



My Story in Computing with Carol Smith

Featuring Carol Smith as Interviewed by Suzanne Miller

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Suzanne Miller: Hello, my name is [Suzanne Miller](#). I am a principal researcher here at the SEI. Today I am very happy to introduce you to [Carol Smith](#), one of my colleagues in the [Emerging Technology Center \[ETC\]](#). We are going to talk about her story in computing today. This series is about understanding some of the non-conventional ways that people get into these really interesting jobs. I want to welcome you, and thank you for sharing your story with us, Carol.

Carol Smith: It is a pleasure to be here. Thank you for having me.

Suzanne: First off, tell us a little bit about the cool work that you do, so that people understand how you got to where you are.

Carol: My background is in human-computer interaction. I am a senior research scientist here at the SEI, working on emerging technology, specifically [artificial intelligence \[AI\]](#) and working on quantum computing, and all kinds of various areas in that emerging technology portion. The work that I do is really trying to understand the people's needs. What are their needs with regards to these technologies? How can we make sure that the systems that they are using are really going to be helpful to them, that they are going to be able to complete their tasks, that they are able to be augmented by these technologies rather than frustrated by them?

Suzanne: This is something you don't know. My undergrad is in ergonomics, back in the 1979-80 time frame.

Carol: Nice, excellent.



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Suzanne: In that time frame, we were just getting into video terminals. We were making a move from cards to video terminals. HCI was really focused on the user interface, but it has gotten a lot bigger than that, especially when we get into AI. We talk about [machine learning](#) as though there are no humans involved in that. Just say a little bit about sort of that scope and how it has changed in the HCI field over the years.

Carol: Yes, so definitely. The work that I do focuses a lot on what we call [Human-Machine Teaming \[HMT\]](#), so how humans are actually working with those machines and how the machine is getting some information and the human has some information, and then they are bringing that together, and really trying to work together to succeed on a particular goal. The work that I do is trying to help people be able to interpret and understand the machine and what it knows and why it is making decisions it is making or recommendations, and then help them to then do the work that they need to do. It is a lot of both the interface piece but also really understanding the human interaction there. There is a lot more focus now on trust and understanding and things like that that weren't quite as focused on in the past. In the past, it was more just understandability and usability, and so there are these added aspects when you have machine learning and other systems that are doing things that aren't always visible and transparent to the user exactly.

Suzanne: How did you get here? What is it that you drew you to computing in general and then we can talk about the human aspects, but what drew you to computing?

Carol: Yes, so my undergraduate was in photography, and photojournalism, and videography. I was really focused on trying to tell people stories and learn about people, and I really enjoyed that work. But I didn't enjoy the job as a job. I ended up working in a variety of different fields. I was working in customer service for a while, and I enjoyed that work, but I wanted to advance my career. In the search for a master's program, I was looking at a lot of MBA programs. I was living in Chicago at the time, and a lot of those had a lot of extra requirements that I wasn't able to attain just taking a day off from work. It just wasn't going to happen. I came across the human-computer interaction program at DePaul and realized that this was a great way to bring together a lot of the things I enjoyed.

The computing aspect was something I found greatly frustrating, actually. It wasn't that I loved using computers. It was rather that I really hated using them. They weren't as usable as I wanted them to be. It was funny. A program that I used a lot just recently had its 30th birthday, and I was remembering using it very early in my career. It was actually one of the better ones, but still very frustrating to use. Now everything has improved so much. At that time it just seemed like a nice combination of customer service and observing people and understanding their stories and being able to fix the computer problems.

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Suzanne: There is a nice synergy with the videography, photography, storytelling, perceptual motor learning, right?

Carol: Yes.

Suzanne: [It] is one of the aspects of human-computer interaction. People that very visual kind of bent and training, you have some perceptive qualities and skills that a lot of people that come from the computing field maybe don't even recognize.

Carol: Yes, I like to think so anyway.

Suzanne: To me that is a really interesting connection into that space.

What about your early days? Can you look back to sort of your childhood, and what made you feel brave enough to make that change? Because that is actually a pretty significant shift, going from essentially an arts-based field into a very technically-based field.

Carol: Yes.

