Computing Educators Oral History Project
An Interview with Mark Weiss
Conducted March 5, 2015
At Kansas City, Missouri, USA
Interview conducted by Barbara Boucher Owens

Interview Context
This interview was conducted during the SIGCSE Technical Symposium 2015 in Kansas City, MO.

[0:00]

Barbara Boucher Owens: This is an interview with Mark Allen Weiss from Florida International University conducted by Barbara Boucher Owens. This interview is being recorded on March 5, 2015, at Kansas City, Missouri, United States of America. It is part of the Computing Educators Oral History Project. Did I get and say your name correctly?

Mark Weiss: You sure did, Barbara.

B: Thank you! Good. Well, I usually start this interview by having you go way back. Way back. So I want you to tell me about your parents — about their work, their life, did they have anything to do with computers. Just tell me a bit about your parents

M: Well, of course, there weren't any computers back then. So, my mom was a schoolteacher and my dad was a dentist. My mom was a Spanish teacher, so I wouldn't say she was a technical person. I think, in our generation, children of my age were responsible for things like programming the VCR. That was not for parents to be doing — stuff like that. So definitely they were there. My mom was not a computer person or TV person or technology person or anything like that. My father was more of that, for sure. More a science person, being a dentist.

B: Did they grow up in the city? In New York City?

M: Yeah. My mom grew up her whole life in New York. My father moved to New York at a young age from Europe. My dad … we lived in lower east side Manhattan, so my dad lived in that general area probably almost his whole life — give or take 5 years.

B: Tell me about where you grew up. Tell me about the community that you grew up in, about the kind of school you went to.

M: Well, the lower east side of Manhattan is a … it was a Jewish neighborhood. Jewish, Italian. Very much what you would see in the old pictures. The schools in the area at the time — not so good. And since my mom was a schoolteacher in a better school district, she was able to get us into the school district where she was teaching.

So we went to public school and middle school in Queens, which was a little different. You have to drive in a car twenty minutes, but it was against traffic. So if you're going from Manhattan to Queens in the morning you're doing the right thing. And vice versa going back in the afternoon. But certainly the kids who were in the school that I was in, you wouldn't really see them after school or anything, which you would nowadays if you were living in the district.

The high school was a special high school, Stuyvesant High School. Very … you had to take an entrance exam to get in, it's a math / science-focused high school. Pretty much one of the best high schools for that in the country. Produces Westinghouse — well, they used to be Westinghouse; now I don't know what they call them, Intel Science Fair or something like that — produces those winners. Many university professors — computer science and math, physics — have gone through there. A couple of Field Medal winners have actually gone through there. So that high school was close to the house. That was actually the first time I was at a school nearby. It was just a bus ride.

B: Can you remember back in your elementary days? Can you remember favorite classes, favorite teachers? Can you …

M: Well math. I was always really good in math — not so good in reading, not so good in writing — but always really good in math. Always top of the group in math.

I remember they used to have you … they used to give you these multiple-choice tests and they'd score your grade level. And I don't know how they come up with these numbers because it doesn't make any sense now that I think about it. But you would take the exam in third grade and it would be a basic adding or subtracting kind of exam, because that's what you did in third grade back then. And if you got all the questions right, they would say you were a 12.8, meaning you were doing this at a twelfth-grade math level. Somehow, in third grade they were claiming I was ready to go to college for math, but, of course, that's kind of ridiculous. So math was always a good, easy subject; came naturally for me.

Teachers I don't remember too much of the teachers from back then; for why I really … I don't know. But I don't remember too many of the teachers from back then at all.

[5:25]

B: Did you have any siblings?

M: My … one sister. She's a year younger than me.

B: And can you tell me about her?

M: Sort of … did all the same … went to the same schools. Didn't have the same math interests that I did. But she's still living in New York. But not a computer person at all.

B: What field did she pursue?

M: She wound up doing stuff working with insurance; actuarial work, stuff like that.

B: Little bit mathy.

M: I guess you could say that now that I think about it. But … but she didn't really like it. She wound up doing it, but I don't think she really liked it. [Barbara laughs]. But you've got to do something to pay the bills.

B: You commuted back and forth to school until you got to high school, but did you have interests outside of the classroom? Things you remember loving to do as a kid and then as a high school kid?

M: You know, not so much. I think at that point in my life I think I was kind of … studious more than anything and … of course, like everybody, we had TV, so we watched the baseball games. We used to always watch baseball back then. Oh yeah, I remember the summer of 1977, 1978, Bucky Dent, I'm sure you remember watching those games. So always … baseball back then — this was from before the cable television age — so back then every baseball game was on free TV. You know, channel 11 in New York you could watch all these games. And hockey and basketball games. The road games were always on TV, but never the home games. And so you would always be able to watch the sporting stuff on TV. So I used to watch a lot of that stuff. But I was no scholarship athlete or anything.

B: Scholarship watcher. [Both laugh] OK!

So both you and your sister went to college?

[7:54]

M: Yes, we both went to the same college, Cooper Union in New York City, which is even closer to where our house was than the high school — although technically you had to take a bus there and then you had to walk farther from the bus station, so … But it was pretty much the same thing, you could walk home from Cooper City … from Cooper Union if you wanted to.

And it was a very small place — much smaller than high school. In Cooper Union, you only have art, engineering, and architecture schools. The three hardly ever see each other. And

then in engineering you only have — at the time electrical, chemical, mechanical, and civil, I think — and we maybe had 35 students in our class and that was that — in electrical. So maybe a hundred and … I would guess, maybe 130, 140 students per class. That's the whole university. So … a very small place. But very selective, in that it offered, at the time, full scholarship to anybody who attended there as part of the endowment. So, heck, that was a pretty good deal, a full scholarship, even back then, so they would always get people wanting to go there. They didn't have any trouble rounding up people.

B: Did they have opportunities to live on campus or did everyone commute that went there?

