

LADIES DRIVE | NO. 55



Beau Lotto is professor of neuroscience at University of London, as well as a visiting scholar at New York University. His incredible research explores how the brain adapts to uncertainty at these three levels: cellular, computational and perceptual. With his studies he aims to understand the fundamental principles of biologically-inspired innovation.

Fortunately, I found Beau Lotto on YouTube while watching a video about unconscious bias and I thought, 'The way he was able to describe the human body and why we hate uncertainty for instance, caught my attention.' I looked up his work and was impressed! And by the way, Beau Lotto founded the Lab of Misfits in London in 2001. This Lab became UK's first 'open lab' where everyone – you and me – could conduct real science. He called it the 'experiential experiment' and has brought in companies like Cirque du Soleil and L'Oréal as his partner organisations. This makes science accessible to everyone and brings science back to where it belongs – to the people. But that's not all. Beau Lotto also founded an augmented reality company called Ripple. So, at first, I thought this guy is never going to give us an interview. But I asked anyway. And he said yes. We met online during his vacation on Ibiza. And the result?

A stunning conversation about fears, empathy and the human brain.

INTERVIEW BY: SANDRA-STELLA TRIEBL

### Ladies Drive: I have a favourite first question. It goes like this – what is the scent of your childhood?

*Prof. Dr. Beau Lotto:* That's a good question! The scent of my childhood is probably horses and dogs.

#### You grew up in Seattle, right?

Outside Seattle. We had lots of dogs and we had a couple of horses. But I'm not a good rider! I was the one who got to take care of the stalls. This isn't necessarily a good smell (*laughs*). But at the same time, it's a wonderful smell.

### What kind of memories does that smell trigger?

Interestingly, smell is one of the quickest mechanisms to trigger memories because it bypasses the thalamus and goes straight from the olfactory bulb to the cortex. Speaking for myself, I'm more of a visual and tactile person. So those tend to be the triggers for my memories. But what smell triggers is that it brings me back to the environment I was raised in, which is relevant in some sense to your readers because I was raised by four older sisters. No brothers. I was raised by five women! So basically, while I was growing up, the house was filled with women – and me. On the one hand there's that context. On the other hand, the smell sparks the memory of my mum in particular because my mum was a remarkably strong woman. And I'm proud of her being a strong woman. My mum was very pragmatic and we did not have much money. So, for instance, if the deck needed fixing, she was like, 'The deck needs fixing!'. I said, 'I don't know how to fix a deck, mum!'. She responded, 'We'll figure that out.' In this way, my mother taught me that everything was possible.

#### That's amazing!

It wasn't necessarily romantic, but she made it romantic!

### That's a gift, that's incredible. Did you ever tell her?

Oh, very much so! And throughout most of my childhood. It was a very mixed childhood in different respects.

### Why?

In terms of poverty and other things. But what I can share is, is that it was a blessing in some sense, but that did not mean it was easy. Things that are difficult can actually become blessings. And my mum was very

much one. As were my sisters and being raised in that context with women was a blessing.

# Do you think this experience helped you to understand women because you grew up with women? Because I grew up with two older brothers and it really helped me work in a male-dominated field. When I was younger, I understood men more easily than I understood women.

Yes, yes. I often feel much more comfortable with women than with men. Most of my friends growing up were women or girls. So, the answer is ves. I like to think that it actually creates a more complex person, so you are probably more complex, not necessarily complicated! For instance, my dad who was a wonderful person, was the maker and explorer. Thus, I had a wonderfully diversified experience. But speaking of gender, I tend to avoid differentiating between men and women in terms of behaviour and perceptions. I think they transcend gender or sexual identity or whatever. I think we all have these different capacities that are just manifested more in some than in others. In our educational work, I always try to rally against empathy as a female trait. I say no, it's a human trait although it is just more often manifested in women. Because as soon as you say, this is a female trait in school, what are boys going to do? Well, they don't want to be girls! By just saving these are different human capacities and we all have the possibility to manifest them, this alone would make a big difference.

# Speaking of education, was there a specific incident or moment when you realised that this is what you want to do in life? Because sometimes you have an epiphany and all of a sudden you know exactly that is where you belong and this is what you should do.

