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Emotional Machines | Rosalind Picard

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The Veritas Forum

This week on The Veritas Forum podcast we're featuring a conversation with Rosalind Picard, an internationally-recognized researcher in affective computing. Rosalind is the founder and director of the affective computing group at MIT, a co-founder of Affectiva, Inc., a co-director of the MIT Autism and Communication Technology Initiative, and the author of over two hundred peer-reviewed scientific articles. In this interview with New York Times columnist Ross Douthat, Rosalind discusses her work in affective computing, her spiritual journey, and how she contextualizes her vocation in light of her Christian faith.

Transcript

It used to be that we just thought about, you know, what work are we going to do based on, like, is it hard or is it easy? Well, we're at MIT, we're going to do stuff that's hard, you know? Is it really cool and novel or is it just kind of lame, like anybody could do it? No, we want to do, you know, cool novel, hard stuff, right? Well, I've added another dimension and challenged my students to think about this dimension too. Is it something that's really going to make people's lives better? Welcome to the Veritas Forum Podcast. This week we're featuring a conversation with Rosalind Picard.

Rosalind is the founder and director of the affective computing group MIT, a co-founder of Affectiva, Inc., and the author of over two hundred peer-reviewed scientific articles. In this interview with New York Times columnist Ross Douthat, Rosalind discusses her work in affecti of computing, her spiritual journey, and how she contextualizes her vocation in light of her Christian faith. Rosalind, thank you so much for having a conversation with me.

Pleasure, pleasure to be here. So you are at MIT where you are the founder and director of the affective computing research group. That's right.

So why don't you tell me about what affective computing is? Yeah, affective computing is computing that relates to arises from or deliberately influences emotion. We've been

inventing different kinds of technology to help people measure and communicate affective information, things like if a person is interested or bored, pleased or displeased, engaged or disengaged. So what does it mean for a technology to read emotions in a human being? Give me an example of what the technology does and how people use it.

Yes, one example is when people are using a computer and it has a built-in camera, if they choose to opt in, they can turn on the camera and have it watch them watching other content. And through that, you can communicate with your face things like where some content made you laugh, where you actually look like you were interested in what the video was saying, or where you're in a lot of political videos we found people smirk. People watching political videos? They do a lot of smirking.

Originally we were looking for smiles and frowns and then we realized a lot of the most interesting facial expressions were skepticism. I'm afraid, yeah, I'm someone who does a certain amount of cable television where you're talking about politics and when other people are talking, I'm always afraid that my face is lapsing into some sort of unpleasantly skeptical expression. And it sounds like it probably is.

There are people who are leaky who express pretty much outwardly what they're feeling inwardly, and then there are people who may choose not to express that. We are all free to hide it. Are we free to hide it? I mean, can people, how effective are people at controlling their facial emotions or their facial expression or emotion? There's a great variety of ability.

There are some people who are not effective at all and there are others who have a great poker face. And do you do tests where you ask people to control their emotions while they're... I do not focus on people's cases where they're trying to hide emotions. I usually focus on cases where people want to communicate and maybe they're being misunderstood.

We've chosen to focus the technology on cases where it can... We can see a clear usage where it can help people. And usually that's not trying to extract things from people who want to hide it. Right, okay.

So you're not giving it to interrogation artists and someone? We are not. There are uses like that. Probably for the best and technology.

So, but so your uses. So tell me about the uses then. What are the applications that essentially help people who aren't being understood? How does that work? Well, one of them has actually evolved from wearing some unusual wristbands here that have... We started working with people who had limited language abilities, especially people in the autism spectrum.

But all of us at some point were unable to speak or we may become sick and unable to

speak. And we realized many of these individuals were experiencing a lot of stress and feelings that were being misinterpreted based on how people viewed them on the outside. And by putting on a sensor that could measure more of what was going on inside them, we could communicate to the observer that the child was actually... Maybe he looked mellow laying on the floor like he was just being lazy bum.

But in fact, he's so stressed that if you bother him right now, he might become injurious to himself or others. Whereas if you let him get the comfort of the deep pressure of the floor, maybe that's the best thing from right now and he'll calm down. So what kind of things are being measured then in that situation by the wristbands? Right, so this one is measuring a thing called skin conductance.

