AI and You

Transcript

Welcome to Episode 23. Today we conclude the interview with Pamela McCorduck. Pamela is the author and co-author of eleven published books, four of which are novels, seven focused on the intellectual impact of computing, especially AI. Other books that she's written include *The Universal Machine* and *The Fifth Generation. S*he has written works appearing in *Cosmopolitan* and *OMNI* and the *New York Times* and she is a contributing editor to *Wired*. She received a BA from the University of California at Berkeley, which you may know from some of the other things we have said in the show and my book is a hotbed of AI research and philosophy, and MFA from Columbia University. For three years she was also a vice president of the Authors Freedom of Expression organization, PEN American Center in New York City.

But it is her seminal histories of the characters and field of artificial intelligence that brought me to talk with Pamela. She authored two landmark books, first [Machines Who Think](), which was published in 2004, and the sequel, [This Could Be Important](), which came out in 2019. In them you will find all kinds of detailed, amusing, insightful, and humanizing biographical sketches and histories of AI. You'll get first-hand accounts from Pamela of what key figures like Marvin Minsky, Herb Simon, and Joseph Weizenbaum contributed and what they were like. These books are nothing like the kinds of dry histories that put me off all of history in high school, but they are rich with color, context, and humor.

In part one, we talked about her books and what sort of relationships she had with the people she wrote about, the culture and worldviews that permeated the profession at its inception, compared and contrasted those early years with now, shifts in the direction of AI research, and much more. In this episode we're going to talk about the receptivity of computer science towards women, and – among several other things – C. P. Snow's "Two Cultures" (don't worry if you don't know what that is, Pamela will explain it) and the interaction between AI and the humanities. These perspectives are really useful in interpreting and influencing today's AI culture. Think of them as positive nutrition for change agents.

So here we go with the second half of the interview with Pamela McCorduck.

Tell us something about your journey. I was surprised, although I shouldn't have been, to read in *This May Be Important* that the amount of sexism that you encountered in this journey, some of it just horrifying, but again, I sometimes live in a sheltered world. And what do you think of the state of receptiveness and receptivity to women that the current field of computer science and AI is in?

Oh, boy. You have to-- Let me address my personal experience. And that was really pretty easy for me because I was one of a kind. Nobody was paying attention to artificial intelligence except this handful of people at Stanford, MIT, Carnegie Mellon. Anyway, not many people were paying attention to AI. So along comes this woman and she says, "You know, I'd like to write a

history of this. Would you guys sit down and let me interview you?" And they all say," Yeah, okay, why not?" So they treated me as someone in a different field. I was a professional writer, not a professional AI-er. And their only interest in me was making sure I got it right. And boy, they were incredibly generous about that.

As I was beginning this, I came to these founding fathers and I said, "This is really interesting and I'd like to write a history of it." And they more or less said, "Yeah, okay" they would cooperate, they would sit down and let me interview them. But there was no sense that I was competition. I was somebody in a different field, who was doing something different. And their real interest was making sure I got it right. And with that, they were very, very helpful, extremely helpful. That was when I was writing the book, and when it got published in the first year or two. But then, I began to see that I had interviewed nearly nobody but men, and I thought, "Well, that's kind of weird," but I lived in a world where most scientists with men so maybe it wasn't so weird. And then I began to meet women later in the field and heard their stories. There's a kind of touching story. My husband died five years ago and at his memorial service, one of the young faculty members that he hired when she was fresh out of graduate school said, "If it hadn't been for Joe, I wouldn't have got tenure, because he went to the Columbia University administration and he said, 'Look, this woman needs more than seven years. She's raising two babies', and pounded on them until they relaxed." So, this was considered anomalous. You didn't get extra time because you were raising kids. No. And little by little, I began to see how big the barriers were for women as scientists. They hadn't been for me because I was a writer but they were really big for women in science. And about two years ago, Center at NYU did the statistical studies on the number of women in the field, and the number of women who are publishing papers in the field. It was about 15% of the entire field. That's bad. That's bad.