Suzanne: What can you point to that said, *You know this helped me to get to this place?*

Carol: Yes. I think I've always been willing to try new things, and I don't know exactly what helped me do that. My family tends to be very conservative in a, *We do this. This is the job, and then we do it.* My grandfather wanted me to go study business, because that was a nice, safe thing. I didn't want to do that, and there's just a lot of...

Suzanne: So, you were the family rebel.

Carol: Yes, maybe, but my grandmother was a bit of a rebel. I don't know. Yes. I had a lot of different influences, so it's hard to say what really helped me do that. But I have always liked discovering new things and meeting people and doing new things. I think that was just part of the drive was to find something that fit better and to do something that was also important. I wanted to pursue a career that was going to make me feel successful and feel meaningful, and this seemed like a good fit.

Suzanne: The work at the SEI...I mean many of us are here because of the purpose: making things better for the government that in turn makes things better for the taxpayers, and all the constituents that we serve. That resonates with me as well. You come from one community, the photography, videography, arts community, and now, you're in the computing professionals' community. You might have noticed a little bit of gender imbalance in that.

Carol: Yes, definitely.



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Suzanne: I know that one of the things you are involved in is an organization called [Built by Girls](#). Why don't you tell us a little bit about that and what you see as its importance in getting everybody's voice into the computing field?

Carol: Yes, they are a really great organization. They are relatively new. I think they have only been around for about two years. Their goal is to really give professional advice to young women particularly, mostly college students who are really trying to figure out what they should do with their career and to have them connect with professionals in the field to be able to have those conversations about, *What class should I be taking? What should I be learning about? What books should I be reading?* that sort of thing. They have been able to mentor quite a few women already in that group. It's just good conversations. They give us really very well-organized scripts and ideas for those conversations.

So, it also helps us be good mentors with that structure, and the students are also given some guidance, as far as how they can best get the information from us. Then, one of the things that we are supposed to do at the end, which I'm always slow about and I need to improve on, is giving them connections to other individuals. It is sometimes hard to figure out who the right people are, who are really going to influence them. A lot of them want to be connected with other women or people of color. Unfortunately, there are just not as many of us in the world as we would like to be. I hate picking the same people over and over again. It is a hard challenge, but a good one. The more people can bring in, the more...

Suzanne: The wider community we have to work with.

Carol: Exactly, yes.

Suzanne: Excellent. Excellent. That is one of many things that we are seeing, a lot of work in the STEM area that people are doing. All of these things come together to improve the workforce—the diversity of the workforce and the diversity of thinking in our workforce. You mentioned reading books and things. One of the things I always like on these podcasts is where do you get your information that sort of helps you move your thinking forward, and how do you filter it? Because that's always the challenge that many of us have, is there's so much out there.

Carol: There is.

Suzanne: How do you go about filtering that information to make it digestible and usable for you?

Carol: Yes, and that is a huge challenge for me. I am always trying new things. I do listen to a fair amount of podcasts. Not as many as I'd like, just because time is always limited, but I find that to be a nice way to generally listen to a conversation or just learn some new things, some



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new aspects that I hadn't heard before. I read a lot of online articles, and use tools like Twitter and things like that to just find out what is going on, and scan, yes. I do a lot more scanning. I would say, than deeper reading, unfortunately, just due to time constraints. But when I am on the go, I like to have the information there and be able to use it.

Suzanne: I am a fairly recent adopter of podcasts, audible learning versus I was always reading-based learning. The thing that I am noticing about it is, for scanning, great, but it is kind of frustrating when you start reading some of these books audibly. It is like, *Wait, wait, wait, go back to that, or I need a diagram.* That is one of the challenges I am finding now. I am a digital immigrant. I admit it. I think about it from an HCI viewpoint. *How do we get audible.com plus Kindle? What does that look like?* so that we've got something where if I want to go right into the visual part, you know, or I can go back to the audio. That's a conversation for another time.

Carol: Yes, but Kindle actually has an option where you can listen to books, which is really nice. I'm starting to do that. Then when I need to, I can ...

Suzanne: You can go back in.

Carol: ...which is a nice balance.

