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HOST: Before we get started today, this is your PSA that coming up on Oct. 14: The Walrus Talks at Home: is about Intelligence - specifically Minds, machines and the complexities of information. Intrigued? Register at the walrus DOT ca SLASH events for a front-row seat from the comfort of your own home.

It's hard not lose ourselves in our own thoughts, especially in an extended state of isolation with no end in sight. How many friends have you lost touch with since this all started? How are you keeping hope alive until we're be able to feel those connections again?

This is the Conversation Piece.

This is our final episode of season one and it's a message of hope – coming out of stories from people who suffered from a lack of connection much worse than the one we're dealing with.

This is CIFAR fellow and UWO professor Adrian Owen.

ADRIAN OWEN: Twenty-two years ago, I was introduced to a young school teacher from Cambridge in the UK. Her name was Kate. Now, Kate wasn't like you. And she wasn't like me, she was living in a state that used to be referred to, to always often refer to as a persistent vegetative state.

Kate was literally living on the boundary between life and death. She would open and close her eyes. She would occasionally stare blankly around the room. She would cough. She would yawn, but like all patients who were described as being in a vegetative state, Kate showed no responses to any form of external stimulation. If you asked her to squeeze your hand, nothing, you asked her to blink her eyes, nothing. And again, like all patients in this condition, it was generally assumed that Kate had no awareness that is she wasn't aware of who she was. She wasn't aware of where she was. And she certainly wasn't aware of the predicament that she was in. And my colleagues and I had an idea that we would put Kate into a brain scanner and see whether we could work out what was going on with her brain while she was in the scanner. We showed her pictures of faces, of her friends and family.

Now, this is something that nobody had ever done before that point. And to be honest, most people thought we were pretty crazy. I mean, what was the point? It was a waste of time and a waste of money. But remarkably, when Kate was exposed to these pictures of faces of people, she knew her brain activated, it lit up the board.

Was this some kind of automatic brain response, a sort of an echo from the past, or was this a sign that there was something more going on in Kate's brain than any of us knew what to be really honest?

I had absolutely no idea back then, but we did know that we discovered something that was potentially very important over the next few years. Uh, I saw many patients who are like Kate and we put them into brain scanners and we saw all sorts of responses, responses to pictures, responses, to words, sentences, even complete stories, but still didn't know what these brain signs meant. What did it mean when somebody's brain responded to a familiar stimulus that we



presented to them again? Was there more going on in the brains of these patients than any of us had up until that point realized?

It was in 2006 that we really had a major breakthrough. I realized that if we were going to truly understand what was going on for these patients, we would have to get one of them to communicate with us and not to communicate with speech or, or movements because of course, none of these patients could do that.

But the question was, could we get a patient to communicate using just their brain? Now, Jillian was a patient who I saw in 2006, who had been involved in a complex road traffic accident. And when she came to our attention, she'd been in a vegetative state for some months. We put Jillian into the scanner and we said, "If you understand what we're saying to you now, could you imagine that you're waving your arms around as if you were playing a game of tennis?" And remarkably, when we asked Julian to do this, an area of her brain known as the premotor cortex is right up here on top of your brain - it sprung to life. And that's the brain that we know is involved in imagining complex movements as if you were imagining playing a game of tennis.

And when we asked Julian to stop thinking about this activity in this area of the brain disappeared, and we repeated this many times, she was able to produce these pieces.

Not physical responses - just responses with her brain. Whenever we asked her to do it, Julian was conscious. Julian was in there, she was aware. She just hadn't been able to move a single muscle in her body to indicate this to anybody around her.

Now in 2010, I moved my root search team from the university of Cambridge to a Western university in London, Ontario. And within a month of arriving in Canada, I was introduced to another patient called Scott. Now like Jillian, Scott had been involved in a complicated road accident. But unlike Julian, he'd been in a vegetative state for 12 years at the point that we met him. And very quickly, I was able to tell Scott's family and his doctors that he wasn't in a vegetative state at all. He was actually aware. And this is because when we asked him to imagine doing something in the scanner, imagine playing a game of tennis, his brain would activate him much the same way that we had seen previously, but we wanted to push it further than that.

We wanted to open a channel of communication so that some of these patients could actually communicate with us. And Scott showed us how to do that. Over a series of many scans over many months, we taught Scott to communicate - to answer yes and no questions. He would typically imagine he was playing a game of tennis. If he wanted to answer yes to a question or imagine a different scenario, such as moving from room to room in his house. If he wanted to, for example, say no, I'll say no to a question. And in this way, we were able to find out many things about Scott, about the situation he was in, about how he felt about that, about some of the memories that he had and some of his needs and desires, including whether he was in any pain now over the last 20 years or so, since we, since we did that original scan, we've learned many, many things about this population of patients in different centers around the world.

Now use these techniques to identify patients who are in this condition and even to communicate with them. And it turns out that about one in five or 20% of patients who appear to be completely vegetative, completely non-responsive, are in fact aware. And in many cases for decades have been lying - silently listening to every conversation going on around them.



And you might be wondering what happened to Kate, that school teacher in Cambridge, who started this cascade of events led me to be here today. Well, again, remarkably, after, some months, some months after we scanned her, Kate began to recover and she talked very publicly about the many struggles she had coming back from that boundary between life and death.

She described how she tried to kill herself by holding her breath. She had no other way of doing it. She's also talked about the, the tremendous stress, the terror, actually, she says of being aware in the presence of other people who had no idea that you are there at all.

But for me, the most important thing that Kate has taught me over the last 20 years or so, is that she says the day that we scanned her is the day that she became a person again,

It's the day when people stop treating her like an object and started to treat her like a human being. And that's why we do what we do. And this all began for me anyway, about almost 30 years ago now, as a journey to try and unravel the mysteries of the brain, but it's turned into something much more interesting and much more personal as we try and pull these people back from the void. To try and give them a voice and reconnect them with the people that they love and that the people who, who love them and ultimately bring them back and give them a place where they belong back in the land of the living. Thanks very much.

HOST: Adrian Owen is a CIFAR Fellow at the University of Western Ontario, and he spoke at The Walrus Talks Boundaries in 2019. If you enjoyed this podcast, consider donating to The Walrus. We are a registered charity that relies on our community of donors and sponsors to produce compelling journalism, events and podcasts. Learn more about how your support can make an impact at thewalrus.ca/donate.

Next week, we are wrapping up season one of The Conversation Piece. We'll be taking a break for a few weeks, but then we'll be back with season two with more of your favourite speakers from the past who were a part of The Walrus Talks.

In the meantime, we'd love to get your feedback on season one of the podcast. Please email us at web@thewalrus.ca.