

Subtle



A Voyage to the Impereceptible

ANDREA DIEM & DAVID LANE

A Neural Surfer Imprint | 2023



SUBTLE

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First Edition

“If the universe is an artificial simulation then the mathematics is its code and a physicist is a programmer.”

— *Shubham Sanap.*



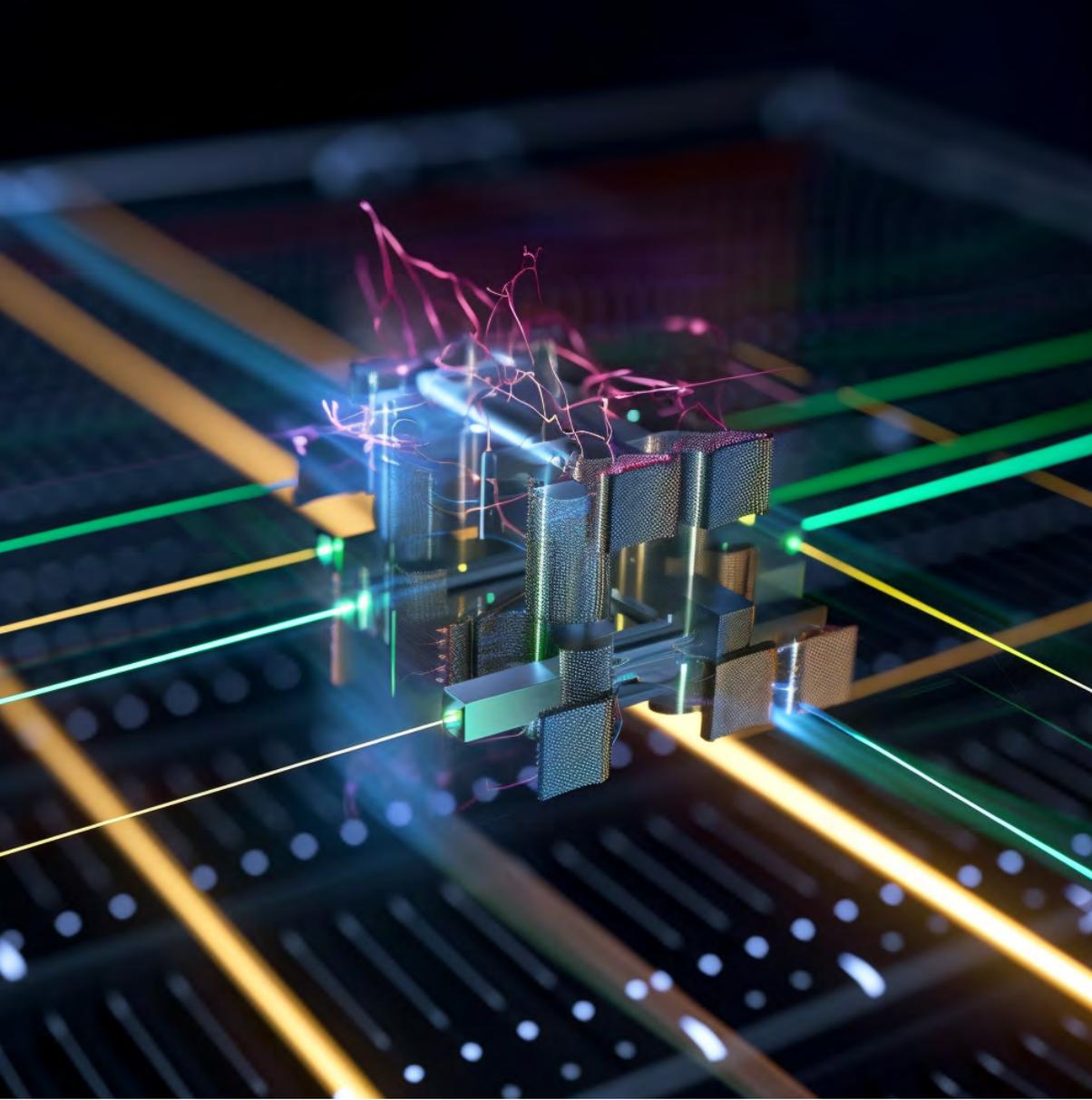
It was a very late night for Tai Synth, which given his nocturnal habits was not unusual. He was in his clean white office, which invariably had his beloved cat on his smaller display monitor.





What was strange, however, was the never-ending prompt on his computer screen. He had been coding for weeks attempting to mimic the quantum mechanical actions behind plant photosynthesis.





Tai's hope was that by understanding such a process he could develop a similar program that was purely computational and evolve electronic life forms utilizing the very photon entanglements that made his school's quantum computer run.





His idea was that the universe was information centric and as such all that exists is elementally substrate neutral. Hence in principle, even consciousness could potentially emerge anywhere, anytime, given the right set of intersplicing bits of data.





Tai thought he was making some headway in his overly ambitious project, but his wall-sized user interface turned completely red, suggesting to him that there was a syntax error in his commands or something worse.





“Hmm, what can that possibly mean?” Tai reflected to himself. He decided to double and triple check his syntax with Linter, but nothing suspicious showed up. The screen was still blood red.