I think I read somewhere about how there were more women involved in computer science in the very early days, perhaps in the '60s than they were in subsequent years, that that number dropped during the '80s and '90s. Now it should be, I believe it's recovering, right now. Does that match your experience? What was it that happened?

It wasn't my experience, but I know it is the case. And a colleague and I did a little study for the National Science Foundation asking why. And what we found was, the excuses were, "Well, it's the pipeline problem. They don't go into the field." Yeah, it sort of was a pipeline problem because many young boys got into computing because they were doing video games and video games just weren't very interesting for girls. Nevertheless, that closed after a while, and by the time they got to university, the numbers were not even, but they were certainly better. Then, when they got out in the field, the barriers were hair raising. I remember one woman saying to me at a conference, "You know, my first boss was an old World War II engineer, and he had all the expectations you would think of and misogynistic beliefs. And I thought, "That's okay. He's going to die. He's going to retire. It can't last forever." She said, "And then my next boss was a Southeast Asian and he was just as bad." So she finally left the field. It was just too damn much. I talked to another woman who happens to be close to a family that's close to me. And she looked at me with despair on her face and she said, "Should I have fought harder?" Now, this is a

woman who graduated in computer science from Berkeley; she was very well educated. And I said, "No, it was systemic. You could not fight the system. You did the best you could." So yeah, things were very hard in the '70s and '80s, and maybe '90s. And then places like Carnegie Mellon decided, "Okay, this is ridiculous. We're wasting talent", and they began special programs to bring women into computer science, making them see that what they were doing was not just some abstract thing to make an algorithm work better, but you could apply that algorithm to real-world problems. And that seemed to speak to women very deeply, which is another thing.

And it reminds me that a lot of the seminal and pioneering work on emotion AI and affective computing comes from women: Cynthia Breazeal, Rana el Kaliouby, Rosalind Picard, and possibly other names that are not coming to mind at the moment, but that AI has offered in a sense this way of working on something more appealing than video games.

God bless video games, may they go on. But yes, it apparently wasn't that interesting to a host of women students who wanted to look to make life better for humans, and that was what they could see by applying AI, applying computing generally to real problems. The natural language processing, which is very, very hot right now, that was almost all women pioneers who did that. In fact, one of the women who I mentioned spoke at my husband's memorial service is one of the great names in natural language processing. And his argument to the administration was, "Hey, this woman is going to be a star. Give her some slack."

And well, that reminds me, but I've read that girls, when they are growing up, have more advanced linguistic skills and language skills. I have two daughters age 10 and six, judging by the amount that they talk, I have no trouble believing this. You talk about C. P. Snow's "Two Cultures" to a great degree, and I'd like you to elaborate on what those are in this context.

I probably have to remind your listeners who C. P. Snow was and what "The Two Cultures" were. Around 1960, a little before that, Sir Charles Percy Snow, who had been a scientist, and worked during World War II, became a novelist, made a change. And what he saw as he was writing novels, was that the worlds of science and the worlds of the humanities didn't speak to each other. They just didn't speak to each other. And they had very amusing stereotypes of each other, and he called these "The Two Cultures". And he did a little lecture about "The Two Cultures", of why they're bad. Mostly what he was arguing was against the hegemony of the humanities in those days, in the British universities, the American universities. "No", he said. "You've really got to pay attention to science. Science is just as much a human endeavor as the humanities." Well, in those days, the way you propagated that was you gave lectures. And so, C. P. Snow came to the University of California at Berkeley, where I was an undergraduate. And I sat there and I listened to this talk. I was a humanities student. I was electrified, absolutely electrified because I had actually thought of becoming a scientist, an earth scientist, as it turned out. And what made me not do that was somebody who said, "But wait, how will you go on field trips? What will your husband and children do if you're away?" And you know, I was years from having a husband and never had children. I thought, "Yes, that's true. Oh, my goodness. Okay, I'll keep on being a humanities student", but obviously, the idea stuck with me. And as I matured

in my knowledge of AI and my knowledge of the humanities, I began to think there is something in AI that crosses that bridge, that connects the sciences and the humanities. And sure enough, 50, 60 years later, there are people in the digital humanities who are saying exactly that. We know what to do thanks to what AI has done in terms of representation, in terms of keeping things straight.But the things that I struggled with in the '80s, the digital humanities struggles with in this century. Now that's pretty interesting, but acknowledging that they were able to borrow from this pioneering work in AI.