I never had that moment because I feel that every year we are doing something different. Or to put it differently, I've had that moment of epiphany a lot of times *(laughter)*. I have that weekly! Starting from when I was eight. I have momentary epiphanies and then I realise how little I know. This is why I tend to say, 'I don't know' *(laughs)*.

### But I still would like to know why you studied anatomy and physiology at Berkeley in the first place?

I actually studied many things. I was always interested, well not in the sciences as such, but more interested in inventing. To me discovery and creation are all part of inventing. My grandfather was an

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inventor. So, in university I first studied pre-medicine and economics. But unfortunately, I did a lot of entertaining.

### Why are you saying unfortunately?

Unfortunately, because it meant that I could not get into medical school (*laughs*). My grades were not good enough. I was on academic probation during my first two years at Berkeley, which meant that they were trying to kick me out because I did not have good enough grades. During the last two years I was in the top 2 percent. So, on average, I was a very average student (*laughs*).

## So, you could not focus? At least for me, it is not easy to focus because I tend to fall in love with other people, new ideas, projects...so when I was at university people always told me that I could not focus. So, what about you?

I do focus, I just focus on a lot of things at the same time (laughter).

#### You are very gifted! I mean the brain works sequentially, right?

It can do, but that sequence can be very rapid. A lot of people, like yourself, do a diversity of things. From the outside it could look schizophrenic, work all over the place. But my guess is that there is something underneath that holds it all together. There's a principle, there is something. It could be about creating kindness that holds the diversity of what you are doing together. And that's true for me. And I think life is about discovering what that is. I don't mean one's purpose, but what is it that holds all your visions and dreams together. And often it's something that challenges people. My lab studies uncertainty probably because I hate uncertainty. And every step I take, puts me into uncertainty, so I'm my worst enemy, right? One example is my daughter. She's close to 23 and she wants to go into interior design. She's a beautiful, beautiful person, as are my two boys. Now what I wanted to understand is what was driving her to go into interior design because interior design is a medium for something else. And through a long conversation we discovered that her interest was to create spaces of joy. Well, that's not interior design, that's a need that transcends interior design. And my guess is that will be true for you as well. What's also brilliant is that she had the courage to also change her degree, which is now focused on child development (we're working on a children's book together right now). So, what is driving you?

### I'm very interested in seeing the true self of people and empowering them to see it for themselves.

Wonderful, so you are an enabler. You enable people. This can sometimes also be a negative thing, right. You can often enable people in ways that they should not be, there's a risk in that.

### Absolutely, but I mean living is a risky thing anyway. I'm not afraid. Are you afraid of something?

All the time!

### Really?

All the time.

#### My goodness, why?

If we get a project, like when we worked with Cirque du Soleil, we work with different large brands and part of our work is to make discoveries that clients can put out into the world and that are meaningful. Well, as soon as we get the contract, I get scared and think sh\*\*, now I've got to make a discovery...! I actually have to deliver. That's scary. I mean I give lots of public talks, I'm nervous for every single one. So that's why in our education programme I don't focus on confidence. I don't think that confidence is terribly interesting. I think that courage is far more interesting. To do something, knowing that it might fail. Or do to something with fear. My mum for instance has lots of fears. But as I came to know her and what I respect her for is that she did something

although she was afraid of doing it. That meant she was overcoming her fears. And that's courageous. And so, I celebrate courage, so I'm afraid of a lot. The question is what do you do with that fear?

### Right, that would be my follow-up question.

Fear can be a motivator or a debilitation. And there you have a choice.

### But how can we overcome our fears to open up again and to trust in the

Most of my answers will be. 'I don't know or ves or no'. This is to preempt any annoyances with these answers. But I don't know how we do it. I think an essential step is awareness. It's not the conclusion, it's a step. And the awareness of why I am afraid. Because what our emotions like fear tell us is less about the world and more about ourselves and our interaction with that world. And often these fears are projected from parents onto their little ones. They project their fears onto them and then those kids start having those fears and they never had a reason to have those fears. So first we need to understand that it is okay to be afraid. Second, we need to know the source of our fears, 'Why am I afraid?'. My mum used to say, 'What's the situation, what's the worst that can happen?'. Then she asked, 'Are you going to die? No, then why not do it?'. You figure out what is the worst thing that can happen here and can I survive that worst thing. But also, what could be the benefits if I do this. That trade-off helps you – and moreover also reveals your you to you! So, we need to be aware of this inner process. But ultimately, it's a choice. Are you going to do it anyway?