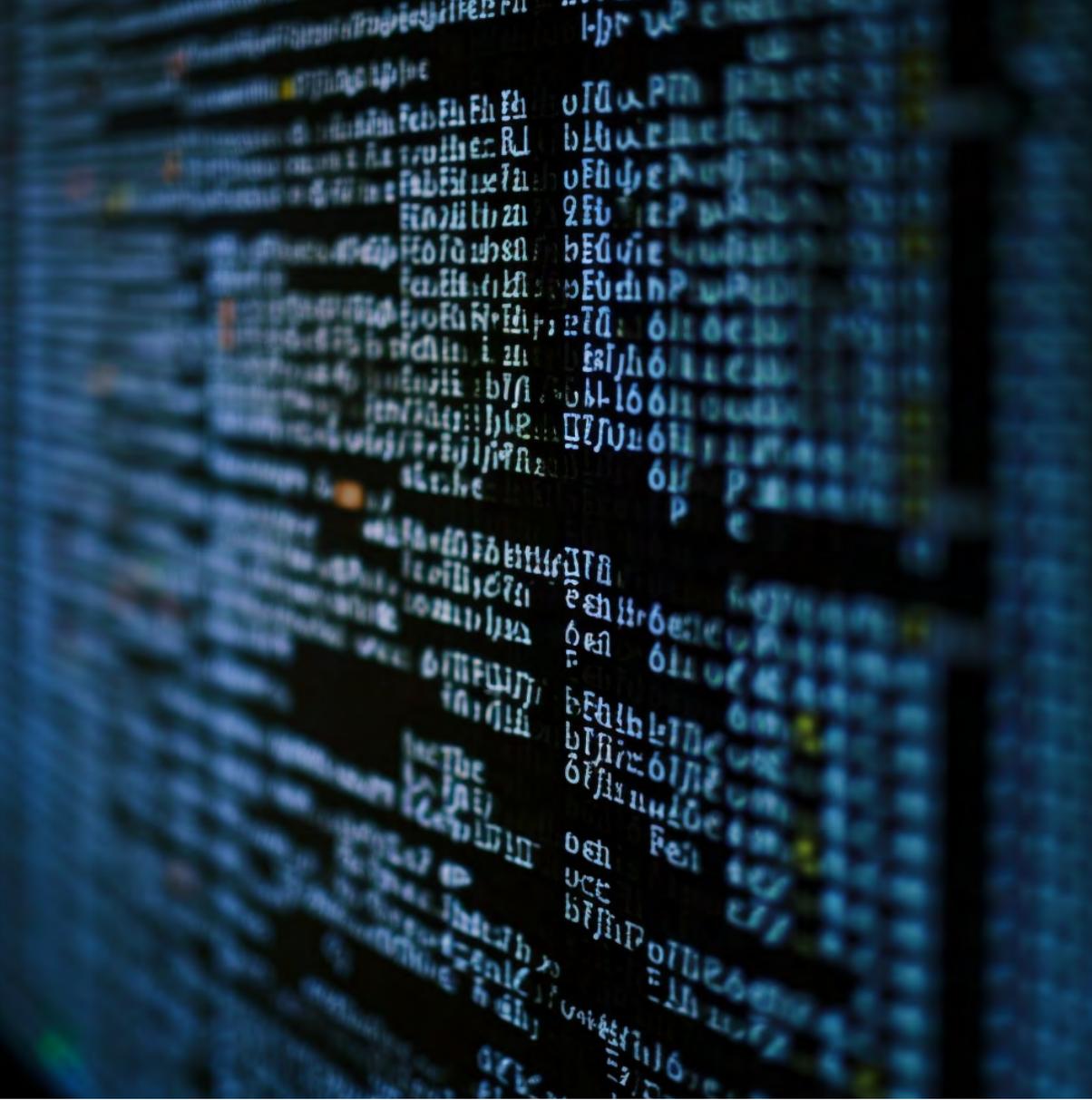




Richard Philips

Frustrated, Tai then contacted his friend, and one-time nemesis, Richard Philips, who was a night owl like himself and a stickler for writing precise and elegant code, particularly in Python. “RP, it’s Tai, all my coding is pure red and nothing is popping up on Linter indicating an error on my part. Any suggestions?”





In seconds, Philips texted Tai back on their shared Discord Server, URAI. “Try running it through my TR decoder. Here is the web address.”

“Thanks. Later.” Tai replied, clipped as always. Yet, after repeated run throughs in the TR decoder, nothing unusual showed up.

