

Fearless Thinkers, Episode 16
Man vs. machine: trusting computerized mathematics
with Peter Mulford

Masami Cookson: Welcome to "Fearless Thinkers," the BTS podcast. My name is Masami Cookson, and our host is Rick Cheatham, Head of Marketing at BTS.

On today's show, Rick sits down with Peter Mulford, Global Partner and Chief Innovation Officer at BTS. Peter leads BTS's Innovation and Digital Transformation Center of Expertise, with a focus on developing innovation leadership, design thinking, and disciplined experimentation capability.

Hey, Rick! What's going on with you?

Rick Cheatham: Hey, Masami, it's been a great week here. My youngest just turned 16, and that's always a big milestone.

But hey... Anyone that knows Peter knows that he is always on the cutting edge of what's new, different, and potentially coming. He's done some pretty amazing things this year.

Masami: Love it. Can't wait to hear more.

Rick: Hey Peter, welcome to the show.

Peter: Hey, Rick, good to see you.
I don't think I'm alone in saying it's been a wild year. I think in last few months alone, I've gone from two days talking about social media's effect on the world at the Vatican with Pope Francis; and then immediately hopping on a flight to talk about machine learning and artificial [intelligence's] impact on the world in Riyadh, Saudi Arabia; to the hinterlands of Vermont, trying to understand hockey parent culture with my kid. And honestly, I don't know which of the three was more bewildering.

It's, I'm still in shock.

Rick: You know, as a father of four there is nothing more complex or bewildering than sport parent culture.

Peter: Oh, my goodness. Yeah, you have to give me advice, and you have to explain to me how it is you still

have all your hair, Rick, you know? Full head of hair after having twice as many kids as me. I've got two, 11 and 13, and it's just... Holy cow!

Rick:

Oh, it's, well I just keep it in the front so that you don't know what's in the back. So, we do what we can.

But hey man, wait a minute. We skipped over something crazy and huge, and that is you spending time at the Vatican having in depth – I'm guessing, some level of consciousness – conversations, and then bouncing to Riyadh for a machine learning symposium.

Peter:

Yeah, it's, well, you can imagine how seamless the transition was.

I would say what both experiences had in common was you had a group of people who were genuinely interested in, frankly, making the world a better place, but also in really understanding how technology is going to impact our ability – either as individuals, or as groups, in the case of Riyadh, as a company – to make better business decisions. And, you know, decisions that aren't merely good for, the bottom line, but for the societies in which folks are operating.

Rick:

Yeah, and actually I would appreciate it if you would probably take a couple of steps backwards, and level-set folks on the journey that you slash we-as-BTS have been on when it comes to digital transformation.

Peter:

When we're talking about digital transformation, we're talking very specifically about transforming the way you make decisions, right?

That isn't the only thing we can talk about with digital transformation, and of course, anyone who's ever shopped online knows that. But in this context, we're talking specifically about the role that **computation**, and more specifically, computerized mathematics, plays in what leaders do.

There's a lot of things going on in this space – artificial intelligence, and its twin, machine learning – but whenever you hear about artificial intelligence or machine learning, I'd have you

simply replace that in your mind with "computerized mathematics."

So, if I take a step backwards, a number of our clients have really gotten interested in the role computerized mathematics has started to play in how we make decisions.

What price should we charge for that product, in that package, in that channel? Or, what's the right salary for this particular role?

You know, as human beings, we've been doing data-driven decision making since we became human beings, largely.

So, all of that is to say, that was a lot of me talking, Rick, but if I were to summarize: the shift really is from decisions based on the gut instinct and intuition to decision making still being made by smart people, augmented by a kind of superpower. And that superpower is computerized mathematics.

And that shift is not an easy one, and in some cases it's a shift that just, astonishingly, people reject outright.

Rick: Actually, as someone who sees my judgment as one of my superpowers, that's a very threatening thing. This is part of what differentiates me, and you're telling me...

Peter: They're coming for you, Rick.

Rick: Exactly! Exactly!

Peter: You said that you rely on your judgment, that your judgment is your super-power. I didn't hear you say you rely on your intuition.

