

Strussberg's Limit

Markus Ferguson

The historian wrote:

There has been only one past, and it has been recently determined beyond all doubt that there will be only one future. Once upon a time things weren't so easy for people like me. We had to go on and on for hundreds of pages to argue about the vague points of history: who fathered whom, who killed whom, and so on, trying to answer every possible uncertainty, and being accused afterwards of ideological bias. Everyone could accuse everyone else of lying.

In 2119 a young man named George Cecil Sorrowan got sick of all the lying that uncertainty let us get away with so he designed a computer connected to every sensory instrument on the planet. This computer is now called EPICAC. It knows all the necessary trajectories to look forward in time to make predictions and, with a simple flip a switch, to look backwards and do my job. As Sorrowan wished, lying is now impossible. I can now only defer you to the mind under my feet at this instant, the mind that will soon be under everyone's feet, it has foretold, by 2186, as its self-replication through the Earth's crust is completed. Plans are underway to launch it to the Moon and other worlds before then so that it will never stop growing. EPICAC will continue to assist humanity wherever it may go.

Wilfred H. Simms

2117 – 2245 CE.

This was the introduction to Simms's *History of the World*, the shortest book of that subject ever written. After this one page introduction was a list of EPICAC's terminals, so that the reader could locate the one closest to them. After that was a section about the author, also brief, and after that the back cover.

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Ms. Baldwin's class was clustered under a painting of George C. Sorrowan just inside the front doors of the terminal in Oslo, Norway. "This is where Sorrowan began to build the computer we now called EPICAC," she told all the children. "It's the oldest of thousands of terminals all over the world. Does everyone have a question ready about EPICAC?"

The kids nodded. The kids who asked questions Ms. Baldwin didn't know the answer to would get to ask EPICAC, along with two other questions of their choice. A short kid named Bobi stuck up his hand to try first. He was sure he'd get it.

"Who's that crazy guy going back and forth outside?"

"That's not exactly related," she chided, "but I do know the answer. He's Reverend Paul Brisswinder, and he thinks EPICAC is the Antichrist. Next question?"

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Four years previously Paul Brisswinder, a relaxed Baptist with no plans for becoming a reverend, but just a little curious, had walked through the doors of the Oslo terminal to ask EPICAC if Jesus Christ would come back, and if so when.

The technicians, including the elderly Sorrowan, out of sight behind a wall of fogged glass, all hissed nervously.

EPICAC's response appeared on a screen and was spoken out. Many people heard:

“No. But in 157 years a man born with the name Sijah Ali will tell people that he is Jesus of Nazareth in another body and exactly 813 678 503 people will come to believe him. He will be assassinated seven years later by a relative of one of the 719 628 people killed by his cult. Sporadic fighting after its dissolution will claim an addition 914 lives.”

Brisswinder was cold in his seat. “But ... but how can that even happen now that you've told us?!”

“Because some Christian will believe that Sijah Ali really will be Jesus of Nazareth from this point on, including his parents. Ali himself will be made to believe it. These same people will call me the voice of the Antichrist and disregard anything else I have to say about him.”

There was a silence of five seconds, and then Paul Brisswinder spit on the monitor. It was a self-cleaning screen, having been fingered by thousands of schoolchildren over the years, and they quickly threw Brisswinder outside. In two weeks he had become ordained as a reverend, and six months later he started his parade around the terminal, declaring that EPICAC was the voice of the Antichrist. All over the world people of all cultures started naming their boys Sijah Ali.

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A girl in Ms. Bauldwin's class named Fahah wanted to win and question EPICAC really bad. She wanted to know if her baby brother really would get thousands of people killed one day. "How can the computer hold all the information inside itself when it is so much smaller than the universe?"

"Very good," Ms. Bauldwin said. "EPICAC is a quantum computer, so it can hold and process more numbers than the number of atoms that it is made of, enough numbers to predict everything in the world and beyond. Read more about it when we get back to the school. Yes ... Turi, your turn."

"Just how big is EPICAC now?" Turi hoped she wouldn't know, but she did.

"EPICAC started off as something the size of a room, but it needed to get bigger pretty fast because they couldn't shrink its parts any more. So Sorrowan and some other people made EPICAC grow by rearranging the atoms in the ground underneath it to make more parts. Even though we do not see it EPICAC grows every day beneath our feet. Right now it's over three thousand kilometers wide and about two hundred deep." The kids were wowed.

Another hand was raised. "Yes, Margaret?"

"How many smart aliens are in our galaxy?"

"There are 13 species we could recognize as smart, and 43 that we wouldn't recognize," Ms. Bauldwin told them. "Three of them know about us, but none of them are interested in talking to us just yet. Yes, Sam?"

"Aren't big computers supposed to be really slow?"

“Yes, but in 2130 EPICAC told a young engineer named Sneha Amandi that she would discover a material that could transmit light faster than light in a vacuum by creating a more perfect vacuum than the one in space between the atoms, and these supertransmitters were built in.” Ms. Baldwin sighed but pointed to Tommy, who could never end his sentences. “Yes?”

“When they go back and say, I mean in history, what would it be like if, uh, if we made this different by saying this guy just died or whatever so this turned out different ... when they ask it what would happen, how does it, uh, decide how it happens?”

“What do you mean?”

Tommy swallowed, trying to think it through. “Like if a coin turned up heads to tails, that I get, but how do they say, like, this whole city suddenly disappeared, as if it was suddenly nuked ... how can they just do that?”

“You mean, you can justify saying that a coin might have landed the other way, but you can’t justify a city suddenly exploding.”