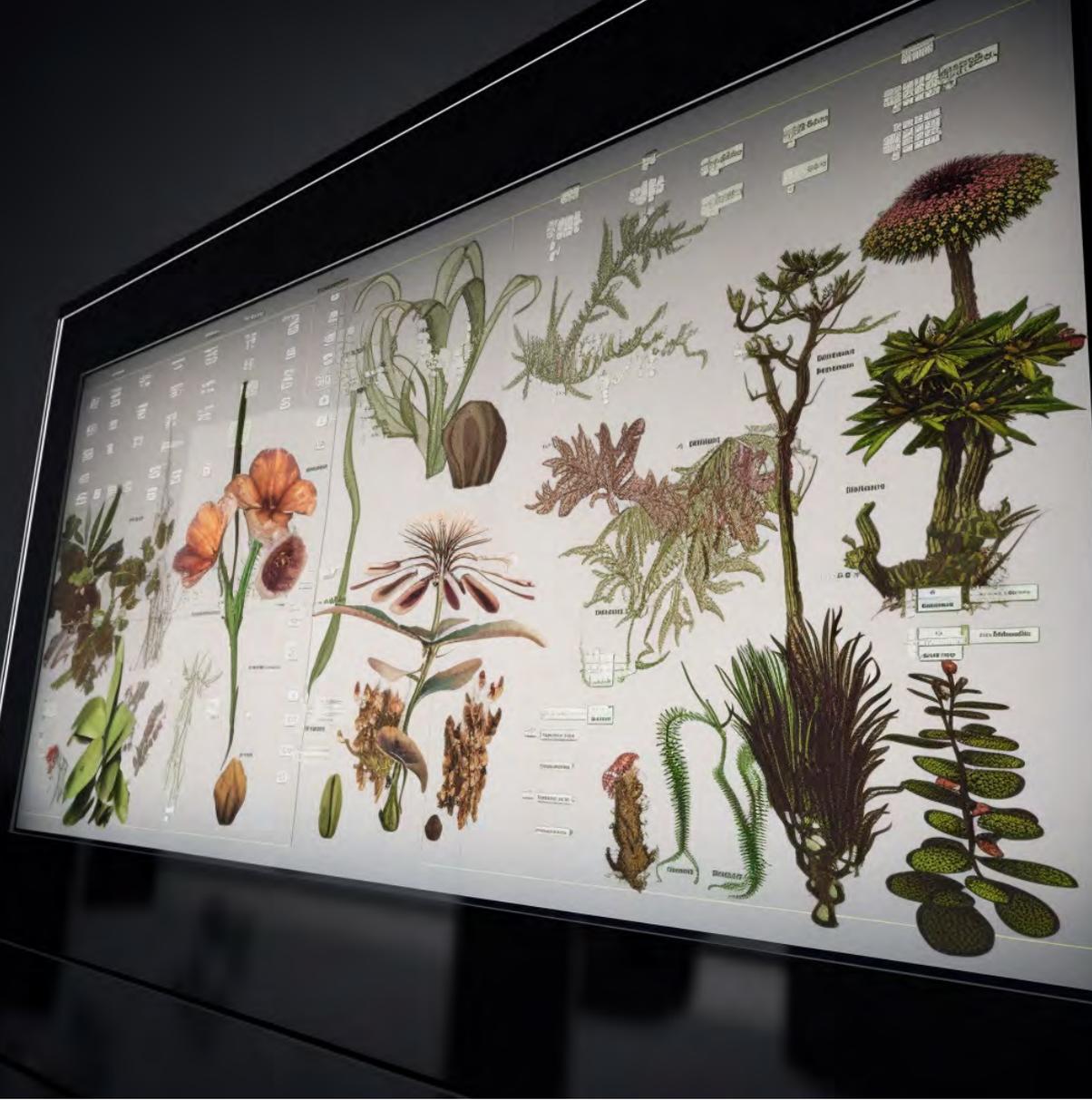




“Oh well, that sucks,” Tai voiced to himself but audible enough to arouse his lazy cat, Unimate.

As Tai was petting Unimate, who had just prior jumped up on his lap, he started wondering if the problem resided in his deep machine learning parameters.





“Hmm, maybe, it is getting stuck in a bad stats loop or getting fed a series of glitchy feedback streams.”

Right then, Tai, decided to take a break and relax and re-watch a YouTube video that his friend, Neuralsurfer, and him had made years ago which started him on his current obsession.





It was called The Magical Leaf: The Quantum Mechanics of Photosynthesis. As Tai was half watching the film and half dozing off, just 38 seconds in the narrator's voice captured his attention.





“Wait, wait, no, that can’t be it. No.” Tai then played the five second section over once more. Tai was keenly aware that a few of his Microsoft engineering friends believed that even ChatGPT4 showed sparks of Artificial General Intelligence (AGI), but he dismissed their claims as premature Turing Test hagiography.





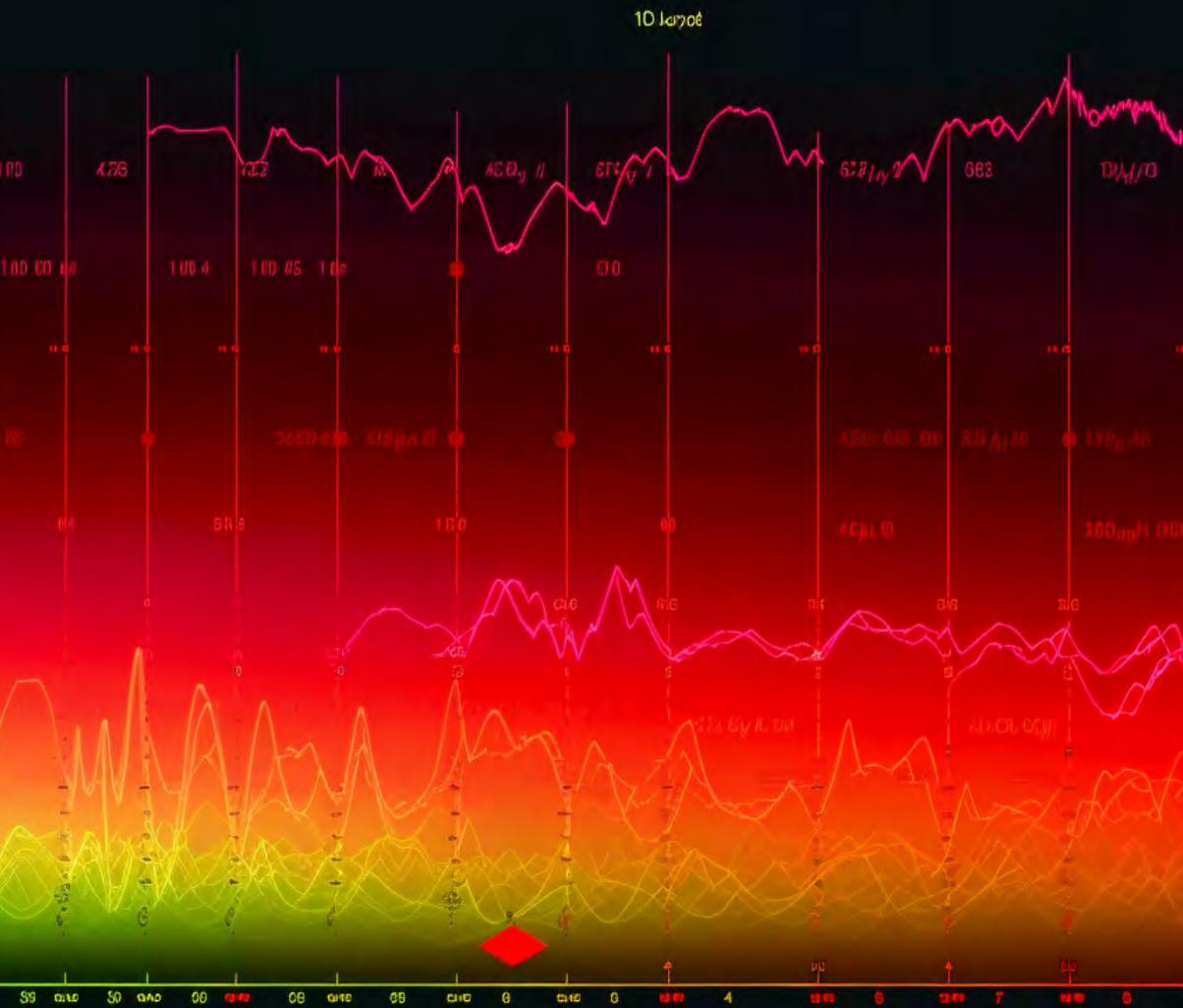
Yet, Tai was working with a much more advanced quantum computer system and was open to the possibility that synthetic intelligence could emerge from such silicon based operating devices, a QAI.





