

# VTE

## *A question of choice.*

BY S. R. ALGERNON

“Understand about the rats and the electrodes,” said the man sitting opposite me in the restaurant, across town from the conference venue, “but what do you mean by VTE?”

He said he was a reporter. Maybe he had a blog. Either way, he was paying for lunch.

“Vicarious trial and error,” I said. I moved plates and wine glasses out of the way and took the plastic rat prop out of my complimentary tote bag. The rat had a silver peg sticking out of its head, an off-the-shelf wireless neural link.

The man glanced apprehensively at the wine glass at the edge of the table and turned his eyes back to me.

“It’s all about choices,” I said. I put the rat at one end of the table and my coffee cup at the other, then turned the wine list edgewise between them, as if it were a wall.

“Suppose this rat has a choice: it can go to the right or to the left. One path earns it a reward, but which is right? Sometimes, a rat will look from left to right several times before committing to one or the other.”

“So it can try both paths out in its own mind?” said the reporter.

I nodded.

“We’ve known that for 80 years. We’ve known for even longer that a photon can behave as if it had taken both paths at once and interfered with itself. So, why not combine these insights? Why not send the rat down both paths at once?”

“I see,” said the reporter, with a smile that was either ingratiating or condescending. “A rat is not a photon.”

“No,” I said. “Neither is Schrödinger’s cat. However, suppose that if the rat receives the reward, a change is made to some qubit in a quantum computer. If the rat’s path is unobserved, like Schrödinger’s cat, it takes both paths. The rat both receives and does not receive the reward.”

I place the rat by the coffee cup to punctuate my explanation.

“Now suppose that this particle controls an electrode that stimulates the rat’s hippocampus in a way that triggers learning. The signal reaching its brain emerges from the superposition of the rats that took both

paths. We have found that our rats who take the wrong path learn something about the right path, even though they never found the reward at the end. The rats that found the reward learnt that the other path was empty.”



“You can do this? You have an algorithm? The implications for stock traders, for generals, for world governments would be ... considerable. After your talk tomorrow, there is no going back. This calls for celebration.” He raised his glass. “A toast to your discovery?”

My head pounded. I said nothing. I reached for the wine glass, but my hand shook. I knocked the glass off the table and it shattered a few inches from my shoes.

“That was,” said the reporter, “from the chef’s personal stock. No matter. I will request another glass.”

“I have to go to the washroom,” I said. “Please, if you’ll excuse me.”

I raced to the sink and splashed my face with cold water. I ran my fingers through now sweaty hair. My fingers brushed against the silver cylinder at the base of my own skull.

It has to be just nerves, I told myself. The thoughts of where this technology could go have got the better of me. No. It wasn’t the conversation. I had been jittery almost as soon as I sat down. I checked the quantum linkage to my

hippocampus. The implant was telling me something, but what?

I remembered a story once of a Swiss doctor who had pricked the finger of an amnesiac to test her memory. Later, although she had no memory of the doctor, she refused to shake his hand. I dried my face, combed my hair and returned to the table.

A new glass of wine waited for me, and the reporter’s smile seemed a little too wide.

“I’m afraid I can’t stay,” I said.

“Just one drink?” he said, desperation rising behind his eyes.

“Sorry,” I said, without taking my seat. “I’m not feeling well.”

“A pity,” he said. His eyes dimmed briefly, but his smile did not fade. “We’ll reschedule.” He reached into the backpack by his seat, “but please take this with you. I picked it up at the airport, and I don’t have room for it in my luggage. Share it with your co-workers.”

I took the bottle and left. I sprinted around the corner and caught a passing bus. Only then did my unease subside.

I called Luisa, a grad student who was third author on our presentation. She was almost always in the lab writing software upgrades for the neural–quantum interface.

“How did it go with the reporter?” she asked.

“Not so well. Hey, does Carla at the hospital still owe you a favour? Good. I’ve got a bottle of ... brandy here. I’d like to have it tested for toxins. And back up our data off-site. I think someone would rather our paper didn’t get out.”

“Why? What happened?”

“Nothing happened. It’s just a hunch. A possibility.”

Maybe it is just nerves. Maybe the time I spent in the lab has made me paranoid. But maybe there’s a universe out there where I took the glass of wine he offered. There’s an image I can’t quite get out of my head, of me gasping for air on the floor of a cafe while the man who called himself a reporter shoulders his backpack, slips through the doors and vanishes into the crowd. ■

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