### But a lot of the people, speaking of fears and anxieties, think they don't have a choice.

That's part of the problem.

### So, how can we teach people to become aware and become conscious beings in the first place?

I think that's the perception of the awareness. Perception underpins everything that is to be us. Behavioural change begins with change in perception. If that's true, then we need to understand how and why we do what we do. And that's why I talk about perception. It's to give people the awareness of how and why they are doing what they are doing. Because when they understand why and how, now they have the opportunity of seeing a situation differently. Otherwise, you are just responding. And that 'why you did it' is usually quite self-serving. And so, I think that's the first step. It's awareness, but in particular, awareness of why and how what it is that I do. But that's really hard. Intellectually, but also conceptionally hard, because you might need to entertain the possibility that you might be wrong and that you don't know or that you failed. You might need to let go of things like ideas and concepts you were holding on to. You might need to let go of the identity through which you define yourself. Lots of what you need to let go of you might have inherited. Even challenge yourself with respect to what it means to be a woman or what it means to be a man. Many people think they have been prejudiced, but haven't been. At the same time, many people have been prejudiced against others, but don't think they have been. They are both constructing a narrative that enables them not to challenge their own perceptions of self. To consider the possibility that you're doing this to yourself or to another person is very hard for people to entertain. Because it takes you into the deepest level of uncertainty, which is uncertainty of self.

### Absolutely. Do you have any concrete examples what the first baby steps could be towards that evolution of our own consciousness?

There isn't a formula. This is a practice. This is something you do every single day. It's like people treat the brain differently from the body, right? And the brain is just another organ. You use it or you lose it. You would not go to the gym once and say, brilliant, I'm in shape for the rest of my life. Of course, you wouldn't!

#### I'm enlightened now.

Yes! Enlightened, done! Life is a practice; you do this every single day. This is what meditation does. It's exercising for your pre-frontal cortex to help it look away from things that are reflexive or what seem obvious to you. It's practising entering a conflict with a question, rather than the need to convince. It's practising seeking understanding. Not knowing, not validation. Another practical step is to sleep. Sleep is a great idea if you are feeling anxious. Another is movement of your body. Taking a cold shower another. The thing is, we all have this voice inside us, which I call The Voice. And that voice is just trying to stop us from doing stuff. It's a smart voice. It's an evolved voice and that voice is telling us to not spend energy. Because during evolution, if you spent too much energy you just died. Consider a female cheetah: she has five goes and if she does not get her prey in the 5th go, she's dead. That's why you see a lot of sleeping animals on safaris. So, we evolved to conserve energy.

#### What is it - scientifically - about the cold showers?

For me, it's like meditation on steroids. What you are doing is you are looking away from the obvious. You are saying, I hear that voice, saying 'That's too cold, let's do that tomorrow', but I'm going to do it anyway. And then when you are in the shower, there's another practice. When you are feeling the cold water, your brain attaches a meaning to cold water. Like, this is uncomfortable. That is what your brain perceives – the meaning of being uncomfortable. Not the temperature as such. So, what I get people to do is not to pretend that the water is not cold, it is cold. It's objectively cold. But don't attach a meaning to it. And I don't mean, try to attach a positive meaning to it, like oh, this is wonderful. It is not wonderful. Right? It's bloody cold! But what you can do is just hold the coldness, just sit with the possibility of neutrality. And we don't need meditation to do that. Lot of people do meditation. They are in that moment for half an hour in the morning, and then go screw people for

True. So interesting what you say because a lot of meditation teachers tell you that you should observe the world without judging it. And this is a really tricky exercise for your brain because it's used to saying, 'This is nice, this is good, this is bad.' We are so used to putting everything in a box, right?

the rest of the day. Right? And then they come back and re-centre

themselves. I say no, every conversation is an opportunity to practise

Absolutely.

meditation, every experience.