If you were to unpack what happens in a decision, right? You can think about it as, I have to frame the decision; what's the decision I wanna make? And then you have to gather data to help you, then you have to analyze the data... Here's a decision: Should you have lunch with me today? Okay, well, I'm gonna think about it. I'm gonna process my data. If I have lunch with Peter, here's what will happen. If I don't have lunch with Peter, here's what's gonna happen. You're making a prediction, then apply judgment. Now your judgment has to do with your values. You know, if you worry that I'm gonna be offended, you might weigh that in a certain

direction; if, on the other hand, you go to lunch with me, you're gonna be late at work, and then you're gonna be late at home, and then maybe your kids are gonna be upset... You apply judgment to that.

The good news is, where machines step into the equation isn't actually at the judgment phase: it's just before that. So, the machines will help you gather data; it'll help you process data; and it'll help you make predictions about the data at superhuman speed. It's not gonna tell you how to feel about it; it's not gonna tell you how to value one outcome over the other – that's where judgment comes in.

So, the good news for you and for all the listeners is: your superpower is gonna become more important, not less, as the value of human prediction goes down.

Rick:

If I'm thinking about this correctly, you know... A lot of times what I would do when I was coaching salespeople, for example, on a big conversation with a senior executive, I'd be like, okay, let's climb the logic tree together: how is this individual most likely to respond to A versus B?

If I'm getting you correctly, a lot of what AI machine learning can do for us gives us the information for the logic tree.

Peter:

You got it. You won't need to be, where you add value really doesn't have anything to do with that logic tree anymore. You know, computers now can come in and give you a superpower where that thing you used to whiteboard is one click away. One click, and wow, look at that: there's what would've taken me a week, you know, rendered in a couple of seconds.

What you do with the output of that decision tree, that's still on you. The need for a strong leader to step in and set some guardrails around, "Look, these are the outcomes we value," is gonna be more and more important.

Rick:

What I think could be helpful for our listeners would be if we looked at things kind of through two lenses now.

Lens number one would be, "How best should I be

preparing my team, or potentially thinking about how to operationalize something like this?"

And then after we explore that for a minute... How I can potentially improve my judgment.

Peter:

Here's how I think about the first one. You know, the biggest problem, and it's just so strange and interesting. People don't like it. They don't like when a machine or an algorithm tells them what to do.

In fact, there's, you know, there's some interesting research that was done by I think it was Joe Simmons and Cade Massey where they designed an experiment, and basically, you have two groups of people. One group of people have to take advice from an algorithm over which they have no control, [and] the second group has to take advice from an algorithm over which they have some control. Anyway, fast forward to the end of the experiment, guess what? Turns out that people who have no control over the algorithm just reject using it, and people who have even a little bit of control... Way more likely to adopt it.

And by the way, this science replicates, right? So this experiment has showed up, actually, at a couple of our clients. This pattern, where merely being allowed to make tiny tweaks to an algorithm increases the chance that a person would trust it and use it, which is wild.

So, the first thing I would say is, if you're about to spend, 6 million, 60 million, 160 million on a digital transformation with a vendor of choice, and you're thinking about how I get my usage of this up, it's not just about, "Oh, let me explain how it's linked to the company strategy!" or "Ooh, let me tell you, you know, what's in it for you."

You gotta get used to the fact that there's just a funny thing about human beings where they're not gonna use it if they don't feel like they have some control over it. You know, imagine a scenario where you as a leader, you're confronted with this data and you have a choice: choice A is give them the control they want, choice B is say, no, you must use it this way, and choice C is, you know, write your own.

The problem is, it turns out if you give even a little bit of control to people over the algorithm, guess what happens to the performance?

Rick: It goes down.

Peter: It goes down, right? So now this is a fancy way of saying, you know, listeners, when you confront this quandary, be prepared to have the conversation where I may have to settle for a slightly lower performance in order to get significantly higher adoption.

Rick: Yeah, it is such a funny thing to me. And... I'm guessing you've heard about this before, but when Betty Crocker first came out with the cake mixes, they didn't move at all 'cause it was "Just add water." It was so simple. And once they did their market research, they found out that it made the customer feel like a quitter.

But they changed it, they changed it, and they made the recipe so you have to put an egg in it and just the act-

Peter: Oh, come on.

Rick: Of giving them that little bit of control, where they had to put an egg in it - they couldn't keep the stuff on the shelves. So I think-

Peter: Oh, that's really interesting.

Rick: It is a crazy human behavior thing that I think probably lives, in more places than our fear of growing up watching movies like *Terminator*, that we want to feel like we have a hand in the outcomes that are coming our way.