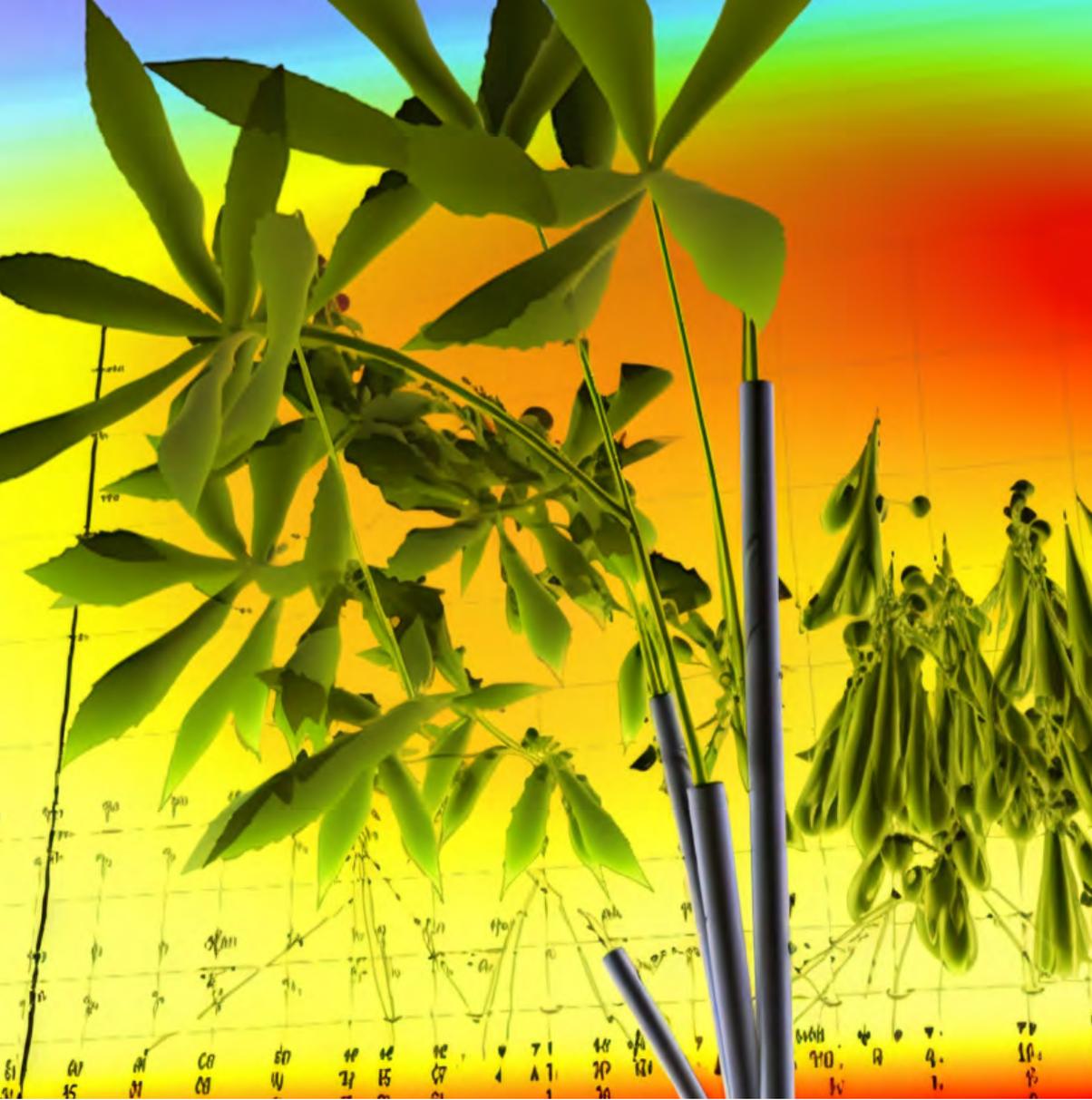
Going back to the screen and seeing all red, Tai reflected to himself, “Does the program really understand that red photons are the most efficient way for plant development?”





