TRANSCRIPT OF EPISODE #23
BRINGING ART & RESEARCH TOGETHER

NB:
Research for what?

Rom Bouveret:
Hello and welcome to *Research for What?*, the podcast that discusses scientific research, its purpose and impact. I'm your host, Rom Bouveret. Each week I will interview recognized thought leaders who share the same passion for science and research and invest energy, time, or money. We will talk about the challenges and opportunities for research. I'm also very keen to find out how experts define impact and what methods they use to measure it.

Every week I will ask the question: '*Research for what?*'

In this new episode of *Research for what?,* I'm super excited to speak with Dr Erica Tandori. Erica is an artist, researcher, and academic with a PhD from the Victorian College of Arts. I met Erica a couple of years ago when she and her colleagues at Monash University organized the first multisensory exhibition, which showed the current research in biomedicine while making it more accessible to blind and low vision audiences. For her work, Erica was a finalist in the Australian Museum and Department of Industry Innovation and Science Eureka Price for STEM Inclusion in 2019. Erica has an extensive experience in communication, in particular, communicating and understanding the needs of those with disability, ageing, and dementia. In fact, everyone in the general public. In this episode, I'm looking forward to a fantastic conversation about art and research. So, Erica, thank you very much for being here today.

Erica Tandori:
It's a pleasure. It's such a pleasure Rom and thank you. And thank you for your wonderful podcasts. I think the question of 'Why research?' is critically important to all our universities and all our researchers and scientists out there, and everyone working in the field of research to reach better understandings of the world around us and problem solving.

RB:
Great, thanks. Okay, let's start!

So, you know, when I meet, a researcher, I often ask why they got into research, but you are both, you are a researcher and an artist. How did you become both an artist and a researcher?

ET:
Oh yeah. It's a fabulous question, Rom. Thank you. So, the journey into becoming a researcher probably started many, many years ago after I was first diagnosed with impending blindness from a disease called Stargardt Disease, which is a genetic disorder. So, it causes progressive blindness, and I didn't know anything about it. It was a shock to actually learn that that was part of my genetic makeup. I had a genetic short straw, and this was it. And at the time, I was at art school, and I was told to leave art school. So I was at the Victorian College of the Arts. I'd just finished a degree in philosophy at Melbourne Uni, and I thought, okay, I'll go and formalize my art career and do a BA at the Victorian College of the Arts. But in that same, you know, early few weeks of enrolling at the Victorian College of the Arts and starting my painting studies, I was given the diagnosis and basically told to leave art school, which after a while I did after about six months, and I thought I'm I'll do a creative endeavor of some different kind that didn't require eyesight. So, I became an actor and then a singer, and stuff like that. So, I moved to Sydney and yeah, became a film

and TV actor and what not. Anyway, years passed, and I had my children and I thought, it was interesting, I thought I wanted to go back and do more art studies despite losing more and more of my vision. But I think the pivotal moment was one day I was watching Mr. Bean, Mr. Bean's *Ultimate Disaster* movie [laugh], and I watched Mr. Bean… [laugh]

RB:
You are the first one to mention Mr. Bean in, in my episodes…

ET:
[laughing] He's pivotal. He really nailed it because I'm watching this scene where he's got Whistler's mother's face and he's accidentally got ink on her face and then he gets some solvent and he starts to rub the ink off the face and goes: "Ah, that's better. I've removed the ink." And suddenly, you know, he puts the can back on the shelf and then turns around and to his horror Whistler's mother's face is bubbling up into this hideous mess. And then I thought: 'My God! That is exactly how I see people's faces, oh my God'. It's art that can actually relay the processes of macular disease so perfectly.

And it's true that to articulate the loss of vision is to use the visual language of art. And I realized something very profound. That no matter how many beautiful machines we have, no matter how much technology we have, you know, it's fantastic. Billions of dollars' worth in this, you know, medical industry to you know, look into the eye and this and that, but they don't know what it's like to look out from such a diseased eye. Only an artist with that disease can tell you, really, what it looks like. And I realized that the lived experience is so vital to our research into this field. How are we going to design software, you know, computers, products, everything that we need in our daily lives to make life better for people with low vision if we don't know what that low vision looks like for those people that have it? So, I wrote my little scenarios, my synopses and whatnot, and I approached the Department of Ophthalmology at Melbourne University in the Centre for Eye Research Australia, and I found my supervisor there. So, I had a co supervision between the Victorian College of the Arts and the Centre for Eye Research Australia.
And this was the first time that these two faculties of Melbourne University had come together. The first time. It was like the inside of the eye, which is the art world, and the outside of the eye, which is the ophthalmology department, came together to look in a holistic way at what vision loss looks like.
You know, what does blindness look like? Only an artist can tell you that. An artist with the lived experience, and **this is why art can play such a vital part in research**.