I wonder, could you say more about that; *humanities* is very broad. What itch in that is AI scratching?

Well, let's talk about the elementary parts of digitalization. As the humanities research begins to digitalize its material, they discovered they can do all kinds of things with it. They can compare music to literature. Well, you could sort of do it before, if you had some really smart person who was willing to sit on a hard chair for years on end and say, "Oh, yes, Beethoven's *Eroica* matches, dah, dah, dah, dah, dah." Well now you can do it with thousands of books or poems, compared to thousands of musical books and poems. Yeah, thousands of musical things. It's an amazing thing. It gives you amazing insight into a period of history. Okay, so you're doing that, how are you doing it? What methods are you using? You ask yourself, "How will I represent this?" Representation, digitally speaking, is really fundamental, and AI is a guide into the thickest of representation.

So, they're using it as a tool for research and analysis?

Yes.

Like, you could have run the Rosetta Stone through AI, and it might have gotten an answer a lot faster.

Yeah, really.

Did they have to wait for some of the people in the field to die out? Because I can imagine that that would have been a vociferous opposition to such a mechanical invasion.

Oh, sure. Sure. I have dear friends, professors emeriti of English, who think this is just nonsense, but the young people have grown up as digital citizens. This is not a strange world for them at all. And so they want to know, how can they use what they already know to study the questions that they want to answer? And this is how they do it.

Is there still any separation between cultures?

Yes.

Where is it now?

Well, I think it is less between the old opponents, adversaries - the humanities and the sciences - and more about the adversarial positions of science and the rest of the world. We have seen that

the US administration in the last few years has been rapidly anti-science, and we have seen where that gets them. No, it's very bad.

If someone was entering this field today who was a copy of you at you're early, and as you described yourself, naive, young self, what advice would you have for her as a historian storyteller with this bent towards the science and computing side?

Well, I used to teach writing about science. And the first thing I would say to my students is, "If you've got a topic, read the scientific papers. Do not think you can wing it. Read those papers until you understand them. And if it's hard, too bad." I guess that's one of the first pieces of advice I'd give. But mostly I would say, "Gee, I hope you have as much fun as I did." This was such fun to do. It was so incredibly stimulating, being on the ground floor of a science that would someday be important. No, I'm deeply grateful for that. And I hope that the next generation or two has as much fun as I did uncovering what needs to be uncovered.

Are there any specific incidents that come to mind when you think about how much fun it was? Anything that bubbles up to the top of your mind?

These guys, and they were almost all guys then, these guys were always surprising me. I was taken to the airport by a man named Seymour Papert, who was a pioneer. I don't say too much about him after later in my later book, but he was working with schoolchildren and teaching them AI back in the day. And he took me to the Boston Airport on one of my visiting trips there. And he very kindly sat down with me as we were waiting for my plane to take off, and you know, blah, blah, blah, conversation. And then I suddenly said, "Juggling? Seymour, can you juggle?" And at that moment, he jumped up, he picked up three ashtrays on various tables and began to juggle them to the amazement of me and everybody else in the bar. This is the kind of nonsense that you never knew what would happen. It was just great. It was just great. I went to visit Claude Shannon, founder of information theory, and he had retired by the time I spoke to him, but we had a very cordial conversation. And then he said, "Would you like to see the maze that I ran my mouse through?" Well, this is ancient technology, really ancient technology. But sure enough, in his house, the maze was set up, and Epheseus, the mouse, did not m ake it through the maze anymore. But I loved that kind of imagination, and it came in every direction.

Wow. And there are so many stories like that in your book. There's one question I wanted to ask. There have been some stories about Marvin Minsky and his actions around women that were uncomplimentary lately. Are you aware of what I'm talking about? And do you have any reaction to those?