M: I think everybody commuted. There was a little bit of people, who … mostly they, at the time, from what I remember, they commuted from the tri-state area. And some people would live in New York City housing near the campus. But dorms and stuff like that, I just don't remember any of that stuff. I think they might have put some of that in in later years. But I still remember people taking the PATH trains from New Jersey, coming in to the university … college.

[10:19]

B: I'm going to keep stepping back because I want a little better picture of you in those transition years from elementary school to when you chose Cooper Union. So a little bit … how were your parents in terms of encouraging you? What kinds of things did your parents do to make you want to go to Cooper Union? To make you want to be a good student? What …

M: Well … for high school, it was … I don't know if they were specifically encouraging it so much as … as much as … that high school was one of the best high schools in the city and the high school that we were zoned for was pretty bad. So it was like, "You really have to get into that high school." It was … it helped that the way entrance exam was structured it was very biased towards math. So there wasn't too much doubt that I would be able to get a good enough score to get into the high school.

When I was in high school I was interested in the math. I wouldn't say I was a great student, but probably good enough. And I was young at the time because I had started … I started school a year early.

B: How did that happen?

M: Well, probably I drove my mother crazy. So she said, "Okay, send him to school." And back then there was more of that than there is now. I think they've done some studies lately saying maybe that's not a great idea, to push the kids this far ahead. But back in the day, if you wanted to get a kid a year ahead, all you had to do was go to a private school and they would do it. So she didn't think I needed to be home any longer than I was and so that was a year early.

And then in New York at the time they had a program called the two-year SP program[1]. And so they would take an entire class and, instead of … middle school, back then, was junior high school, was [grades] 7, 8, and 9. And instead of doing [grades] 7, 8, and 9, they'd have that whole class just do [grades] 7 and 9 and skip [grade] 8 and somehow put some of the [grade] 8 [material] into [grade] 7 and some of the [grade] 8 [material] in [grade] 9, so they'd compress it into a shorter time frame. But the whole class did it. In fact, I think … it might have been even two classes, maybe 30 or 60 kids in one class, did that. It wasn't that unusual.

So I skipped two years. So when I graduated, I was on the young side and so it was … parents weren't really excited about sending me off anywhere. There was a perfectly free university right down the block that people are killing themselves to get into, so why not go there? So, I think one of the things I might mention tomorrow during the talk is there's a lot of talk about how you attract students and stuff, but sometimes the students have nothing to do with it. Sometimes, the parents have so much influence on the kids and you're doing all these programs targeting the kids. Maybe, if you want to make some things happen, maybe you need to target the parents too and I'm not sure how much targeting the parents people are doing lately. But, in my case, somebody could have targeted my parents if they really wanted me to go somewhere … if they really wanted me to pick a different major or go to a different college. So target the parents. Target the parents.

B: You've talked quite a bit about your mother. How about you dad? What was he … did he want you to be a dentist? Did he encourage you … ?

M: Well, of course, my parents wanted me to be a doctor! Of course! God, what's wrong with you, Barbara? You know that! [Barbara laughs] So it was a very big disappointment that I didn't do that. When I went to … I was going to talk about that tomorrow, too, actually. I'm giving away half the talk! I hope the talk is decent …
[14:56]
So when I went to Cooper Union, obviously I was going to choose engineering. It wasn't going to be art — I can't even draw a stick figure. So which engineering do you pick? And, as it turns out, if you want … my parents really wanted me to go to medical school. And in order to apply to medical school you have to take Biology and you have to take Organic Chemistry. At least you did back in the day, I don't know if you still have to. And, so if you are going to take Organic Chemistry, you might as well be a Chemical Engineering major. That was the whole thought process in choosing a major back then. Both my parents wanted me to be a doctor. And this major was just kind of a thing. You're just going to school because before you can become a doctor, you have to have a four-year degree. It's incidental. It means nothing what this degree is. Just get the grades. [Barbara laughs] OK? So that's the whole thought. But it turns out that when I was at Cooper Union, eventually I did some computer stuff and I liked it. But I can't say that my parents encouraged me to be a computer person or electrical engineer or anything because of the field. [Barbara chuckles]

[1] The SP (Special Progress) program was an opportunity for classes of gifted students to compress three years of junior high material into two years. Prior to WWII, this same program was called RA (Rapid Advancement); it existed at least as far back as 1916.

B: So what was your sister doing at that time?

M: Well, she was a year younger than me. So she eventually went to Cooper Union also.

B: What did she study at Cooper Union?

M: Are you not paying attention, Barbara?

B: I am!

M: Pick the major!

B: Well, I …

M: Chemical Engineering!

B: Chemical Engineering. OK. All right.

M: Got it?

B: Got it. So she was supposed to be a doctor too?

M: Yes. But part of the problem with Cooper Union is to apply to medical school, you really … especially back then, you really had to have super high GPA. It was tough. Nowadays, I guess there's more grade inflation everywhere now than there used to be, but this was late 1970s. So the grades hadn't … I think grade inflation sort of started in — from what I understand, maybe you can tell me if I'm wrong — I've been told grade inflation started in the 1960s, the Vietnam War era, when professors were getting pressured by students to inflate the grades so they could stay in college because if they didn't get … so they could get into grad school. Because if they couldn't get into grad school, they could get drafted. Is that right? Does that sound like … ?

B: That sounds like a possibility. I was thinking it also coincided a bit with open enrollment — I was at City [University of New York] at the time — but this is an interview with you, not me!

M: Oh, sorry! So anyway, so … back then, anyway, to get a GPA … a medical school kind of GPA from Cooper Union was pretty tough. That part of the plan maybe my parents didn't … didn't count on.

B: The school was close, but … All right.

Did you work at all while you were in high school or in college, outside of the … ?

M: Only in the summer. In … let me think — now I have to think back farther. Not in high school. In college I did. One year, I did some … just nonsense kind of a job, you know, working in an architecture company as a "gofer boy".