RB:
So, who were you trying to talk to at the time? Which faculty were you trying to convince or show what blindness is?

ET:
Both. Both. Because for a start with the Victorian College of the Arts, I was in doing rigorous, you know, research, which an artist actually does. So, you know, I uncovered Semir Zeki, the neurologist, you know, the famous neurologist, and, you know, he's investigated visual areas of the brain and whatnot. So, I had these two departments talking to each other, and in my PhD, I addressed both of these areas of research, you know, ophthalmology and art. And they have so many parallels. It's unbelievable. It's unbelievable the amount of parallels they have. And yet no one's really thought about that.

RB:
Well, let's talk about this because you have been an artist in residence at the Biomedicine Discovery Institute, Monash University, in Jamie Rossjohn's lab for a few years now. How did you get there and what have you learned?

ET:
Yeah. Well, I finished my PhD, graduated in December 2016. But who was going to employ a blind artist, researcher, academic? Where on earth was I going to get a job with these qualifications, with these skills? And I remember I was looking for a pair of glasses, which there was only one pair in all of Australia. And, it was actually located at the Institute for the Blind, over in Adelaide. So, I was ringing up Vision Australia and I somehow ended up talking to Vision Australia in Sydney. And the woman there said: 'Oh, are you looking for employment?' And I said: 'Well, yeah, I am'. And she said: 'Well, contact Vision Australia in Melbourne in the employment department'. So, I did that, and I spent some time there, you know, working on my CV and whatnot. And then they sent my CV over to Jamie Rossjohn. My CV landed on his desk. 'Oh my goodness. It's a blind artist with a PhD. Hmm. Well, I'm interested in actually employing people and engaging people with low vision to work in my lab. So let's give her a shot.'. So, in March of 2018, I was hired, you know, for a short employment stint to help produce the first sensory science. And I worked with the scientists to develop ways to articulate aspects of their research in a way that was accessible for people with low vision and blindness. And it was a very, very successful exhibition. We had our first Sensory Science exhibition in May of 2018 over at Monash. And then, as you know, we developed our second one with your faculty over at UNSW, and that was also incredibly successful. And since then, we've travelled over to Perth. And then after lockdown, during lockdown, we were going to go to Geneva. We'd been invited to go to Geneva, to the United Nations for a beautiful show there. But that couldn't happen. And then we had Berlin, *Breakthroughs in Science*. And I guess we've kind of virtually been going across the world. You know, I think we've been, in a way, because of lockdown, we've had to find new ways to actually exhibit science and art in a way that people with low vision, if they can't touch it, how else can they explore it? And with my colleague, Stu Favilla who's sitting here with me, we've developed ways to articulate science through sound. And this is really Stu's specialty. Protein folding, sonification of proteins. It's been fascinating and it's really augmented my tactile work. To have my tactile work spin off into areas of sound and exploring those aspects through sound in a way that we can all actually find accessible. So, Stu maybe you can probably say a bit more about how you've come across these amazing ways of expressing science.

Stuart Favilla:
Yeah, so I'm an audio designer from Swinburn University, and I've been working in the sphere of making interventions for older people with dementia. And it was in that laboratory that Erica came to work for a short period of time, I met Erica. And at some stage I got hold of her PhD. I think she had sent it to another colleague, and the colleague passed it to me because my father was a quite well-known ophthalmologist in Melbourne. He was a professor of surgery for some time at Monash as well. And he gave Erica her diagnosis. And how did I know this? Because at one stage in my career, I was working with my dad, building medical devices for him. And I was building EEG machines and we were taking kind of measurements of retina signal and optic nerve signal and stuff. And I just remember my dad, you know, he would tell his patients, straight. He wouldn't mince words. And he came across sometimes as a bit of a grumpy old, you know, curmudgeon of an eye doctor. And sure enough, there in Erica's, preface of her PhD, she talks about her diagnosis, and it was given to her in such a rude and abrupt manner. I just knew it was my dad. Immediately. So I felt like I had to contact Erica and actually apologize on behalf of my family. You know, say 'Hey, we're not all like that.'

ET:
It's ok.

SF:
By the way, you gotta forgive him because he was a good guy.'

ET:
Yes.

SF:
That he just came across grumpy. So Erica and I began to talk about multisensory things because that was following on from her PhD. And, I'd been doing some sonification things in my class and with some colleagues at Swinburn, looking at astronomy images and working out how to turn them into sound. And also, with the microbiology stuff. I mean, there's, you know, the protein library there. There are these wonderful data resources. And I just love turning data into other forms, you know, sound forms or whatever. And it's just been an interest. My background's a musician, so it was very similar to what Erica was trying to do.