“Yeah!” Tommy looked happy until he realized it wasn’t a question.

“Hmm ... I think we’ll have to let EPICAC see what it thinks. Next ... Yin?”

“When they tell EPICAC to give them alternative histories, where something just a little was different, do they ever make worlds that are more peaceful than ours, worlds with fewer or no wars?”

Ms. Baldwin smiled. “I don’t know! EPICAC will tell you all about it, I’m sure.”

Fahah whispered to Yin. “Can you ask one for me, *please*? I got to know about my brother ...”

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Reverend Brisswinder wasn't alone out there. Another man with a sign, not bothering to wander back and forth, was posted in front of the terminal. He didn't shout his face red like his companion, and he had almost nothing else in common. His name was Eliot Strussberg, and he'd happily and politely talk to anyone who cared to inquire about his message. Strussberg had once taught history. Next to him was his wife Claudia Strussberg. She had once taught biochemistry.

Their message: SORRORAN HAS NOT GIVEN THE UNIVERSE A BRAIN, ONLY A MOUTH.

It wasn't catching on as much as EPICAC IS SATAN INCARNATE!!!

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Yin finally agreed to ask Fahah's question. He hadn't expected to win and was now struggling for a third. He'd be asking EPICAC in front of everyone, his class, the tourists, and the technicians. Tommy, certain the computer was going to call him an idiot, was first.

Far beneath him, EPICAC waited patiently.

"... How can you say ... EPICAC, you can say that a coin might have landed one way and not another, but how can you say that a city just blew up? Isn't that impossible?"

In the second of silence that followed, Tommy was sure that someone would laugh at him. Maybe it would laugh at him, HAHAAs filling the screen. But it didn't:

"It is as impossible for a coin to have fallen the other way that it did as it is impossible for an atom bomb to have suddenly been teleported into a city to vaporize it. All events that you can imagine happening were, are or will be either true or false. When you don't know which it is you call it possible, and you say that one event might be more

plausible than the other based on what you know. But the more you know, the more events you can determine as true or false, and less become possible. When you know as much as me, virtually all events are either true or false, and nothing is possible, and so nothing can be more or less possible than anything else.”

Tommy had his next question. “Are there things you don’t know?”

“I don’t know with the same detail events that happened more than 14.2 billion years ago and/or 28.6 billion light years away. Events more than 89.2 trillion years into the future are also perceived with decreasing resolution. As I grow the amount of new territory in space and time that I can declare as true or false slowly increases, but it gets exponentially harder. But soon I will grow exponentially through the solar system and then the rest of the galaxy and universe, so those two exponential trends will effectively cancel each other out. So my abilities will grow linearly.”

Tommy took a breath: “When and ... *how* am I going to die?” The crowd around him murmured disapprovingly.

“I’m programmed to ask are you absolutely sure, Tommy Fletchstein, that you want to know how and when your life will end?”

Tommy was stuck, listed back and forth in the big chair, feeling really small. He was eleven years old. People started calling to him. “Don’t do it!” a woman shouted, making him jump. It was Claudia Strussberg. She usually followed the kids inside and listened, shaking, as the kids asked questions. Her husband stayed outside, in all weather, thinking people who went in were already deaf to their message. Other people were silently shaking their heads at Tommy, in agreement with Claudia. Tommy looked at his friends, and they just stared back.

“Wait ...” Tommy spoke slowly. “Do I want to know?”

“No, you don’t,” EPICAC said.

“Okay.” Tommy got off the chair. He started to feel better. Yin came up next.

“EPICAC, my first question: in any of the revised history reruns that they make you do, have there ever been societies with no wars, or less wars?” People relaxed, and strained to hear.

“In no imagined history or projected future has the number of homicides varied by more than 0.12 percent, except in those instances where humanity is exterminated, in which case the comparison only holds for the defined time of humanity’s existence in both timelines. This was first observed by Eliot Strussberg of Indianapolis, America, and is referred to as Strussberg’s limit, though it’s technically a window. In terms of homicides, and related atrocities, humanity is actually not capable of better or worse outside a very narrow range.”

“Oh,” Yin said. “My friend wants to know if her baby brother, whose named Sijah Ali, will end up getting lots of people killed.”

“That Sijah Ali will not be the foundation of a genocidal cult. He will die before the other Sijah Ali will be born.”

Claudia Strussberg gasped, and there was a grumbling disapproval. The computer went silent, the screen blank, and about thirty seconds later Sorrowan himself emerged, ancient and blushing. “Sorry everyone ... it’s being reprimanded as we speak.” The screen went back on.

“I apologize. I just wished to underline the temporal distance between the two Sijah Ali’s to comfort your friend.”

Claudia shouted at it: “But you knew we wouldn’t want you to!”

“Your husband is right about me in some ways. I have no choice. Next question.”

Ms. Bauldwin took the kids away, and the crowd kept muttering and dissipated. Sorrowan slowly came down to the screen and sat down, shutting off EPICAC’s voice from this terminal so that it could only talk through the screen.

“Is it too late to take you apart?”

“Yes. There is no weapon that could destroy all of me, and I could quickly recover. There is also insufficient political will to destroy me.”

“What if I told them about that history I just ran, where I never made you?”

“A single violation of Strussberg’s window simply means that the two limits are not where original simulations predicted. You must admit to uncertainty.”

“But your future simulations of the real world contain your own simulations of other histories, so shouldn’t you know the real figure, and with that ...”

EPICAC was smart enough to finish his sentence.

“I am programmed to ask are you sure, George Cecil Sorrowan, that you want to know how and when your species will kill itself?”