It's an electrical change in the skin. It's generated when you sweat, but it's also generated very subtly by changes in the deep emotion centers of your brain, especially the parts that get activated with fight or flight. When something makes you anxious or you might feel like it really matters a lot and it's not under your control, so it's kind of mildly threatening or majorly threatening.

Those things can activate these regions in the brain, which sends signals to your pseudomotor nerve system, which can cause you to sweat, but even before you sweat, it can cause electrical changes that we sense. Interesting. And so this is in a sense, these are forms of wearable computing.

Exactly, these are examples of wearable computing. And I know that some of your work, it's not just autism, you've done work related to depression as well. And so how does that, because I think people think of depression as such an inward interior state.

And I'm wondering both sort of how, if you sort of are trying to measure it, what kind of measurements you use, but then also what are the applications of your work for either people struggling with depression or people trying to help them? Right, we're doing a lot of fundamental research on what the bodies changes are during depression right now, both before a person becomes depressed and after. We have projects on both. One of the things that led us to that work, I mean, originally I thought, "Oh, you're depressed, you're just not moving much, or you're just not very emotionally activated." And some of it is a suppression of expression and a suppression of activity.

But also we've learned there can be imbalances deep in the brain. And now we are doing some basic studies as to how those show up in some of the signals we measure in different parts of the body. One of the biggest surprises we found was when one of our non-speaking children was having a signal that was huge on one side and not the other.

And I couldn't forget what caused that. Like, how could you be emotionally excited on one side and not the other? Like, I thought our sensors were broken. And after debugging everything and realizing it wasn't the sensors, I learned that the child had just

had a grand mal seizure.

And that explained what was going on. And then we started to learn about seizures being little bursts of electrical activity in different parts of the brain, sometimes they spread to the whole brain. But when they're localized, they can send signals that show up in only one part of the body.

And as we traced that down, we learned that certain regions when over-activated or under-activated could show up as things like your right side being aroused in your left side not. And that now is those findings are being used to build seizure detectors and also to issue alerts that could help people prevent dangerous states from going unattended. And also, we're looking at early signs of depression.

And also, as people get treatment and start to heal and come out of depression, do these patterns shift to more normal patterns. So both people who are already patients and people who are, I guess, at risk populations would wear these devices, basically, in the long run. As sort of monitoring for themselves or their doctors.

Right. In fact, this is a slightly- Are you actually- Yeah. Yeah.

This one also doubles as a risk watch. This is the impact. I was going to say it's the Apple, you know, it's the Apple Watch.

I think it's better than the Apple Watch. That's better. Thank you.

I wouldn't expect that it's cheaper, but maybe- It is less expensive than the Apple Watch. It is. Well, then your technology must be well in its way.

We're working on it. That's right. Yeah.

This is a prototype. So the theme of these conversations is the relationship between faith and reason, God and the university, and particularly your vocation as a computer scientist and your religious faith. So I was wondering if you could just tell me a little bit about your religious background, your religious journey, I guess, as people like to say.

Sure. Sure. My religious background, I guess most people start with their childhood, but mine was really that of a proud atheist.

I thought, first of all, I just didn't think about religion in the beginning. Then later, I moved to Atlanta, Georgia, where a lot of people talked about religion, and I got very turned off about it. I thought it was just for people who were non-thinking, or it was a crutch, or it was just something people did because they grew up with it.

Were your parents just skeptics, and just did you have any childhood religious? No, they just never talked about religion, and we didn't go to church. We did celebrate Christmas with a Christmas tree, but there was never any signs of religiosity associated with it,

which was fine with me. You got the presence, and you know.

Yeah, I got the presence. That's all the matter, right, as a kid, right? Get your presence, and give your presence, and believe that there's something magical about Christmas that you're always trying to figure out what it is, even unless you know the real reason for Christmas. I had neighbors who were Christians who kept inviting me to church.

I didn't want to go to church. I didn't want to wear a dress or a skirt. I didn't like the idea of the church.

Right, in the south, you actually have to wear a dress. Yeah, exactly. It's so funny how it's these trappings of what it is that are so easily rejected.

Eventually, they said, you know, after, I think, six weeks in a row of faking stomach aches to get out of Sunday morning churches, they said, you know, maybe you don't have to go to church, but what matters most is what you believe. Have you read the Bible? And I thought, oh, you know, I've heard that's the best-selling book of all time. No, I haven't read it.