Peter: Now, to give you an even more contemporary example, you know, all these self-driving cars with steering wheels in the front, just there's something about it. People need to know that there's the wheel there in case they can reach over the handle and grab it, or there'll be a panic button, right? A panic button where you can just hit the button, and presumably, stop the car. It'll be interesting to see whether the button actually ever does anything, but just

having it there...

Rick: Just knowing I've got a button.

Peter: Just knowing it's there will probably increase its usage.

And you know what I would say just to land the plane here is, those anecdotes are kind of fun and they make for a good podcast, but they actually are the sort of things you want to grab onto and carry with you back to the office place whenever you're doing any kind of digital transformation, because the the same behavioral dynamics are gonna be at play.

Rick: Very cool.

Peter: Yeah, it's wild times.

Rick: So, what could or should I be doing to maintain my edge, for lack of a better way of saying it, in this new world?

Peter: It's worthwhile building up your mathematical thinking. You know, your **numeracy**.

Understanding things like the role of probabilities in basic decision making; being able to untangle skill versus luck before you pass judgment on the people responsible for the outcome; normal distributions, [and] how to incorporate risk into decision making. (And by risk, by the way, I mean literally risk. A risk is nothing more or less than a statement of probability.)

What you're trying to do is shortcut failings in your intuition. And you know, this is one of these things that yeah, a lot of smart people talk about this, right? Daniel Kahneman talks about this; Richard Thaler talks about this. It's, you know, in the battle between intuition and, you know, data, there's a lot of hyperbole, but there's a couple things we know for sure, and this is what we know: We know that intuition works. It's actually wonderful in circumstances where two things are true. One, that the intuitive person has deep knowledge in a certain domain; and two, there's a lot of regularity in that domain.

The flip side is no matter how much intuition you think you have, if it's in a domain where there's not a lot of regularity, well, then it's a problem. For example, the stock market is one of those places where, you know, I'm highly skeptical about expertise that isn't data-driven, because there's so much irregularity.

Rick:

When you think about... The ability to do some self-mastery and to step out of your ego a little bit would be critical as I'm trying to make some of these shifts. Because there are very few environments these days where people get to work in that very well-defined regularity that you were referring to earlier.

Peter:

As I listened to you speak, I was thinking about a book written by a good friend of mine, Hitendra Wadhwa. I don't know if you know him. He wrote a book called *Inner Mastery, Outer Impact*, and I just love that language.

And what that has to do with our conversation here is, being able to use mathematical thinking to have an outer impact of any kind is in part a function of how well you know how to do it, right. How well you understand the math. But in order to have this outer impact, you also have have some kind of inner mastery which largely has to do with you first understanding how and why it is people just flat out reject the math or they reject the science.

There's something really interesting going on there that, in many cases, makes it more likely than not for us to just reject facts that don't conform to our worldviews. We will reject facts that make us uncomfortable, because it just doesn't, you know, my gut tells me otherwise. And unfortunately, we're entering into a world where that just won't work.

Hopefully, that that rounds out your questions. How do I prepare for this? The first part is, you know, the hard bucket. Get more numeric, right. Just as my dad used to say to me, "Figures are your little friends," which, you know, at the age of 13, I was like, "Yeah, they're so not." Turns out he was right. You know, that was when I was 13, so what was it, you know, 20 years later?

Rick: Sure.

Peter: Is that bad math, or is that wishful thinking?

And then the other part of it is to recognize it takes more than just a class on coding and Python. You, the leader who's interested in getting this right, have gotta understand that there's something that sits in the way of you and the superpowers that technology can provide you. And that thing – that kryptonite, if you will – is your own brain.

Rick: I love it. I actually love it. No, it's very good stuff.

It's always my friend, it's always a beautiful big brain exercise when I get to chat with you.

Peter: Yeah. Well, thanks for that...

Rick: Always. Always fun to learn and think.

Peter: And by the way, Rick, seriously, don't worry about machines taking over the world. That's not gonna happen... That's not gonna happen... That's not gonna happen... I don't think you need to worry about that.

Rick: Yeah, it's your *Westworld* moment. All right, my friend, well, thank you, thank you, thank you for the time today, and-

Peter: You're welcome.

Rick: We talk soon.

Peter: Take it easy.

Masami: If you'd like to stay up to date on the latest from the Fearless Thinkers Podcast, please subscribe. Links to all of the relevant content discussed in today's podcast are in the show notes or you can always reach us at bts.com. Thanks again.