### Maybe we should stop our brain from judging. We could enjoy beautiful weather without labelling it, right?

That's true. But with that said, we are always judging. You can never not judge. When you sat down on your chair, you judged that it was not going to fall. Unconsciously. We are constantly judging. We can never not judge. But what we can do, is control the level and the behavioural consequence of our judgment. So, I can sit with someone with whom I may completely disagree. For instance, if I sat with Donald Trump. I can sit with him and I can have a wonderful conversation with him. Because what I want to do is understand him, but not validate him. So, I can feel the judgement, I feel like he is whatever he is, but the question is what do I do with that? So why don't we embrace the fact that we do judge because that is being honest. And then also look at the judgements that I'm making, because in that moment they tell you a lot about you. And then, what am I going to do about it? And the answer might be nothing because I might be really happy with my judgements.

### Absolutely. Is it also true that we need to engage with the world in order to see, feel and understand it?

We do. Silicon Valley keeps forgetting that. That's how your brain creates meaning, by physically interacting with stuff. And the more you interact, the more complex your environment, the more complex your brain will be.

#### The more diverse it is?

The more diverse and the more diverse your experience, the more diverse your brain will be. With that said, what the interaction does is try to find some principles that transcend that diversity. If you can find the things that link that diversity, then suddenly literally the energy required to engage in that diversity decreases. And we often forget this in business. Businesses will celebrate diversity. But what they forget is that they need to integrate across that diversity. Otherwise, you have actually created a system that requires a lot of energy to maintain. So, diversity is essential. It's the driver of evolution itself. What I mean is that diversity is essential for things to evolve. But often people forget about the integration part.

## True. But having said that, how compassionate or how emphatic can a human being be in general. For example, if I never burnt my hand on a hot surface, can I really understand what that means?

So, I think we can be empathetic if we have not yet had the experiences ourselves, that's called imagination. I can imagine how it is to be you to the extent that I understand who you are. But I have to ask you questions to understand who you are.

#### How close to reality can that imagination be?

In some sense, we can never know. And it will be never isomorphic, per se. I can't literally put myself inside you. But everything that you are doing right now is meaningless in itself. If I speak, it's literally a sound. And you are constructing the meaning and projecting it on to me. This is true even now. So, my identity to you is actually the person you see in me is actually also in you and thus merely being projected onto me. It is the same with colour. So, just as every personality is actually inside us and projected outward, every colour we see in the world is inside us and projected outward. Colour does not exist. When two people resonate, their projected meaning of another person coincides with their projected meaning of themselves. How do we learn as human beings? Through conversations and interactions. Of course, I can generalise, I fundamentally transfer the stability of generalisations from previous situations onto novel situations. But through our conversation I can start narrowing that down based on how you are interacting with me, if I'm willing to listen. Right? And sure, we have assumptions and biases about what a woman is for instance. Our past experiences will all be projected onto that woman. Listening with awareness and the desire to understand are key.

### Absolutely. Speaking of biases, unconscious biases, how can we become aware of them?

I'm a huge fan of becoming aware of stuff. But especially things you might be able to have influence over, such as your biases. Having awareness of your biases is only a first step, it's not the conclusion. But a lot of people stop there and say, 'Well that's just me, take me as I am'. We all fail from time to time, we are all unkind from time to time, purposely or not. We should all feel guilt from time to time. I'm a big believer in guilt. Because guilt invokes an emotion that tells you that maybe we did something wrong. Lots of people say, I do not want to feel guilt. But – how do you know then whether or not you have done something wrong to someone, if you are not going to let yourself feel guilt? I think we have a tendency to avoid these negative feelings because the problem is, once you have that awareness, there are only a few options: to deny it, blame it, or do something about it. So, it is much easier to just deny it or even better blame it on somebody else. Becoming aware of your biases is a start. Then the next question is, what do you do with that knowledge, which requires a desire to do something about it. I work with leaders a lot and it's about trying to get them to engage in the world by finding that desire. So, where we start is with caring.

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#### And curiosity?

For me caring comes before curiosity. So, the first step is purpose. What is it that you care about? Do you even care? Because if you don't care you are not going to ask a lot of questions. You are not going to be curious. You are not going to want to even become aware of your biases. Because why should you? Because awareness implies that you might have to change. So, the first step is to teach caring as a way to look at the world. It is not something you just inherit. I think you can also teach it.

