spracklen: Kathleen here went off on a different route after chess.

Q: Yes?

Kathleen Spracklen: Okay. After Sci Tech, the disappointment with the world championship, that we did not win, I went to work for a researcher, Dr. Tom Deshawn[sp?] and he was studying the root causes of juvenile delinquency.

Q: Oh, my goodness.

Kathleen Spracklen: And this kind of came out of the work with Dr. Mickey that Dan and I had done because part-- one of the things that we had done was we'd worked a lot with the SPSS program and had done multi-varied, linear aggressions and it turned out that he needed a statistical aid, statistical analyst and a statistical programmer to create some SPSS analysis programs to help him analyze the collection of data. They had a marvelous data source where they had followed a group of at-risk boys from a very young age all the way up, you know, 10 and 15 years of their lives into their delinquent stages and later

on even through their marriages and it was just a stunningly rich data set. And Dr. Deshawn was trying to see if he could determine ideas of what caused delinquency...

Q: Yeah, look for some cause and effect relationships.

Kathleen Spracklen: Right. He had a hypothesis and he felt that it was the reward system. That, when you-- he had knowledge from his own study that he'd done for the National Institute on Drug Abuse had shown that, if you put delinquent kids together, which often happens in treatment programs, they get worse. And so his philosophy-- the hypothesis that he was working from is that it's the psychological rewards that delinquent kids give each other, laughing at the deviant jokes, you know, the conversational pluses that they give one another to reinforce their deviant behavior that led, ultimately, to deviant acts. So he was going to look for this kind of-- in the rich data set that they had of these boys included studies where the-- each time the boy would bring in his best friend so they would have peer to peer interactions. These were videotaped interactions that were then coded so they had behavior metrics coded. And so, with what I had learned working with Dr. Mickey, I discovered a way to test what's called the matching law and there's a-- it's in-- the matching law has been proved to apply to many, many subhuman species, all the way from Pavlov's dogs on up, but it turned out to be very difficult to test whether the matching law applied with humans. And using the methodology that I had, you know, that the statistics that I'd learned from Dr. Mickey, we were able to test that the matching law did apply if you talked about the laughter response to a deviant remark in these peer to peer interactions in 11-year-old kids, that followed the matching law and predicted future delinquency. And so I worked with him and published three different scientific papers with Dr. Deshawn and that one in particular was <inaudible> we're very excited and I was kind of, like, the fifth or sixth author unto others. <laughter> It was a really thrilling, fun period and worked on that for quite awhile. And then, after that, I taught briefly at _____ Community College. I taught programming. And then I went to work for a company that I still work for that is just-- it's the love of my life. I totally enjoy it tremendously. It's, you know, this is not glamorous, this is not earth-shaking, not museum quality or-- it's a-- Pierce _____, the company I work for, is a distributor of sewing notions and craft supplies. And it brings the two sides of my nature together because I've been-- I've loved sewing and crafts since early childhood and I've loved mathematics since early childhood and they were always, like, one was a hobby and one was a vocation and now I'm doing both together and I'm doing operations programming. And my area of interest right now, what really keeps me going, I've been with them since 1997 so it's a fairly long time now and my-- what I do all day is I try to make people's lives easier. I focus on the-- right now, I think the accounting software is hugely abusive to human beings. It's abusive. It's-- you beat-- it beats people up. It forces them into this-- these tiny little boxes. Talk about being in a box, you're in a box in a box in a box in a box in a box with accounting software. You get to fill in one little blank of one little form and, when you're done filling out all the little blanks on the little form, you get to hit save and you get another form where you get to fill in all the little blanks and all the little boxes. It's dehumanizing. It takes-- and it just-- we-- because we're in sewing notions and crafts, we have over 60,000 different items in inventory. We bring in a new thread line, it might be 200 different colors. You put a person-- you want to put 200 new items of inventory in there and they have to use those little boxes and fill out probably 40 data points for each item in inventory then you've got to turn right around and fill out all 40 data points again for the next color and the next color 200

times. And that's just-- that's unacceptable. And so I work in software that-- where I'm-- I've become a specialist in bringing data into the computer from Excel spreadsheets in a way that ordinary users can do it on their job without having fancy data transformation programs. They can do one click and it does-- what it does is it does the error analysis in a different way. It turns it on its head. Typically, all of the programs that take data, end user data in blocks and bring it into the computer, they simulate filling out those little forms. They take each row of data and they say, okay, we're going to bring this row in. Okay, now, we're going to bring this row in and they validate it a row at a time. That means the process works fine until it comes to an error and then the whole thing stops and you have to fix that error or else they add-- save up the errors and you get a report of all the errors. And this is very-- just brutal. Even-- so it's better than one at a time but not much better. So what I do is I stand the process on its head and I do the analysis a column at a time, a rule at a time. So this means that, if you've made a conceptual error, boom, immediately, you find all of them at once and it's, like, oh, well, duh, I forgot that column. And it becomes very, very, very quick to get all the errors cleaned out. Ordinary people with high school graduation or even GEDs can do it very simply and we can get data into the computer very, very fast without troubling the users. And I also do reports that are round trip. I don't know if _____ you talk about the Cognos[sp?] or micro strategy or the new Microsoft data services analysis, nobody has a feature that my code has. I've never seen it anywhere and that is, the user can send over to the computer the records that they want and the columns they want. Basically, we're going back to you're creating a-- you're defining a spreadsheet. I want these rows and I want these columns, now go give me the sales. And it will go fill them out. And there's nothing else like that on the market. So, for example, if you're talking about a person who needs-- I'll give you a recent example. One of our vendors said, "We're having a pricing increase effective, let's say, March 1st". That wasn't the actual date. Okay. Here are the 7,500 items that we produce and here is our new price list. Well, we carry maybe 2,000 items of that 75,000 items. How are you going to find, out of that 75,000 items, the ones that we carry and get the new prices in? Our users can run one report. They just say, well, give me what our prices are right now for all 75,000 items. And it'll take the 75,000 items and bring back our prices. Well, we don't carry all of them so a goodly number of them are blank. So then you just sort by the price, throw the other ones away. Now you have the 1,000 that we've got. One more click of upload and the new prices go in. It's a ten-minute job.