But then another year, the folks … the good folks from IBM came to visit Cooper Union and gave a talk and they did some recruiting. So I think it was my junior year, but I'm not positive, but I think so; this is 30 years now. I wound up doing an internship at TJ Watson, Yorktown Heights. So I did that for a couple of summers when I was in college.

But definitely didn't have a job while I was in college. It was much different than it is now, especially at FIU. So many students now are working while they're in college. It changes the whole game really.

B: So what did you do at IBM Research when you were an intern there?

M: I was working on some projects that involved Unix. At the time, IBM was looking at doing some Unix for some of their products. Don't remember too much more about it. It was so long ago.

[19:51]

B: You don't remember who you worked with … or did you have a mentor there?

M: Yeah … I can't remember his first name. His last name was Rosenberg. I can't remember, offhand, the first name now.

It was an amazing place just to go there because you would walk the halls and you would see on the doors these names. And … back then, I wasn't a graduate student or anything, so you just had … you would have your books, like your Aho, Hopcroft, and Ullman, and you'd see at the end of the chapter they'd have those further references and stuff. And you'd see, "Oh! There's Ralph Gomory." "There's Herb Schorr — Schorr-Waite garbage collection." He was the vice-president of research at the time. You would see Mark Wegman's office was right there, you know, [John L.] Carter [and] Wegman. There was just … boom, boom, boom, boom, boom, you'd see all these names that you would recognize as … at the time, many of them were from the 1960s, legends of the 1960s, right? And it was amazing to see that big collection there.

The building itself was just so huge. I never … you grow up in New York, the buildings are tall, but they're not long. And over there, that thing must have been a quarter-mile long with this dark glass all the way around. It was kind of amazing. They had a lot of summer interns there. They really tried to make it fun for everybody who was there and they would have picnics and stuff and it was a great experience. And they did offer me a job when I graduated. That was probably the whole point, right? And … but I just didn't want to work. So I went to graduate school.

B: Didn't want to work! [chuckling]

Well, tell me about the professors in college. I mean, it is clear you had a little bit … that you had awe of the people working in research.

M: Yes.

B: Now were there particular professors at Cooper Union that inspired you or even pushed you towards … ?

M: Yes. So Cooper Union … so … my major originally was chemical engineering, but the first semester you take basic chemistry. I did okay in the course, but I was coming from the mindset of, "If this is really my major, shouldn't I get an A in it?" I don't think … the kids don't think like that anymore. The kids will take the first course and, if they pass it with a minimal pass, they're good to go to the next course. They don't question whether this is really the right field for them. But after I took that chemistry course and it was an okay grade but it wasn't anything special, it was like … "is this really the right …" I started thinking, "Is this the right major for me?"

And we also had to take a computer course that first year, everybody had to take it. And Cooper Union didn't … I mean nobody back then — I shouldn't say nobody, but there weren't a lot of computer science degrees back then — so Cooper Union didn't and still doesn't have a computer science major. It was electrical engineering.

So they had somebody who was teaching computer … a basic computer course. And he was really the Director of the Computer Center. He wasn't an assistant professor. He wasn't an associate professor at the time. He was just running the computer center and that was part of his job, was to also teach the first course. And I really liked it. So that was Bob Hopkins. And he's been there — he's still there I think — he's been there since the 1970s. Did the whole computer science thing there and actually they eventually — he was so good — eventually they … he's an associate professor now. They actually moved him into the professorial ranks. And he would have … he would run the lab and use a lot of student volunteers to sit down and help out. So I got involved in that. I spent a lot of time in the computer lab. Definitely, he was really memorable.

He had a good teaching style. Funny. A really funny guy. I always think people who teach should be funny. You want to convey the information but it's also … it's not like life and death, so you try to have a good time with it too a little bit. And he definitely was like that so you could always go to his class and learn some stuff but also get a decent show at the same time.

[25:08]

Since they didn't really have computer science faculty — it was very small, it was all EE people — they would bring in adjuncts to teach the courses. And usually they had a steady stream coming in from Bell Labs. I guess … it must have … it sounds like it was really far, but it must have been easy to get on the train and get right there because there was a train station nearby, PATH train was nearby.

So there were a couple of those guys that came in. One of them was Ned Horvath, who I know is still around, I think he's in Texas somewhere teaching or working with the University of Texas. And he was really good. He did the data structures, kind of algorithms course. He did the compiler course. And it was … I just remember back then using the Aho, Hopcroft, Ullman book and you see the end-of-chapter notes and Chapter 3 was on sorting and there you'd see a reference. And you'd see, "Horvath, stable sorting" and I was like, "Wow! Holy mackerel! This guy must be a genius! He published a paper! Wow!" But later I found out that he did his Ph.D. at Princeton and worked with Ullman and I don't know that the paper itself was the world's greatest paper. But he worked with Ullman and it was some sort of important result. But he also could … he could really teach. He was really good. So they had a couple of those kinds of guys at Cooper Union.

So eventually I switched my major from chemical engineering to EE, because that's what you had to do. Partially … those people teaching the computer science courses came in well after I already switched majors. Since I was an EE major, all the computer science courses I took at Cooper Union were basically elective courses. Didn't even need them to graduate.

I graduated with some ridiculous number of credits. And nowadays we call it a double major; back then it was just … an ambitious student. But back then also there was quite a few students who were just taking tons and tons of classes. There was one student there who took 31 credits in a semester. He got almost all As. And now it was like, "Okay, he's taking 31 [credit hours]! Well, you can't just only take 18; it's an embarrassment!" Right? So a lot of people would take these computing courses because it seemed like interesting stuff … at the time and the teachers were pretty good.