Suzanne: The first time I read a book that needed diagrams through audible, I was like, *this isn't working. This really isn't working.*

Carol: I'm very visual as well.

Suzanne: So, we all have our favorites. What are some of your favorite podcasts related to work, and then other things that are important to you as well?

Carol: Yes, there's a newer podcast that started probably just six months ago or so, called [the IA] [The Informed Life](#), and that is a really great one. It talks a lot about information architecture, user experience, human-computer interaction. Then, for fun, I listen to, like, TED Radio Hour, the New Yorker Radio Hour. Those are really great, and then Spark from CBC Radio is always a great one.

Suzanne: So. any particular books that are favorites of yours?

Carol: Yes, so lately, I have been reading more about ethics, and in that area. Just recently, I got to see [Safiya Noble](#). I don't think I am going to say her name right, but she wrote [Algorithms of Oppression](#), which is more about search, searching using a search engine, and how search engines are made particularly to make income. The things that they're going to show are going to be based on what's most popular, or what's being paid for, that sort of thing. She talks about a lot how racism and other issues are really unfortunately more common in our searches than, you



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know, we would like, and that there are things that we can do to improve that, if these organizations are willing to do it. It is a really interesting book. There are lots of other really good books out there about right now about ethics. Another good one is [Weapons of Math Destruction](#) by Cathy O'Neil.

Suzanne: Math, not mass.

Carol: Right, math destruction, yes, and how algorithms again, how that work can actually create many large problems for people, and that we're really, especially when we're using data that is already biased because data is created by humans. It's going to be biased -- that that data tends to actually continue to exacerbate problems instead of solving them, and that math doesn't actually solve problems. Algorithms don't solve problems. People really need to be involved in thinking about these issues to be able to solve them.

Suzanne: Makes sense. I am going to geek out just for a minute.

Carol: Yes.

Suzanne: My first human-computer interaction book was [Ben Shneiderman's](#) book that now has, I think 20 different editions. Is that something that was still being used when you were being educated?

Carol: It was referenced, but it wasn't one of the big ones.

Suzanne: Oh, it was, it was the biggest thing when I was so...

Carol: Yes, no, and there are some really great ones. There is one that I refer to a lot on paper prototyping [[Paper Prototyping: The Fast and Easy Way to Define and Refine User Interfaces](#)] that is just really helpful for thinking about, *How can I model this without spending a lot of energy doing it*, and I read a lot of articles just on, like, making software agile, and things like that, and ways to improve the work, and partner with people better.

Suzanne: Yes, I always joke with people that I really don't have any stock in 3M, because I use so many Post-It notes in my work, that you would think that I was trying to support 3M single-handed, but I don't. I really don't. No conflict of interest here.

What is the one thing that you would want to give to people that are considering computing of any type, human-computer interaction in particular, as a career? What advice would you give them? Especially think about people that are sort of high school age and really starting to think at the beginning of their life. What would you tell them?



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Carol: Yes, definitely to come in with a sense of curiosity. Being willing to learn, interested in learning, being open to learning new things, being willing to take critique, I think, is a major skill, being willing to accept that you are going to make mistakes and that there are ways that you can do better and being open to that.

I think the biggest one, which I think the upcoming generations are much better about, is being inclusive and realizing that we all have different skills and different awareness and different knowledge and different experiences. When we bring that all together, we are better as a team when we are diverse versus trying to look for people who are only like us.

Suzanne: Absolutely. I want to thank you for this conversation. I don't get to talk to very many people that are in the HCI field. I actually met a guy that is in a Lean UX Center of Excellence the other day, and I'm like, *I'm so excited to meet you*, because this was in the military, so I was like, *Ooh, yay!*

I want to thank you, and I enjoyed this very much. Thank you for being here. Thank you for your work with us. I look forward to future podcasts where we get to talk more in-depth about your work. We will have a transcript for our viewers of all the resources that we've talked about. In the transcript, we'll list all the things, so you don't have to remember [Weapons of Math Destruction](#), even though that is the catchiest title that I've seen in a while.

Carol: It's a catchy title.

Suzanne: I want to thank all of you for viewing this podcast, and you can get this on the SEI website, as well as all the places that you get all your other podcasts. Thank you for viewing.

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