Q: As opposed to?

Kathleen Spracklen: Weeks and weeks and weeks.

Q: Weeks of manual effort.

Kathleen Spracklen: Of work.

Q: Wow.

Kathleen Spracklen: We need to put in new products? One click. One click and it's gone.

Q: Oh, that's great.

Kathleen Spracklen: So that's the kind of thing we're working on.

Q: So you're-- very good.

Kathleen Spracklen: And I'm very happy because I love my users. I'm with-- I get to see the people that I work with face to face, you know, and...

Q: Yeah, you see-- you see-- yeah, you see...

Kathleen Spracklen: ...my job is making people happy.

Q: Yeah. As opposed to writing the software for Microsoft or something like this, you're writing it and your users are right there.

Kathleen Spracklen: Right there.

Q: And you see them...

Kathleen Spracklen: Yeah.

Q: Well, you see the benefits and you see when, oops, oh, it didn't work. I thought it would work like this and it doesn't. Boom. Feedback.

Kathleen Spracklen: Yeah. And they can come to me and say, you know, this is driving me crazy and...

Q: And you go...

Kathleen Spracklen: I can...

Q: ...work on fixing it.

Kathleen Spracklen: ...go and not only do I fix it so that they've got the data they need right now, they have the tools to get the data next time.

Q: Yeah. Yes. You don't fix, one-time fix. Well, that sounds very rewarding.

Kathleen Spracklen: Yeah. And I'm really happy there.

Q: That's great. That is-- that's super. Very good. Now, only one thing I can think of that we didn't discuss. How-- can you tell me a little bit about how you managed to-- I gather you have at least one daughter, maybe more?

Kathleen Spracklen: Two.

Q: Two daughters.

Danny Spracklen: Two daughters.

Q: How did you do that, presumably in your 30s, when you were totally <laughter> totally buried, you know, totally obsessed with working and writing chess?

Kathleen Spracklen: Well, the first thing I did was...

Danny Spracklen: I don't know. We did it somehow.

Kathleen Spracklen: ...I managed to skip the diaper stage totally. I married Dan when Amy was three and Tracy was seven. So I...

Q: Ah, so these were...

Kathleen Spracklen: So I was able to completely skip the diaper stage.

Q: ...daughters from your previous.

Kathleen Spracklen: From Dan's previous...

Danny Spracklen: From my previous marriage.

Q: From your previous marriage.

Kathleen Spracklen: Yeah.

Danny Spracklen: Which I hadn't mentioned.

Q: Oh, yeah. Okay.

Kathleen Spracklen: Yeah. And then the girls came to live with-- they were weekend residents for awhile and then, when our oldest daughter started high school, she moved in with us and, very shortly after, the younger daughter moved in with us, too. So when they were, like, in sixth and eighth grades, you know, they moved in with us. And so, for awhile, we were still working at home but that's one of the reasons we had to leave working at home because having teenage daughters in the house was really getting hard to get any work done. Fortunately, they had a grandmother who was-- they were very close to so the girls stayed with their grandmother after school and we picked them up from grandmother's house and...

Q: And. Okay.

Kathleen Spracklen: ...cooked dinner, ate dinner together, had a evening, a family life at home. But that decade, that ten years when we were just doing nothing but work, the girls were weekend.

Q: They were weekend.

Kathleen Spracklen: Yes.

Q: Okay. I was wondering. Okay. All right. Very good. So you had been married before and then you were divorced by the time you...

Danny Spracklen: Mm hm.

Q: ...the two of you met so you both had...

Kathleen Spracklen: Yeah, we both had previous marriages.

Q: You both had previous marriages. Okay. And relationships that had some problems, that often bodes very well...

Danny Spracklen: Yeah.

Q: ...for-- no. You understand how lucky you are.

Kathleen Spracklen: Oh, yes. <laughter>

Q: And then you can work-- then you really work on it. <laughter> You work hard on it.

Kathleen Spracklen: Yeah. Well, I got lucky the second time. <laughter>

Q: Yes.

Danny Spracklen: That, too. <laughter>

Q: Strikes me both of you got lucky. <laughter>

Danny Spracklen: Definitely.

Q: All right. That's good. Are there any other things that I really ought to-- that you think I ought to ask you about the chess? Obviously, we could go on forever about it but have we covered your career?

Danny Spracklen: I think so.

Q: And software chess?

Danny Spracklen: I think we've hit all the high points.

Kathleen Spracklen: Mm hm.

Q: Good. That is wonderful. Well, thank you very much for...

End of DVD 2