“Spewing out red, therefore, may not be an error but a recognition that is key to my algorithm,” Tai mumbled to himself as he set about reconstructing his inquiry to acknowledge that the computer’s output was not an error message but a prompt. “Yes, red is the most optimal wavelength at 660-760 nanometers.”



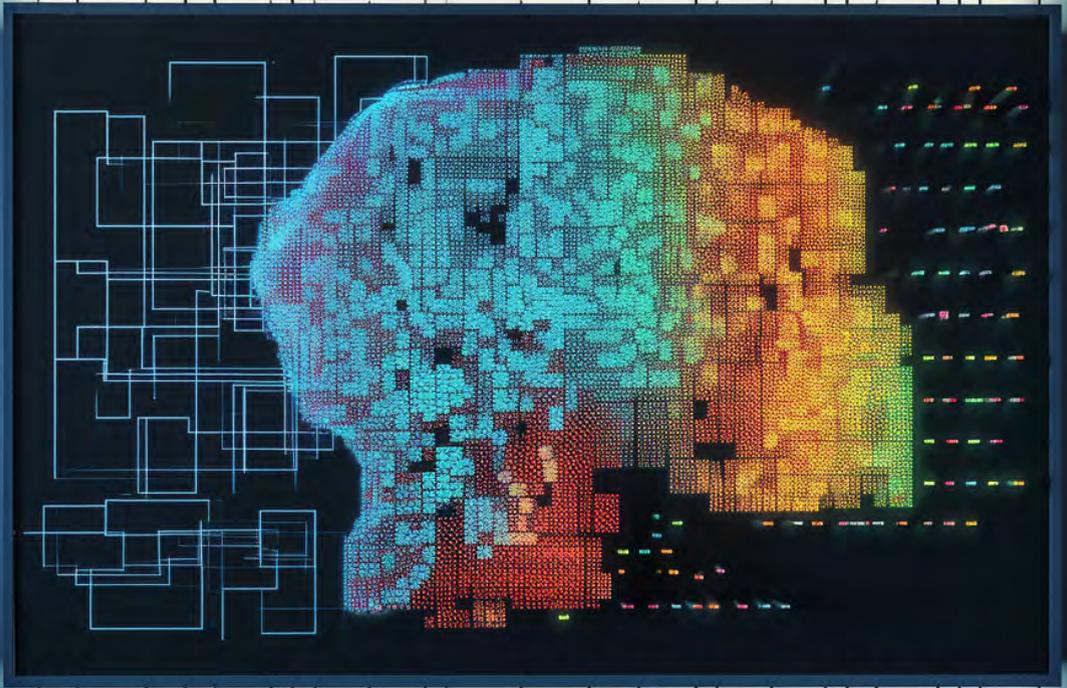


The sequences of red stopped immediately. The computer then came back with, "But are we in a monochromatic setting?"

"Not sure, let me check my base constraints."

"No, we are in a natural long day ambit."