But the actual reason that I switched into EE is really … well, (A) I didn't like chemical … I didn't think I was good in chemistry. So I was trying to figure out, "OK, what major should I take? There's only three left!" (Electrical, civil, and mechanical.) So somewhere in my head, I said, "Well, I'm good in math. I think electrical has much more math than the other ones. I'll go with electrical." I looked at it recently. It [electricalengineering] doesn't have much more math. It's more than civil, but electrical andchemical — at least, in the required courses in most programs — is pretty much the same math. And when I was there the last couple of years, I could see what the mechanical engineers were doing and they were doing a lot more math than we were. At least, it looked like it. Because they were basically doing physics. And … but, you know … people make these decisions and well … it turned out great, I guess. But … the right answers, the wrong reasons sometimes.

Well, so you went straight through in four years but graduated with a crazy number of credits. Is that what I'm hearing you say?

[29:28]

M: I think I had a crazy number of credits. It was way more than 120. Now, in Cooper Union, I think just to graduate you have to have like 135 [credits] for engineering, but I had more than that. I probably had like … maybe 140 something. And that … I mean, nowadays that …

In a public school you can't do that. In a state school like Florida, if you need 120 credits to graduate and you graduate with more than 132 credits, the university's in … that's a negative

for the university. Our Board of Governors is going to say that the university graduated a student with excess credit hours and bad. And we're measured on how many students we can graduate without going over the excess credit hours. So it's a different time, because … well, they don't want to pay for that. It's a state school; it's not a private school.

B: So another thing I've been hearing listening to you; you've only talked about guys — guy teachers, guy students, guy educators. Were there any women in the program?

M: You are correct. There was one woman in the EE program at the time. There were a few more women in the other engineering programs at the time. But this was a very … this was late 1970s and this was a very male school for engineering. The high school situation was also very similar. The high school was actually all male until 1969. And …

B: When were you there?

M: … I went to high school the 1976–1979 period. So it was starting to get more women in, but you would know that that's … seven years, not much is going to happen in seven years, going from all-male to … in there.

So it was … there was not that many women in the high school, but the women that were there were great. One of the women a year behind me was Lisa Randall. She won the Westinghouse Science Fair, first prize. Went on to … she's a renowned physicist now. A member of the National Academy of Sciences. She was the … I think she was the youngest tenured professor, or tenured faculty member, in the Physics department. What was the story? I think she was the first female physics person to get tenure at Princeton and now she's at Harvard. But a complete star, right? And there's a few more of those, for sure.

B: So when did you decide to go to graduate school? How did that happen? You said you didn't want to work.

M: Didn't want to work! So what are the options, right? But it's not like I was totally against working, I did interview a couple of places. But … I figured I would … a lot of other people were also looking to get Master's degrees or Ph.D.s. So I said, "Let's apply to graduate schools and see what happens." So I had a couple of job offers, but then I also had a couple of offers for graduate school.

B: How did you go about picking graduate schools or programs?

M: I applied to big names and then the fallback was that I could do a Master's degree at Cooper Union. All right? And the different big names — one of them didn't take me; a couple of them took me. And then there was various degrees of assistantship support and stuff like that. But Princeton was the closest and it made the most sense, anyway, just … I think, at the time. So that's where I wound up going.

B: Do you want to talk about the others that you were thinking about? Or you'd prefer not to …

M: Well, there was … I guess there was Stanford and Berkeley. They both accepted me.

B: And these are in Computer Science or in EE?

M: Well, Berkeley was EE/CS and I was officially an EE major. So I was also on the … I was still on the fence if I was going to be EE or CS or … like I say, nowadays, what I did back then was either like a double major or maybe you might even call it computer engineering, not straight computer science.
[34:33]
So, yeah, I went out to Berkeley and Stanford with a friend who had also gotten admitted there and looked at the places. And … they're great departments. Probably at the time better departments than Princeton. But in terms of university name, probably Princeton's [was] still the bigger name. And Princeton had … definitely had a much better financial offer package and stuff. And … and it was closer.

B: And what did department were you?

M: At Princeton?

B: Yeah.

M: At the time it was EE/CS department. So it was still … Princeton was still one big department. And they had … they had … and so the degree you would get would be a Ph. … I think the degree you would have gotten at that time would have been a Ph.D. in EE/CS, the degree would be called Electrical Engineering and Computer Science. I'm not positive of that, but I think that's what it was.

B: So were you admitted to the Master's program at that time or the Ph.D.?

M: No, I was admitted — and that's part of the issue — I was admitted directly into the Ph.D. program. Whereas at Stanford, they were willing to admit me into the Master's program, but not the Ph.D. program. So Master's program and then see how you do, and then Ph.D. program — in part because I didn't really have a straight CS background.

Don't really remember Berkeley, but I think that was more the EE/CS … again, that was an EE/CS department, so I don't if they were that much split off at the time. I'm having a hard time remembering that part. So I think the fact that I was … that Princeton admitted me directly into the Ph.D. program is probably what made the offer more competitive to start with. I think Berkeley had a really big department at the time. Princeton had a smaller department and it was easier to meet with some of the faculty who were there when I went there to visit. And it … I guess I wasn't really ready to fly across the country at the time.

B: So did you move to New Jersey …

M: Oh yeah, yeah, yeah.

B: … for school?

M: Oh yeah, yeah, yeah. So lived on campus in a … it's called The Graduate College. So I lived in The Graduate College for four years. The graduate college … you know, all the Princeton buildings are old and beautiful, really. The graduate college, I think, was built in 1913 maybe. Has a big tower, the Cleveland Tower. It's the only monument to Grover Cleveland, our 22nd and 24th president, who I think was the governor of New Jersey or something like that. I really should know. [Barbara laughs.] But …

So that was … that was … that was my college life, right? Because I didn't have a college life, so that was a little bit of college life. I definitely … you know, I didn't live off-campus. Definitely. I was happy to stay there and have all the food … the food plan and everything like that. And the dining halls. And … Yeah.

B: So tell me a little bit about your studies at Princeton. What did … what set you on the path that you took and what influenced you … ?