### What would be the best thing to do to create a more diverse and inclusive workplace?

In some sense, be self-serving. Realise that you will become a more resilient, adaptable system, if you have a diverse integrated system. It's actually in your own interest to do so. But to do so, requires operating in a different way, which might reduce your sense of control and power. But at the same time, diversity is not always a good thing. I would also say that not all organisations should be diverse. That might be a crazy thing to say at any point in time. So, innovation has two sides, creativity and efficiency. When you are in an efficiency phase you might not want diversity. So, it's a cycle. It's not one or the other. For instance, you do not want to rethink your whole company weekly, but you might want to rethink a certain product on a weekly basis. If you are a restaurant with a menu, you might want to rethink that weekly, but you don't want to shift from being an Italian to a Spanish restaurant every week.

## Absolutely, but being aware that everything, even innovation, is a circular process is so different than what people have taught us for years and years.

It's actually obvious and challenging at the same time. It's obvious because that is actually how nature works, that's actually how your brain is working. It's challenging because we evolved to see things linearly. There's a beginning and an end. There is no beginning and end in nature. I see it more as a spiral than a cycle, nature is a spiral. And it's complex. A lot of my work is focused on complex system theory where you have emergence and lots of things happening at the same time. It's non-linear. But we have evolved to see things linearly, a bit more like Newtonian physics. A causes B, causes C. And that's not bad because it approximates the world. And an approximation is pretty good. The problem is our approximation can only get us so far. And now the shift to a cyclical process, which requires doing things very differently, as you say. The value of it is you will be more resilient and that's actually where success resides. If you have two systems that adapt, the one that adapts faster will outcompete the one that does not, the slower one.

#### Speaking of nature...can a human being heal herself or himself?

I have thought about this a lot and I don't have a coherent answer. I don't think that anyone can necessarily heal themselves. Why do I say that? Well, it's a larger context and I appreciate that it goes against all these ideas of self-love and all these. And I don't necessarily believe in selflove by the way. I believe in self-respect. I can't force people to respect me, I might not even deserve to be respected. I don't know. But I can behave in a way that is respectful towards myself. That will affect the way I interact with other people. In fact, evolution works from what does not work, works from failure as opposed to success. You get formed by failure, not by success. Evolution is driving us to not die. But we need to be aware that we are all fundamentally dependent on others. And we have this illusion that we are, especially in America for instance, selfmade. Nobody is self-made! Nobody is an independent woman or an independent man. We are all dependent on the nature around us at the very least. And we are all dependent on others, and Covid has made this explicit and I think this is one of the big challenges that people have faced emotionally. Their life is not their own.

#### How dependent we are and how fragile this is.

Yeah, I mean every time you get into your car you trust that the person installed the brakes correctly, that the engineers did it right, that when you are driving that people will not suddenly swerve into your lane. We put our lives in other people's hands 100 times every single day. And then we talk about whether or not we trust people. We trust people all the time, it's just that it's implicit. What would happen if we actually embraced that fact?

#### So, would that help to heal ourselves?

I think so. As Jung used to say - he lived not far from you, right - we never fix a problem. We only change our perception of it. And that is why we focus on perception. We have to change the meaning of the things because it's the meaning that we struggle with. When you think about your past, you can never change what happened. It happened. But what we can do is change the meaning of what happened. That's where we have some influence. When we change the meaning of what happened, we literally change our history. Because it's the history of our meanings that your brain is using to determine what you are going to be doing in the future. I call it changing your future past. And that is where you can get healing. For instance, people often find that when they have been abused, they find healing once their trauma becomes valuable to somebody else's trauma. You still might wish that it would not have happened in one sense, but in another, you are also grateful because it made you who you are, and it enabled you to transform the life of another.

#### Absolutely and that would be my last question. Is our future bright?

Who knows (*laughs*)! But I will say that I don't think that we are making good decisions. We often make a decision. In doing so, we create a context. And then we respond to that context. And that response is what defines whether or not it was a 'good decision'. I'm eternally hopeful. But hope is a double-edged sword, as there are awful things that were inspired by hope. Yet, it's also the source of the best things that ever happened in life.

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