ET:
Yes

RB:
Can I ask you both, why are you doing what you're doing? Why do you think it's important to make research and discoveries accessible to more people who you usually don't have access to that, to research?

ET:
Well, it's so critical. Rom, **if we didn't have barriers out in the world for people with disability, we wouldn't have disability.** If we can break down the barriers between our own selves, living with so-called disability and having immediate access to say, looking at something, hearing something, seeing something, doing something, and it's out there in such a way that there are no barriers to access, then there's no disability.

And I realized, you know, I realized there was such a lack of understanding even in the field of ophthalmology, because the scientists spent so much time looking into the eye. They didn't realize how much the person plays in living with their disease and how, you know, the accommodations that they need to make out in the world. And I, and I think it's been the same for Stu as well in the field of dementia. You know, these people with dementia are people. How do we make their lives better? How do we make all our lives better? And in the field of low vision and blindness, if we can really make life better for people with low vision and blindness, it may be one of those common denominators that makes life better for everyone. We reach a deeper understanding of life and a deeper connection.

RB:
Why is it so hard and so maybe uncommon, to connect, you know, research, art, and communication? I mean, behind all of this, is very strong communications.

ET:
We, well, Stu will, I'm sure have some really eloquent answers, but I think in the first instance, we've just forgotten. That's all. We've forgotten over the century. I think back immediately to Leonardo da Vinci because then there was no schism between science and art. How could there be? He's exploring the idea of how to make a helicopter. He's exploring perspective. Through his drawings, you see this inquiring mind. And that's why I think Semir Zeki says all artists are neuroscientists and all artists are really researchers inquiring about the nature of the world around them.

SF:

There are also other opportunities for art and opportunities for science too, in exploring different modalities of perception. We live in a visual world. Yet, ask any ophthalmologist, you know, 'where do we actually see?' and then you'll get a hot debate about whether it's somewhere in your idiomatic, central processing pathway in your brain. And there's different types of seeing as well. And we know from studying the modality of site, that it's limited. It's limited in the amount of information it can take in. But the world is so visual and so set up around these visual displays. So, Erica's art actually touches on that for me very poignantly insofar as it offers new sight in supporting it with other modalities.

So we know that sound, our ability to perceive sound is different to that division. And we have a capacity to do pattern recognition on a temporal level that's just way beyond sight. I mean, sight, the persistence of vision tells us that our frame rate, so to speak, is about 60 frames a second. Yet, we can perceive asynchronicity between two clicking sounds to microsecond range. So, there's also all this wonderful sensory substitution work that is coming out of art and science practice as well: people that are feeling sound all over their bodies through special jackets, people that are seeing images through their tongue. And this wonderful play through sensory modality just shows how a) adaptable the brain is, and b) you know, how you can always boost the saliency of some representation of data by adding another modality.

RB:
How does your research affect your artwork, and how does your artwork influence your research?

ET:
Yes, so that's, that's the notion of praxis. As an artist, you have an idea or an impulse or a will to try something, you go back and you make it again or refine it and over and over and again, you're constantly in a state of experimentation and exploration. And that's research. It's research.

SF:
I mean, it may have been hard to imagine years ago in an empirical based lab, where, you know, you have to do things a certain way and rely on assay data and double blinds, and all of these things. But science has actually moved on from that too, and it's embracing a lot more triangulation, approaches, to get at the truth that can't be told or can't be [inaudible]. And, I feel in that sense, there's some commonality there with the artist who's always struggling with something that's in front of them or unknown.

ET:
Yes.

SF:
And the process of the art making becomes one of discovery.

ET:
Yes.

SF:
So there's, you know, some commonalities there between science and art for me that both things are striving or something that's unknown.

ET:
Yeah.

RB:

Is that what helped you integrate into Jamie Rossjohn's lab?

ET:
When I came to Jamie's lab, the thing that immediately struck me was: 'Oh my God, am I in the sculpture department?'
Because when you looked at the 3D models and you looked at their investigation of molecular structure, it was sculpture. They were actually using ideas of art or approaches of art, form and function, and how they work together. You know, what does this structure mean? And so, it so lent itself to just me grabbing some clay and creating these structures that they had either done with 3D models or, that they had, you know, that they were exploring in other ways. So that's what really struck me first and foremost, about coming into a science lab. It was about shape, form...

RB:
Was it, was it easy to integrate?