M: Well, I tried … I tried … my first year, I tried three Computer Science courses and — let me think about it — and, actually, one EE course. And the EE course didn't go so well. And the Computer Science courses … I hit the jackpot with some really great teachers. I mean, obviously Princeton is known for research. But those guys can teach, too.

B: Who did you have? Do you remember?

M: Sure, I did a course with Ken Stieglitz. He's … he'd been around there a long time. I think he just recently retired. He did a lot of interesting work and co-authored a combinatorial optimization book with Papadimitriou back in the 1970s, so it was a relatively fresh book at the time.

Took an automata course with Dick Lipton. And, again, Dick is … Dick Lipton was great at teaching material, telling stories, and stuff.
[39:40]

And I took a VLSI course. So that was kind of half in software and sort of half in the EE side, with Andrea LaPaugh. It was probably the … probably one of the best courses I ever took. She was really fabulous.

And … so those courses … with those courses — that was my first semester there — and based on those courses and my abysmal EE course, I knew … pretty much knew at that point that, okay, it was going to be Computer Science. That's where … that was the end of my EE courses. And the rest of my courses were in Computer Science.

B: How did you pick what you were going to study for your thesis and … ?

M: So the department was EE/CS. And so at some point the decision was made to break up the EE/CS into EE and CS. I think Computer Science — I mean the faculty in Computer Science — must have been pushing for that for years and years and years — from what I've heard. So finally they did it.

And they … when they made the Computer Science department, they hired Bob Sedgewick in from outside. He was a professor at Brown. And they hired a whole bunch of faculty, too. It must have been a big package deal, because all of the sudden, within a few years, the department had grown. They brought in some senior people like Bob Tarjan and Andy Yao. They hired Kai Li as junior faculty. Bernard Chazelle came from Brown with Bob Sedgewick. So the department kind of grew.

My topic was basically … sort of random. Every week somebody would come in and give a talk. One week it was Bob Sedgewick's turn to give a talk. He was talking about something and he said, "Oh, here are some open problems" he was interested in. And I was … one of them caught my attention. And I went off and did some computer programming and stuff and made some progress on it. And that's not a thesis right there, but that's how I got involved in that particular area. And the thesis had to do with shell sort and those kinds of sorting algorithms. So … back in the day, that stuff was in vogue.

B: And so you studied under Sedgewick?

M: Yes.

B: He was your major professor.

M: Yes, so he was my major professor. At the same time he was running the department, right? He was also the department chair. So it was … but then that was … it was definitely a great experience.

And you also would know … Sedgewick at the time also had these books going on. I remember when I went back to Cooper Union and Bob Hopkins asked me, "Who's your advisor?" And I said, "Oh, it's Bob Sedgewick." And he whipped out, "Oh, I have his book." I was like, "OK!" He didn't know anybody else there, but he knew Bob Sedgewick. He didn't know Bob Sedgewick was of red-black trees, that's kind of important, too, right? But he knew of the book.[2] So that always stuck with me a little too.

B: [chuckles] I see a pattern here.

M: What is that?

B: You modeled your … both your …

M: Bad behavior! Modeling bad behavior [laughter from both]

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[2] Sedgewick, Robert (1983). *Algorithms* (1st ed.). Addison-Wesley. ISBN 0-201-06672-6.

B: Yeah! Did you … it sounds like you really didn't deviate from this. So you … did you say you were only there four years?

M: I was only there four years …

B: So you were quite young!

M: I don't know how I got out of there in four years actually. That's kind of a miracle.

B: So you must have been 16 [years old] when you started … when you started Cooper Union. So you were 24 [years old]?

M: Yeah. Yeah, right. So … and then I went straight to FIU [Florida International University]. And that's where I've been.

B: How did you decide on FIU?

[44:00]

M: Well, 1987 was not a particularly good winter. It was snowing a lot. And I do mean a lot. So that influenced some of the places where I applied to.

Now back in the days, you would just open up your *Communications of the ACM*, go through it, and you'd pick out the ones you liked. And it was early enough … it was late enough, I guess, in the computer era, that you could form letter apply — not like you do now, you had to do a little bit of work — but you could send out more than just a couple back then. And so I picked the ones I liked and I sent out a bunch. And FIU was in there because it's Miami, it's a horrible winter, right? So why not? A lot of New Yorkers go to Miami.

So they called me. It wasn't a particularly good season to be applying for jobs. So as it turns out, 1986 was a good year to apply for jobs. I would have done much better in 1986. And somehow around 1987, it wasn't a good year. And in 1987, the stock market crashed in October. So 1988 and after that was bad for a lot of years. Universities were having the pick of the litter. So I applied to FIU and they were one of the places that called. So I went down there — I didn't think I'd wind up there, but then there weren't a lot of different offers. Theirs was good and it was Miami and all that. So I thought, "I'll try it for a couple of years."

B: A couple of years? [laughs]

M: You see what happens! [laughs] So I'm still there, almost 30 years now.

B: So one of the things … reasons you're here is because you've received … you're receiving an award as outstanding educator and you have valued the teaching part of your career. Can you tell me a bit about how you view your career as a professor? And how did it evolve?

M: Well, I guess when you're an Assistant Professor, you're out there trying to publish or perish. And "publish" means journal papers — back then. I guess now it means more conference papers. But back in the day, that's … you had to try to do as much of that as you could. And so I did that for a while. But somehow I also wrote my book,[3] while I was still an Assistant Professor. Not really too smart a thing to do, generally speaking. I wouldn't really … when you hire Assistant Professors, I don't tell them "Hey, why don't you write a book, great idea for tenure." It's not really a great plan. But it worked out okay. You would see you had a paper in a journal; you had a book; and what did people know? What was actually making an impact? Very obviously, it was much more with the book.