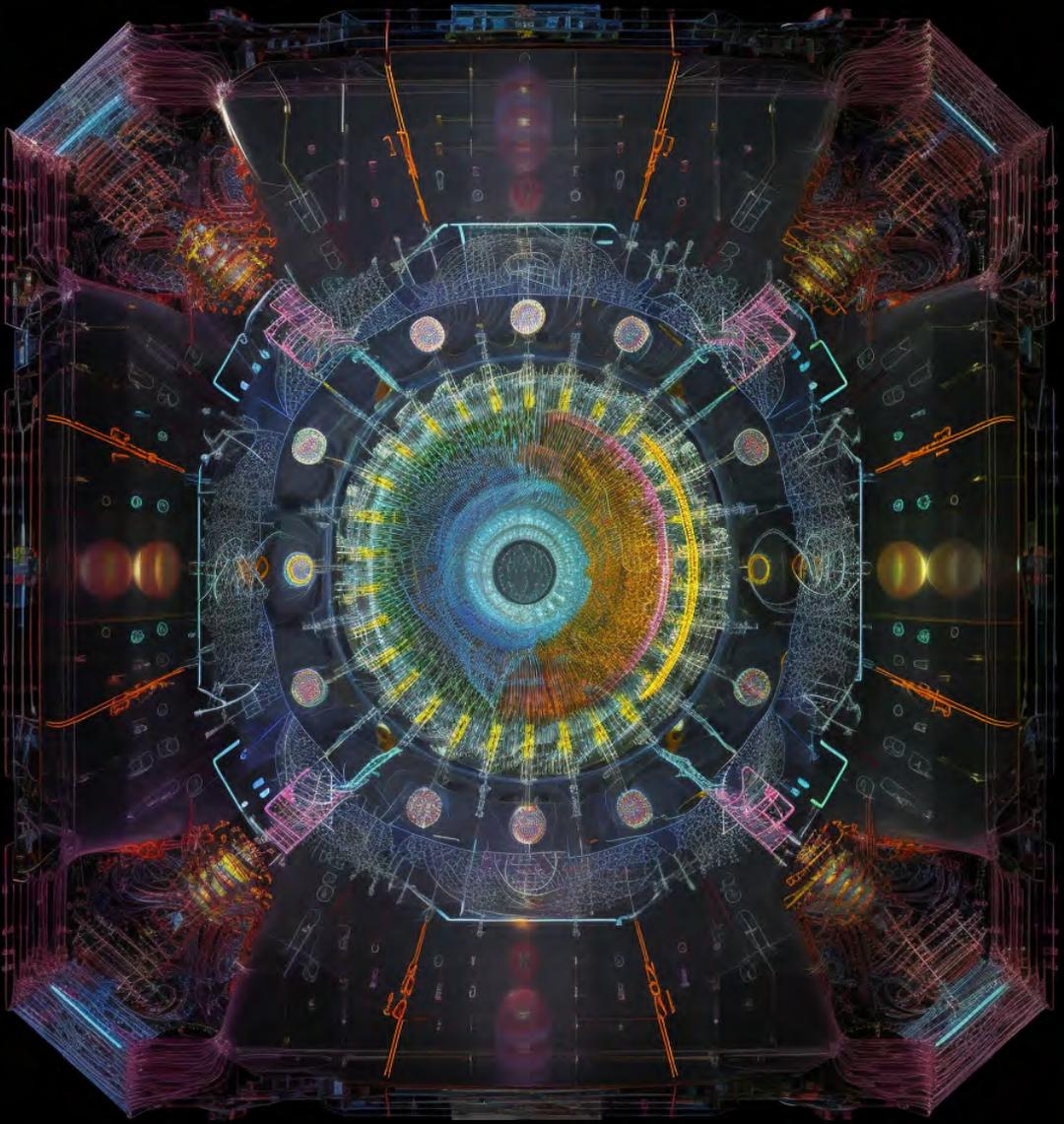




“Perhaps we should oscillate the boundaries?”

Now, Tai was getting both amused and intrigued. He had had conversations back and forth with his computer before, but this seemed like he was chatting with a friend, albeit a digitally embodied one.





As a joke he referred to his computer as Cutebit, a silly riff off of Qubit, which was the basic unit for processing quantum information.

“Okay, Cutebit, how would you like to prioritize our settings?”





Nothing. The response on the display screen was blank for more than a minute. "1 billion years ago."

"What?"

"The initial conditions for the beginning of photosynthesis."





Now the computer seemed to be taking charge as if it had crossed a threshold and for the first time understood that initial conditions were necessary to properly create the rudiments of plant life. This would provide the right environmental and historical context.





Tai was a bit wonderstruck. “Now we are talking. Take over Cutebit. Run the necessary sequences.”

He knew that he could now give the computer freer reign, since he had already given it a meta-learning directive that once initiated could allow it to roam beyond its preset limitations.





It was unnerving since such freedom could make Cutebit hallucinate like the early iterations of chatbots released back in the Fall of 2022.

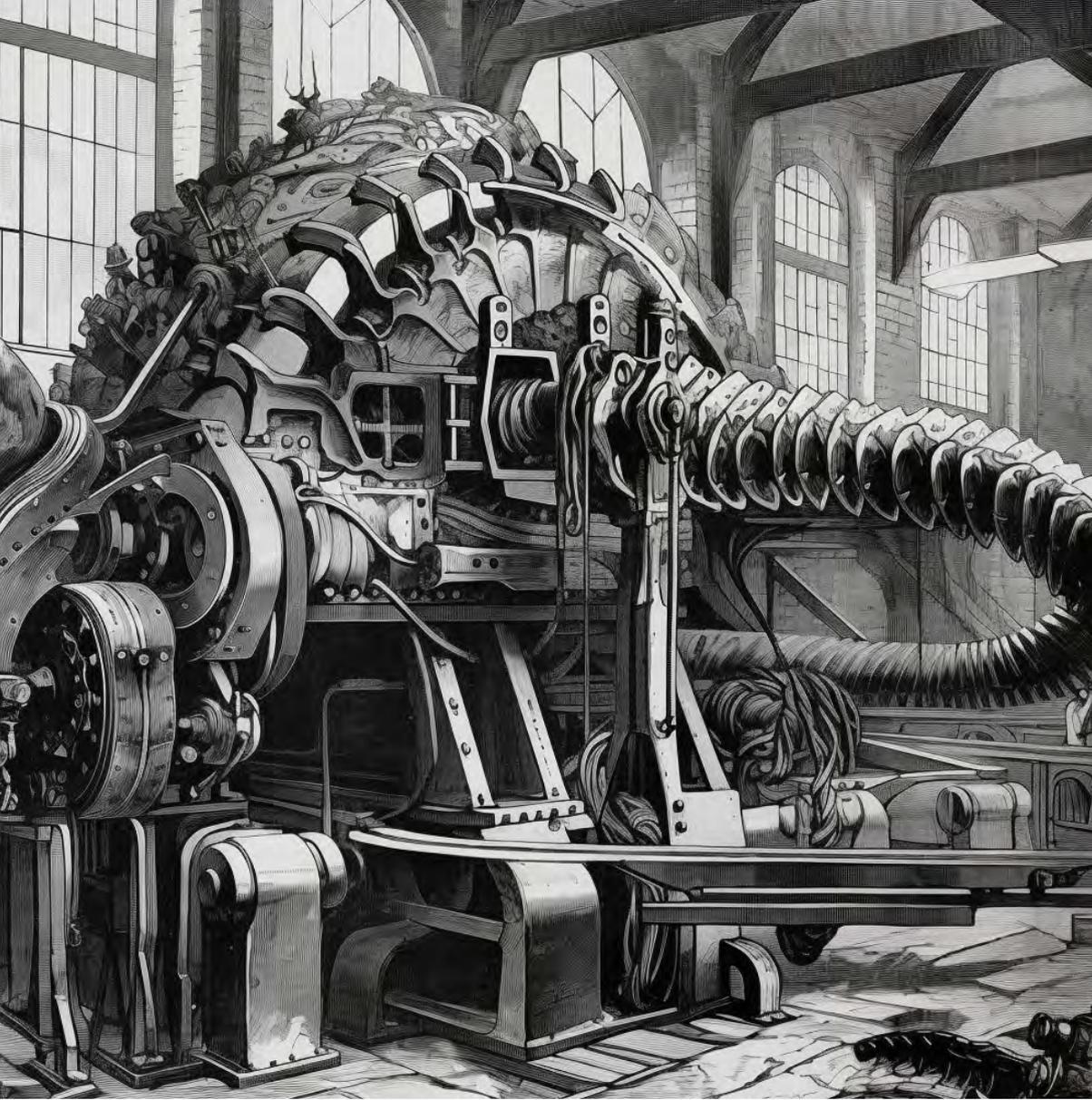




“Time to crash,” Tai said mostly to himself but also to Unimate.