ET:
It was easy to integrate. And it was a delight, and it was also a delight to see the scientists go: 'Oh my God, I'm holding a dendritic cell. I've studied this all my life, but I've never held one. I've never held one in my hands.' But now we're reaching new points where, what does it sound like? What does it sound like when these cells interact with each other? And in our imaginations, we can really envisage that. And then I come back again to Semir Zeki. And he says that understanding is seeing, when you understand something, you will see it. And to understand something, you don't need your retinas. You can use your ears or you can touch something and you will reach an understanding. And we can get to science and discoveries of science like that, and it increases our sense of understanding. So, what you said, all those modalities really come into play.

RB:
How do you feel about touching people like this, helping them understand what they've been working on for 20 years, 25 years?

ET:
Yeah. Well, that makes me cry. I mean, it's profound. It's profound. The whole process of life is profound. And I think the, the research of science is profound. You know, it's just humans wanting to know: 'What are we? And why? How did we get here? What is going on? What is the nature of this miracle of life?' And I think it extends from the molecular to the intergalactic. I mean, it's just incredible. It's incredible.

SF:
I think Erica's touched on so many things there. There's another output that Erica's been doing for the Jamie Rossjohn Lab, and that's cover images for scientific journals, which she's done for *Nature Immunology* and, other well-known top tier journals. And those images, I find, are really multi-sensory as well. They're very tactile. The way Erica will create a visual image of, say, a protein mimicry paper, comes to mind, where she made kind of a geometrical form with moths with eyes on their wings, and owls, mushed all together and surrounding them were, I think, some macrophage cells or whatever. She will know more about this image than me. But she portrayed those as kind of willow wisp grass seeds. And this is very different from the 3D print kind of concept, because as exciting as it is to 3D print, a [inaudible] image of a molecule, and we're excited about that too. We're hugely excited about those things and love them. But the scientists in a way who present to the public and hand that 3D print to someone to feel, suddenly realize that they are now an artist and that they are now having to present their work, their sculpture to the public.

And unfortunately, the plastic is kind of a cold experience. It's kind of a uniform texture and it only relays a certain amount of information. But Erica's play on that will go back right through your sensory history to objects in the real world. And she brings even to a two-dimensional graphic image, things that you can feel, taste and smell. Things that you have kind of knowledge on from your childhood touching the wings of a moth or whatever. And it's a different kind of understanding and that translates directly into her sculptural work as well. And the use of food and all these other things to make viruses and to make all these wonderful physical sculptural forms.

RB:
Your work touches so many people, scientists, artists, general public. Was that by design and are you aware of this? What do you think about this?

ET:
No, I wasn't aware. I wasn't aware of it. I think that's marvellous. It's marvellous to think of that. But it's just a desire, I think, to express what it's like to be alive with the particular condition, perhaps. Or to transcend that condition. Actually, I think, you know, it's more transcending that condition and that's why I can easily relate to Stu's work with dementia as well, because we are humans being humans. And maybe when we reach across to each other from that level, we'll hopefully touch everyone and communicate deeply with everyone.

RB:
If you had a magic wand, what would you do? What would you change?

ET:
Wow. My first thought is I would change, I would make knowledge and access to knowledge, available for every child and every person across the world. I mean, when I think about even hearing about kids in lockdown in Sydney who don't have access to an iPad or a laptop so that they can, I mean… The story I heard the other day of a poor mother with four kids who had to share one phone so that they could do their studies is appalling. And that's in Australia. Imagine the rest of the world. If Stu and I could do something that could, you know, through Jamie's wonderful support or through whatever support we could get, to be able to create books or ways of accessing knowledge to all kids, all people, of all disabilities or needs, and get that knowledge to them across the world, that would be amazing. That would be truly a magic wand. We don't need to fly to Mars. We need to help people here on Earth, you know, for a start. Mars would be great. But…

RB:
Stu, Erica, I enjoyed our conversation a lot. I think it's fascinating. I think you've got such a unique approach to both art and research. I loved learning about, you know, the connection that you made, really, that didn't exist, but that you made between the two. And I really enjoy the way you're talking to everybody, you know, without any distinction making research and art accessible to everyone, including myself. So, thank you very much for that. Thank you for your time.

ET:
Our pleasure, Rom. Thank you so much for having us.

SF:
Thank you, Rom. It's a pleasure to meet you.

RB:
Thank you everyone for listening. Find more information about this episode and about Eric Tandori, and Stu Favilla's artwork on researchforwhat.com. Before that, stay tuned to listen to *My Goodness,* a pop song created by Eric Stu to express how the gut biome works. This song is featured in the new multisensory book, also called *My Goodness.*

[*My Goodness* song playing]

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