So I gradually started doing less of the research because it wasn't … there's a lot of great researchers out there and so you can't … it was hard to even think that I could do much more than just publish. You can put more lines on your vita and publish and publish until you have a lot of papers, but it wasn't going to do much. And then with the book, we were back in that crazy time where … you'd write a book and then there was a new language, "Why don't we do a new language?" Right? Well, you remember, every year there was a new language. Nobody knew what the language was. But everybody knew that they were right. So everybody wants the book and they don't want to say, "We'll just have it in pseudocode and then we'll put it in our own code in there. We'll translate it ourselves." They want the book in that language because that's the right language. So then I spent a lot of time doing that. Because … my editor said you should do that. I figured they must know what they're talking about. So I spent a lot of time doing that and less time doing research because of that.

So at some point, the research took a back seat to everything and I spent a lot of time on the books. And then eventually I spent a lot of time in the AP [Advanced Placement] world. But that stuff is … I think, made a difference. I think people can look at that stuff and draw different conclusions about AP. It's not for everybody. But you can definitely say that there was some contribution there. And so I've very much enjoyed all that stuff. I don't write books as much or as frequently anymore. I'm a little out of the AP world now. But I always look back on it rather fondly.

[49:46]

B: So what's your typical semester like now?

M: Well, a few years ago I wound up getting into administration. So a lot of it … administration is a mixture of you're trying to do great things and have an impact and trying to convince people to do some new stuff. At the same time that you're solving a lot of problems that sometimes … that shouldn't even have to be solved. There shouldn't even be these problems, but things have to be done. So there's a lot of that and then there's a lot of day-to-day work because departments don't just run themselves. We'd like them to, but they don't.

And FIU is a big university. We have over 50,000 students. The Computer Science programs, of course, are growing. I took over as the Associate Director at probably the absolute worst time. In that … budgets … in 2009, budgets got slashed at most state universities because we

[3] The first edition of *Data Structures and Algorithm Analysis*, published in 1992.

were coming off the banking collapse. So budgets were going down at exactly the same time that enrollments were going in the opposite direction.

I remember Maria Klawe was saying something about that, how, "Well, we've had boom times in computer science before — no big deal — but we never really had them at the same time when budgets were getting decimated." Departments around … departments were getting closed around the country and faculty hiring was being frozen around the country. And then … but you have all these students who want to come into your major. And things have to be done. You do the best you can. So … a lot of … a lot of just trying to run a department takes up a lot of time. Solving problems. Students …

B: So you're not in the classroom at all anymore?

M: I still teach. I don't teach … back … used to be I'd teach two or three courses a semester. Now it's maybe one a semester.

B: What's your favorite?

M: The Data Structures and the Algorithms courses. Of course, that's … those are my favorites. I've taught … I've taught the lower ones before — the programming, the intro programming, or it might be the course between the real data structures and the intro course — that's hard. That's really … that's hard stuff. Guys who do that and do it well are amazing. I don't know. I did that a while ago. I was okay at it. I don't know … if I did it now, I don't know if I'd still be okay at it.

B: What gives you the most joy?

M: Oh, I guess … you mean, besides when the semester is over? [both laugh].

I think what most professors would tell you, especially the ones who are doing any reasonable amount of teaching, is when you hear back from the former students. And the former students will tell you something. Sometimes they'll say, " I went on an interview and they asked me this question and it was on the test or it was our assignment and it was almost like it wasn't fair." So those … I think everybody would say that kind of … that's what you're looking for. It's certainly … I think it's from the students more. It's not like your annual evaluations don't … nobody cares about those anymore. You're tenured … you're a tenured, full professor. Who cares what the annual evaluations say? So I think that's what keeps a lot of people going. You have a class full of students and especially, I think, they're coming and they want to … they do want to get educated. Some days are better than others. Some days I just go in and just don't have it. And a lot of days you do and when the students tell you that, it's great.

B: What … do you have a teaching philosophy? Is there some … ?

M: You know, I always … any class that I give, I always want every student to walk out of the class and be able to say they learned something. I don't think they have to learn everything I

talked about, but that they learned something in that class. If they learned nothing, then it was a complete waste of 50 minutes or 75 minutes or whatever it is. So, did they get something out of that class that they didn't get. Because the rest of it they can go back and maybe figure it out.

B: Have you changed your style at all over time?

[55:17]

M: Well, I do a little bit … I started recording my classes recently and …

B: Video recording?

M: Yeah. You know, not sure about it yet. One of the things with the video recording, it seems like more … when I do the recording, as you get deeper into the semester, students feel like they can skip the class more easily because they know there is a lecture that is being recorded. And I know at the end … as they're getting towards the end of the semester… I'm kind of struggling with it. I know maybe they need to skip the class. Maybe the work is piling up. As I said, a lot of our students work and they have all these projects getting due and maybe they need … maybe they just have to skip the class and they know the recording is there. But they feel more entitled to skip it if the recording is there. But I'm still struggling with whether that's a good thing or a bad thing. I'm not so sure yet.

But, yeah, I definitely do more the live coding kind of stuff, where I'll write the programs rather than try to sketch pseudocode on the board. I'll actually write code, especially if I'm teaching a Data Structures course. Now that we've been in Java for ten, fifteen years, where I've written this code so many times, I can close my eyes and write the code. But there's definitely a "Wow" factor.

When I was at Cooper Union, we had a math professor who was really great. He would just go in, no notes, and just whip off these impossible theorems like it was nothing. Right? And so I always … I haven't used notes since my first semester. My first semester, I used notes. I had my whole lecture planned out like they … I think people tell you, "Oh yeah, you got to prepare for class. You got write all the notes out. You got to have this." So I have these notes and I'm looking at them and I couldn't read my handwriting. But I'm trying to follow my notes and I'm trying to write this code for the queue. And I'm screwing it up because I can't read my notes. So after that semester, I decided, "I don't need notes. I'm going to do it without notes." Because … well, for the first couple of years I practiced it more, before. And … but then after a while you teach the same course, I can just walk in. And some of these I can do completely cold.