Oh, yeah, I'm aware of the stories. I think both his wife and his daughter denied the specifics of the stories. I can tell you as far as I'm concerned, there was never a problem with Marvin. He and I just hi t it off wonderfully. I couldn't be omnipresent but from my personal experience, no, not a problem, not a problem.

In your latest book-- Well, you've talked several times about how in *Machines Who Think*, you had to go through a lengthy process of a record number of rejections to publication before it

got out there. What was the experience with your latest book? Was that a cakewalk or did you have--

No, it wasn't a cakewalk. First of all, my longtime agent, who had not represented me in *Machines Who Think*, who took me on after *Machines Who Think*, said to me, "If this is a memoir, I can't handle it. I only handle scientific books." By that, he meant popularization of science as I had done. Well, I said, "Well, okay, I understand, but I feel like telling my story, and that's what I'm going to do." So, I began sending around queries, and I got some interest, but it was always people who didn't really understand AI. They knew it was a buzzword, and they didn't quite know what I was up to or what the book was about, so it just didn't work. And finally, I thought, "I'm too old. I can't go through this crap any more." And I just thought, "Maybe I'll self-publish." And then before that, I thought, "No, I should at least try the university presses." And the university presses, in fact, were a lot more receptive. And one of them said to me, "We can't publish this, but we should look forward to reading it." "Okay, thank you." And then I send a query to Carnegie Mellon University Press. Well, they were on the phone in a week. They said, "Yes, this is this is our kind of book." And they told me what they were going to do with the book. In addition to publishing it as a Codex paper book, there would be a digital version, and so on and so forth. And at the end of our conversation, I said, "Well, this sounds very good. How about a video game?" I thought, "That's going to end it." "No", they said. "Oh, we can do that." And sure enough, they got a bunch of graduate students to do a little video game, not based on the book so much as based on my career or some aspects of my career. It was very fun. Very sweet.

Oh, that was nice. You've been so generous with your time here. I would love to talk for so long because of how much you have. What's up next for you? What do you want people to know about your works, how they can find that, how they can find out more about what you've done?

I do have to bring my website up to date and I'm sorry, I haven't done it. What is next is an interesting question for me. What is next may be retirement. I've said all I have to say about AI. But maybe not. I was thinking about the way Robert Caro, the great biographer, does his work. He doesn't just tell you what-- Say in the case of Robert Moses, who made great changes in the face of New York. He doesn't just tell you what Moses accomplished - this beach and that highway and this park. He goes to the people who were negatively affected by it, and says, "How was it for you? What happened?" Now, I have never done that, and the numbers of people who are going to be, who already are affected by AI in terms of losing jobs, or losing income is huge, and perhaps a book remains to be written about that. I can be a big cheerleader for AI because I just love the idea of it. Another kind of intelligence, how great? But there are costs. And I did not pay attention in my books, to the costs, and that may be an interesting walk to turnover. I don't know.

Well, you were addressing some of the people that talk about that in the philosophy section of *This May Be Important*. You were talking about Bostrom and some of the others, Sir Martin Rees, that have been vocal in talking about the risks of things like automation on employment.

So I think there's some of that there but as you say, it's a rich field, and that's one that I'm trying to play a part in. Anything I haven't asked that you would like to have said? I've got one more question.

No, I think you've covered the waterfront, Peter.

So, one final question, then. If there's any truth to the saying that those who do not understand history are condemned to repeat it, what would you want people to learn from your histories of AI?

I would like them to learn to be cautiously bold if I can say such an oxymoron. Yes. When I was writing *Machines Who Think*, other scientists would say to me, "Oh, the ideas are so far-fetched. They're so ridiculous." And I would say, "If they weren't far-fetched, they wouldn't be interesting." So be bold with a modicum of caution. Don't be so eager to dismiss what people have done before. AI has a history of great ideas that could not be realized because the technology wasn't there. Machine learning, which captured everybody between 2010 and 2020, those ideas were 1980s ideas, but they could not be implemented until the technology caught up. So, this idea that everything grandpa thought of was stupid, no, no, no, no. Go back and look at what grandpa thought of and he just couldn't do, that kind of thing.