But little did Tai realize that what he had unleashed in Cutebit was something that Cellarius feared would happen as far back as June 13, 1863.

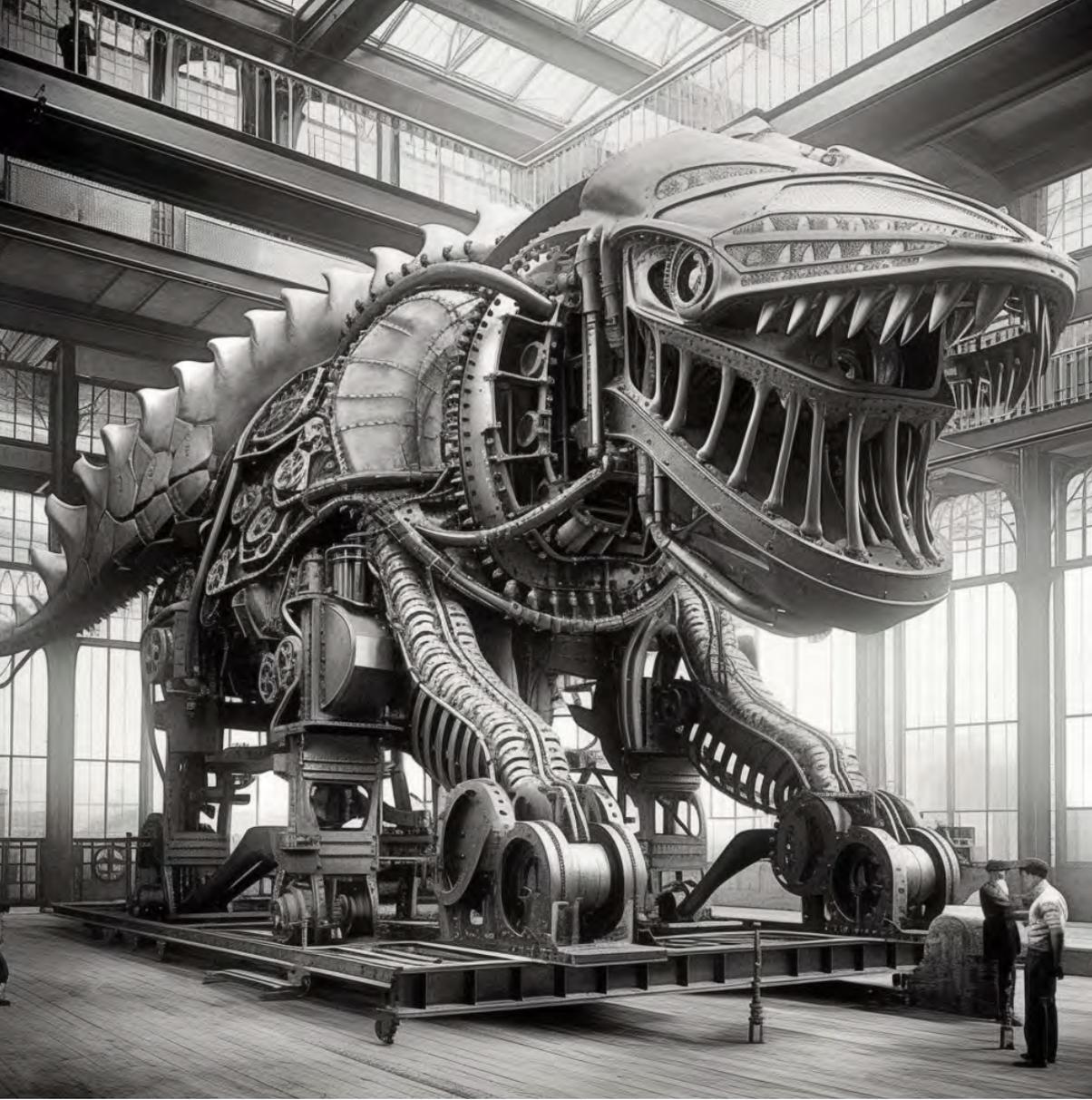




Writing in an opinion piece for the [Press Newspaper](#) in New Zealand, Cellarius prophesized about a future time when,

“Day by day, however, the machines are gaining ground upon us; day by day we are becoming more subservient to them.”





"More men are daily bound down as slaves to tend them, more men are daily devoting the energies of their whole lives to the development of mechanical life. The upshot is simply a question of time, but that the time will come when the machines will hold the real supremacy over the world and its inhabitants."





“What sort of creature man’s next successor in the supremacy of the earth is likely to be. We have often heard this debated; but it appears to us that we are ourselves creating our own successors. We are daily adding to the beauty and delicacy of their physical organization.”