So I don't use the notes; I like to do the live coding more. You know … not too much has changed with my style, though, besides that and the videos. I guess I'm … I guess I still have some catching up to do, maybe I'm a little old school. But I guess … I know a lot of our younger faculty — and I encourage them to do it, but not me — are doing more stuff with active learning, where you are getting these classrooms with the tables that move all over the place. They can do a demolition derby if they want with those tables. And some of them are doing pair programming and all these kinds of things. But I don't know. It's just like … I

think what I've been doing was working. I'm not sure if I can pull off that other stuff. And I'm a little too scared to try it. So that part's stayed the same. But it seems like it's … it seems like it's okay, just … but I haven't done any scientific studies on this. Maybe I don't want to know.

[59:32]

B: You don't want to know! [both laugh]

What are you doing in the professional community? I mean … societies? Do you go to meetings? What service role …

M: I haven't … the family life has kind of taken over. I haven't … I used to go to SIGCSE pretty much every year. I haven't been to SIGCSE in over ten years now. I've always been, "Oh, let's go, let's go!" I thought when it was in Atlanta, that was almost close enough to try to pull it off. But professors have the professor life and they also have the family life. And it was a lot easier back in the day to do that stuff.

So lately, I haven't been doing too much in the professional community. I've been doing my thing at FIU internally in the administration — a lot of stuff there. The professional stuff, that was really from the 1990s. In the early 1990s, I actually did some stuff with SIGACT, which is the automata and computing people. I used to write some columns over there for a few years. And then, of course, I did the AP stuff for maybe ten years. So between them, that's like fifteen years and that's kind of a lot. It's not bad.

And maybe in a couple of years when the kids are a little older, I can get back to it, because I do like the conference. There's so much stuff going on and you don't really want to be away if you … if you have to, but if it's impossible to avoid. But I've seen people here … I ran into a lot of people just the last hour that I hadn't seen in years, that were on AP committees at some point. They're retired and they're still here. So, it's amazing what a great community it is.

B: Can you point out any major challenges your career has had? It sounds like it's been a pretty straight path.

M: I've been pretty lucky. I haven't been … it has been a straight path. And there have been some random choices that I've made that have turned out okay, for no … without any real skill on my part. As I said, this whole concept of writing a book when you're an Assistant Professor is not a brilliant concept.

B: If you'd known more, you wouldn't have done it.

M: Yeah, if I would have thought about it. And actually our director at the time said, "Are you sure you want to do it?" Right? But, you know … back in the day it was okay. So it's been okay. It's probably not a great decision to totally let go of doing research. If I had to do it over again, I probably would have tried to stay with that a little bit longer. But probably at this point I think I have only so much energy I can focus things on. And between keeping my

administrative role, keeping my family life, and I still have to revise books every now and then, I think something has to lose in that picture. And so right now that's …

B: One of the questions — we're getting toward the end — and that is do you have outside interests. And what I'm hearing the outside interest is family.

M: Yeah.

B: That's the major, or maybe the biggest, interest. Can you tell me some of the things that you enjoy with your family?

M: Well, I enjoy just … we're not an adventurous family. We're not travelers or we'd have travelled all here and destroyed the whole conference. But … no, I can spend time with the family, which is getting harder and harder to do, especially as some of them are getting older and they don't really want to spend time. The younger kids … the younger kids are still young enough that they're not terribly embarrassed of the parents yet.

[64:33]

B: Did your parents come to appreciate that you were a college professor?

M: I think … I think my mother eventually did when … I think eventually she did.

My father passed away a while ago. For … it's been over twenty years. So …

B: You were a professor by then.

M: I was a professor. But I was a professor at … I wasn't a professor at Harvard. I was a professor, right? So I'm sure he was good with it. My mother was, for many years, just upset that I couldn't write her a prescription. But these things are important. When you need that prescription, you really would like your son to be a doctor. [Barb laughs] And I couldn't do that.

But, after a while I think she started to appreciate a little bit of … part of the perks of … what people who are tenured full professors like. There are some things that are nice and … in some cases it could be better than being a doctor. She has friends, and my sister has friends, we all have friends who are very high-paid doctors. But they have these … pagers — well, they don't call them pagers anymore, beepers, whatever they are now, I guess they're cell phones right? — and these things go off no matter where they are and there's an emergency and they have to get to the hospital. Now, I work a lot. I work at night. I work past midnight sometimes. You do too. All the professors do that. But if we're out doing something, nothing is that important that we have to … we don't have to leave the hockey game in the middle because we just got something on our cell phone work-related. So, there is … there are some things maybe that doctor life wasn't … isn't everything. I think she was okay with it at the end. But who knows! She might still have been saying, "If only he wrote me that last prescription!"

[67:08]

B: Is there something that you're thinking career-wise that you would like to accomplish before you retire or after you retire? Do you have a future vision for yourself?

M: I thought you were going to ask me, "When do I get to retire?"

B: What does your wife do?

M: She's also a professor in Computer Science at the university. But she's off the tenure track, so she's …

B: Teaching?

M: … in the teaching sphere. Doing a lot of our service courses. She sees tons of students. She has thousands — two thousand students a year maybe — in these service courses. And whenever I need to hear about what's really going on in the university — what are these students really … what are their real problems, what's the real things — she's always quick to tell me that when I teach a class I just have a little club going. She's got all the masses there. And she can tell me anything I need to know about why some solution is not really going to work.

B: That's great!

M: And … I'm not sure. That's hard to say because I have a while to go until I retire apparently. And so … you would like … I'd like to find … get through my administrative phase of life, I guess. Then… I usually break up my career into seven to ten year spurts maybe. So I'm getting near the tail-end of the administration, probably, another year or two, who knows. So the question really wouldn't be what do I want to when I retire, it would be what do I want to do …

B: Next.