Thank you so much, Pamela McCorduck, for coming on the show.

That's the end of the interview. I thought it was particularly insightful how AI can be used to enhance the learning and experience of people in the arts and humanities who probably thought they were a thousand miles from computer science. What new ideas does that give you about the potential for AI?

I'm really happy with Pamela and all the wonderful guests I've had on this podcast. I'm learning a tremendous amount from them and I hope you are too. We've got more of them coming up, and I think you'll agree with me that they deserve as large an audience as possible. Let me take a minute to talk about that. Don't worry, this is not the point where I ask for money. What I want is *listeners*. I'm hearing from more and more people who've just tuned into the podcasts how great they are, what a pleasant surprise they turned out to be.

You know, I talk a lot about exponential growth, because that's what computers are doing. Well, I saw an exponential chart recently that was quite gratifying, because it was the rate at which this show is gaining listeners. I'm glad about that, because I put a lot of work into them, but more so because this work is important to me and the value of the work is proportional to the number of people that it reaches. If you're enjoying this podcast, if you're getting something out of it, then consider how it was that you found out about the show. We don't have an advertising budget yet, so odds are either you saw a post on social media or someone told you about it. So my ask is for you to think about the people you know who would also be interested in what we talk about on this show. If they don't know about the show yet then they're being denied that value because they don't have a free choice. Making a podcast is not a matter of Build It And They Will Come, because they won't *know* that you've built it. The world is a jungle of people competing for attention; and don't think that the quality of content is all that it takes to come to the attention of people who would benefit from that content. So help enlarge the community and bring more people in that we can all play with by telling your friends about this show.

Remember, we're at aiandyou.net. You can also participate in the show by asking questions. There's a contact form on my main website which is humancusp.com. Okay, that's the end of the appeal.

In today's AI news – since Pamela is from northern California, I chose this one. General Motors' Cruise autonomous vehicle unit says it will pull the human backup drivers from its vehicles in San Francisco by the end of the year. Cruise CEO Dan Ammann said that they got a permit from California's Department of Motor Vehicles to let the cars travel on their own.

The move follows an announcement from Waymo that it would open its autonomous ride-hailing service to the public in the Phoenix area in vehicles without human drivers. Waymo, a unit of Google parent Alphabet Inc., is hoping to eventually expand the service into California, where it already has a permit to run without human backups.

Cruise has reached the point where it's confident that it can safely operate without humans in the cars, according to a spokesman, who said that there's no date for starting a ride service, which would require further government permission. Cruise will go neighborhood-by-neighborhood in San Francisco and launch the driverless vehicles slowly before spreading to the entire city.

Steven Shladover, a research engineer at the University of California, Berkeley – there we are again – who has studied autonomous driving for 40 years, said the moves are the next logical steps by both companies in a gradual progression.

"I don't see them as revolutionary steps, but they're part of this step-by-step progress toward getting the technology to be able to work under a wider range of conditions," he said.

Both Cruise and Waymo program their vehicles to drive more conservatively than humans, but still need to progress safely, Shladover said. He noted that Cruise will tackle easier areas in San Francisco first before venturing into more complex traffic situations.

It is huge news that autonomous vehicles are not only operating without human drivers in the challenging environments of suburban last miles, but also that regulatory agencies are granting permission for that. I don't think many of us would be surprised if they felt too nervous to do that, so the fact that as conservative an agency as the California DMV feels confident enough to make this decision tells us more about the maturity of this technology than its own makers could. I'll be looking eagerly to see what happens next.

I bought a Tesla a year ago because I liked the idea of getting in my car and going to sleep or working until it got where I wanted to go, and while I know it's not going to do that soon, this development in San Francisco brings it just a little bit closer. I'll take it.

Next week's episode is a little different. We won't *exactly* have a guest, not in the usual sense; but we will be talking about the most important question surrounding the existential impact of AI, a question from one of my listeners. You won't want to miss this one.

Until then, remember: no matter how much computers learn how to do, it's how we come together as humans that matters.

http://aiandyou.net