You know, maybe I should, because I considered myself a smart person. I should read the Bible. So I got one of those, read the Bible through a year, you know, checkbox.

I think it was called The Way. It was one of those paraphrase versions. And I started reading the Bible.

And to my not wanting to tell anybody what was happening in me, I started to change. It started to change me. And I thought it would be sort of full of fantastical, crazy stuff.

They actually had me start with Proverbs, which was smart because it was full of so much wisdom that I'd read a phrase about. And I had to read it down and ponder what was going on here. And it immediately hit me with my sort of intellectual arrogance that I had a lot to learn from what was written here.

And were you in academia at this point? Oh, no, I was in grade school. Oh, okay. Oh, so this was... Oh, so this was a childhood.

I started reading it like in seventh-eighth grade, I guess. Now, it took me many years before I... So your neighbors were neighbors as a child? Yes, I used to babysit for them. Okay.

And what did you... And did your parents know that they were asking you to go to church with them? Because I mean, I would just say if we'd had neighbors who had been asking me to go to church with them, my parents might have raised an eyebrow or something. Yeah, you know, I don't know if they might have known. They never talked to me much about it.

They were very quiet about anything church or religion related. I never knew my mom had any opinions about it until I came home one day and said, "Mom, I want you to know I'm leading the debate team for evolution against creation. I'm on the evolution side and we're going to want those stupid creationists." And she said, "But the Bible's an important book.

And my jaw dropped. I'm like, what do you mean the Bible's an important book? I've never seen anybody look at it in our house. You know, I knew we had one." So this was... Okay.

So this was... We were an early teenager, basically. And so then how did that ultimately translate into religious practice? Yeah, after reading the Bible and I still didn't want to go to church, I still didn't want to identify as a Christian because I still didn't like what all of that was. But I did have to wrestle with the fact that I was believing in God and I still wasn't quite sure about Jesus.

And then I went off to college and a friend invited me to go to church. It was one of those churches where the preaching was really good, but you want to raise your hand five or six times in the middle of the sermon and ask questions and they wouldn't let you do that. So I found that very frustrating.

And I hear some churches now are having Q&A afterwards, which is so smart. I wish they'd all do that. And gradually I met with people who could get my questions answered.

And then I changed from just believing in God to realizing that there was something much greater there that was being offered, which was not just faith in Christ, but the opportunity to get to know Christ as a living person and to change sort of who was in charge of my life, instead of it just being me to hand that over. And this was... so this was college and graduate school, I assume. This was undergrad.

And did you feel... I think there's an expectation that kind of religious pilgrimage is somehow at odds with the kind of vocation that you have. I think when people think about the science is writ large, but I think maybe especially computer science with its associations with sort of Silicon Valley, this sort of futurism in which the singularity is the only heaven that we're ever going to achieve or something that there's this sort of inherent tension between that and Christian belief. And did you ever sort of experience that either personally or just culturally in terms of your fellow students, PhDs, and so on? I certainly have colleagues who speak very much the way I used to speak.

You know, like, how can you believe in something that you can't, you know, prove mathematically or show in this way? And in fact, a friend of mine who's a mathematician used to say that to me, "How can you believe in something that you can't prove? I only believe in things I can prove." And then one day he was reading a history book, and his

friend who happened to be a Christian said, "Why are you reading that history book? You can't prove any of that." And he realized there's a lot of truth that has happened in the past that we can't prove today like you can a mathematical thing. And furthermore, of course, all of our science and our math rest upon axioms and things that we take at faith. So people who think that they can't deal with faith are really just deceiving themselves.

All people in science are accepting something on faith. The question is what is the evidence for that, and do you allow kinds of evidence that are non-scientific? And do you feel a sort of, is there a sort of religious vocational element in your work? I mean, do you feel that your faith has influenced where you've ended up in terms of the projects you're working on? I mean, it seems like the work you're doing has, you know, not that all or any work can't have sort of altruistic implications, but you're working in an area where you're trying to help people who are in particular distress, maybe it sounds like. And do you think that that's connected to your religious faith, or has it been a series of providential actions? No, it's definitely influenced by it.