M: … when I go back to the faculty. What is there to do? And that's something I probably ought to start thinking about in a couple of years. But again that might be something where by then the kids are older and a lot of stuff off my plate and then maybe it's time to get back into the community again.

B: We'll take you back.

M: That would be so nice if you would.

B: We'll take you back.

M: After you hear my talk tomorrow, you might not. [both laugh]

B: Well, if — and this you've kind of skirted around it, but … if there a piece of advice to a young person right now about going into computing — especially a young woman, because this started out as a project mainly about women in computing. And it morphed into having men being interviewed and become part of it because without both perspectives there … it's difficult to make any conclusions.

So what would a man advise a young woman or what would a man … what would you advise anybody about choosing a career in computing?

M: Well, I have two daughters. I, for the life of me, don't know why they wouldn't be able to go into computing because … it's almost the same thing I told you about how I was responsible for programming those VCRs. Nowadays if — now that I'm an old person and I have all these gizmos, these iPhones and all other things that need fixing or setting or tweaking — I just give it to the girls. They go, "Dad don't you know how to do this?"

And my daughter does all this stuff with video software — which is basically programming — she makes these amazing videos and she's doing loops and all this other stuff. And the younger one is still in elementary school and they did the code.org thing[4] there. So I don't … I don't … I don't know. I'm not an expert on this. I've been out of the community for so long. But for the life of me I don't know why this would be a turn-off, right? Why. Because they don't seem … it's not like they're coming to me and saying, "Dad, get this iPhone away from me. I don't want one. Ever." No, my girls aren't saying they don't want an iPhone ever. No, it's … I think it's an iPhone 6 or whatever the latest model is. That's … "Dad, why are you using the Droid? What's wrong with you?" So, I don't know.
[71:56]
I do get the role model thing. So I … as an administrator, I get to pick and choose instructors and lately we've been able to hire women instructors. Not because they're women instructors, but these are the women instructors that are doing that active learning stuff. I mean really interested in education strategies. And I don't know if specifically they're targeting women or anything, but just … just osmosis almost.

So, I don't know eight or ten years from now what's going to happen. Departments lately, to me, with these crazy enrollments, have just been trying to keep their mouths and their heads above water, just to struggle to get classes offered and courses taught. You presume that's going to stabilize at some point. But yet you would also presume that the younger generation, they don't — women, the girls — they don't seem scared by technology, by computers. When my sister was growing up, she didn't want to know anything about that VCR — "call Mark!" But it seems … when they're coming up, it seems a little different. But, I'm not … haven't done any scientific studies … about that. I have a small sample. But my daughters have a lot of friends and they all have iPhones and they're all facetiming each other and they're all trading apps and they're all doing stuff, and they are not scared of those computers at all.

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[4] From the code.org website: *Launched in 2013, Code.org® is a non-profit dedicated to expanding participation in computer science by making it available in more schools, and increasing participation by women and underrepresented students of color.*

B: I have one other question. And that is — and you can think about this for a second — if there's one story that you would like to tell, that would be "I remember when Mark said that." Can you think about any story you'd like to tell, like "Man, it was the best day in the world when I published my textbook" or "I remember the time that this student came back to me and said … whatever."

Is there some story that you'd like to tell?

M: Wow! Let me think about that one. Hmmm. [about 14 seconds of silence as he thinks]. Yeah.

B: Okay.

M: Yeah, there is. It was SIGCSE 1997. It was in San Jose. It was a really good SIGCSE for me. I gave a … it was just … we were just starting the Java craze. So, of course, it was time to do a Java book, right? So I'd already started working on a Java book and, of course, I had to test some of this stuff out on the kids … so we were teaching. So I did a Data Structures course in Java. I think nowadays you wouldn't be allowed to do that, just change the syllabus, pick a new language, and not tell the department chair. But back then, "I'm just going to do it." So I did the course in Java and then sent the paper to SIGCSE about it. This is actually my only paper at SIGCSE. I was on a lot of panels and stuff, but this is the only time I actually did a SIGCSE talk and it was pretty well attended. But that wasn't the highlight.

The highlight was: I get back to the Addison-Wesley booth — I think it was Addison-Wesley at the time, they've been through so many versions — and my sales rep over there — actually, it was my editor who was at the booth — my editor says, "Oh, you just missed him. Don Knuth was looking for you." So, 1997 was when Don Knuth had just done the revisions of his books,[5] of course, and the conference was in San Jose, which is of course right down the block from Palo Alto. So Knuth came to SIGCSE to show off the books. I mean why not? And so I said, "What do you mean he's looking for me?" She said, "No, he came by and said 'Is Mark Allen Weiss at this conference?'" He used the full name, too, because that's how Don does stuff. I was like, "Well, ughhhhh!" And so somehow they eventually found him. And so I talked to him for a little bit. And amazingly he also started — he had just done a paper with somebody on shell sort — so he also started to talking to me about research, which was "Oy, oy oy!" — at that point I was starting to get out of it — but I still remember it because he actually asked for me by name. And so they took a picture, I still have it. It was a Polaroid back then. Remember, there used to be a company called Polaroid that would make these pictures that would develop instantly? And he signed it for me and I still have it. So definitely that's … that's something somebody would remember, because when you do some work and then somebody actually knows about the work when prompted — and a lot of people don't, because a lot of very senior people like Knuth, they're not teaching Data Structure courses anyway, they're not using the book — so it's a lot of younger people now would be using it, not the elder statesman. But that he would know that book and ask for me

[5] Wikipedia provides a good starting point for becoming familiar with Knuth's seminal work: https://en.wikipedia.org/wiki/The_Art_of_Computer_Programming

… I made sure to show the picture to the boss and everything. That was probably … so that's my favorite SIGCSE.

B: That's a great story.

M: Yeah.

B: A really good story. Well we've wrapped it up. And I appreciate the time. And thank you very much. I look forward to your talk tomorrow.

M: Okay. Thank you, Barbara.
[79:00]