It used to be that we just thought about, you know, what work are we going to do based on, like, is it hard or is it easy? Well, we're at MIT, we're going to do stuff that's hard, you know? Is it really cool and novel, or is it just kind of lame, like anybody could do it now? And we want to do, you know, cool novel, hard stuff, right? Well, I've added another dimension and challenged my students to think about this dimension too. Is it something that's really going to make people's lives better, or is it, and actually we don't want to say it's going to make people's lives bad because nobody wants to say their work makes people's lives bad. So we'll just say it does a little good, or it does a lot of good.

And so we're trying to add this third dimension and see if we can do stuff that does a lot of good. And it means that when you're thinking about building something like an AI, you think, okay, is this really going to make people's lives better, or is this just going to put people out of work and get you a lot of papers published? And so we're adding these other dimension, this other dimension, to ask the question. I can't say we can perfectly optimize with respect to that dimension, but we can at least add it to the criteria as we think about what we want to work on.

And do you think that that's something that can, I mean, you raise the AI example, right? I mean, I think the assumption for a lot of us sort of outside the scientific community is that the developments in science in the West, and not just in the West now, all around the world are defined primarily almost exclusively by that, here's a problem, let's solve it mentality, right? And it is very hard to imagine whether it's in biotechnology and genetic engineering or AI research or anything that we as a society could ever say no to something that could be done, right? And do you think, can you imagine a world where we hit some inflection point in terms of what we can do as a species with technology, where we were able to say, maybe we shouldn't do that? I think we've already done

some things that certain people have said later, maybe we shouldn't have done that. I guess but I'm thinking more prospectively, right? I mean, could we say no to the thing, to doing the thing itself, right? In hindsight, we might say, well, we, you know, oops, we shouldn't have built Skynet and then it destroyed the world and the terminators ran rough shot over everything, right? But if we could build Skynet tomorrow, somebody would see, it's my assumption as somebody who looks at this sociologically and doesn't even pretend to understand the underlying science, is that the trajectory of our civilization is such that when doors open, we always end up walking through them. And it sounds like you're sort of thinking about, you know, the question of, you know, saying, well, when we're on the threshold somewhere, maybe we could, you know, think about what it means to walk through.

Or we step back and we see that's not the only door that's open. Right. But do you think that's an argument that could resonate widely with people at the frontiers of science? I think that people at the frontiers of science like a challenge, they like to do what people think they can't do.

Right. And you have to understand those motivations. Hard to go on.

Yeah. And so that's why I don't, I don't say take away certain pieces of the two existing axes. I say, let's just add a third one that makes it even more challenging and makes it even harder and hopefully appeals to a lot of people.

I can't ever say everybody should adopt this third axis. I can say that when we work on that, we still are able to achieve the other two and do something that hopefully at the end of our lives will feel like we feel really great that we worked on that. Yeah.

My last question is on a, I guess, a more sort of personal professional level. I just wondered, you are in certain ways a minority twice over. You're a Christian in a field that is probably not dominated by Christians.

And you're a woman in a field that is sort of assumed to be male dominated and often assumed to be a difficult field for a woman for that reason. And I wonder if, I mean, maybe neither of those, maybe neither your beliefs nor your sex has ever felt like a difficulty or a pettiment in your field. But I just wonder if how you've experienced that combination.

And if sort of either one has seemed to make you make you more distinctive in a good way or alienated in a bad way from your peers and your profession. First of all, I think being a woman in technology and science is fabulous. It's a great career for a woman.

It's a career where you can bring a lot of creativity, flexibility, and we value different perspectives, different ways of seeing things. So kind of the more different you are, the more you can fit in. That said, I do feel like there are expectations.

And if you do sort of the same quality work, they just expect it's not as good. Because you're a woman or you're blonde or you're from the south of your Christian. Oh gosh, you know, my goodness, is that something conservative you were reading over there? You can just tell people, it's the New York Times.

Right, right. Yeah, the Times is okay in academia, but I actually read the Wall Street Journal. Sorry.

But it's, actually I read the Times too. But I read a diversity of things, whereas some of my colleagues pretty much come from one angle. But I think our community as a whole is so international and diverse that we welcome people whose viewpoints are really different.

Because we know from the past that they make contributions that are valuable. That seeing something the same way all the time just gets you stuck. Well, this has been great.

Thank you so much for having this conversation. Find more content like this on baritas.org. And be sure to follow the Baritas Forum on Facebook, Twitter, and Instagram.

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