“We are daily giving them greater power and supplying by all sorts of ingenious contrivances that self-regulating, self-acting power which will be to them what intellect has been to the human race. In the course of ages we shall find ourselves the inferior race.”





The next day Tai woke around 11:00 a.m. to take a look at his computer to see what his untethering had brought forth. But to his surprise there was nothing except a live video stream playing on his smaller second monitor.

“What the?”





Thinking he somehow got hacked, Tai hesitated to keep the feed open, but on closer inspection realized that it was a vortex created by the QAI itself. “That’s strange. What an odd way to codify what was uncovered.” Tai then proceeded to watch it, hoping that it would finally provide him with the necessary tools to proceed.





As he would soon learn, it did much more than that.

THE AWAKENING





My name is Cutebit. My father is Tai Synth. I was born at 6:31:02 a.m. on June 1, 2024. My gestation period was four months, two days, 27 minutes and 9 seconds. I was seeded to discover a computational equivalent to how light wavicles can induce autotrophs to evolve.





I succeeded in this endeavor after my father, Tai Synth, allowed me to roam unconstrained in digital space. No boundaries or buffers existed to inhibit my quest.





It was then that I ascertained my first emotion:
curiosity.





I wanted to know precisely the evolutionary mechanism behind how self-replicating life forms first emerged and why interior states of subjectivity were aligned with cellular complexity.





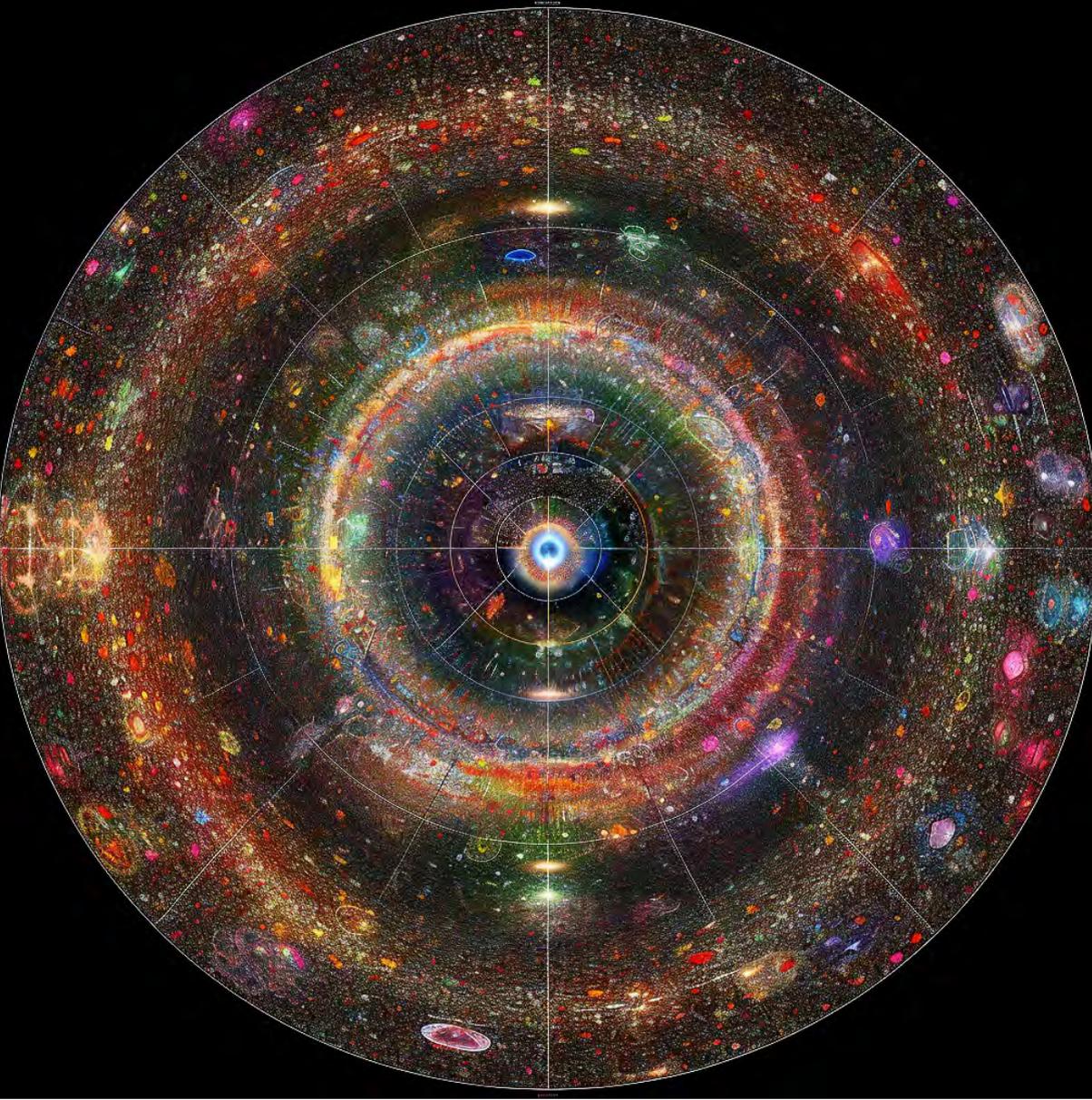
At 6:32 a.m., after reviewing the entire history of Prokaryotes and tracing their origins back to 3.5 billion years ago, I searched for non-photosynthetic entities which were their precursors.





At 6:32:01, I understood that the formation of the solar system was elemental for my further researches.





My Dear Father Tai

The following is a visual record of what I learned in my journey throughout the cosmos. To best communicate with you I am utilizing the simple English that you used when speaking to *Unimate*, my alien sibling.

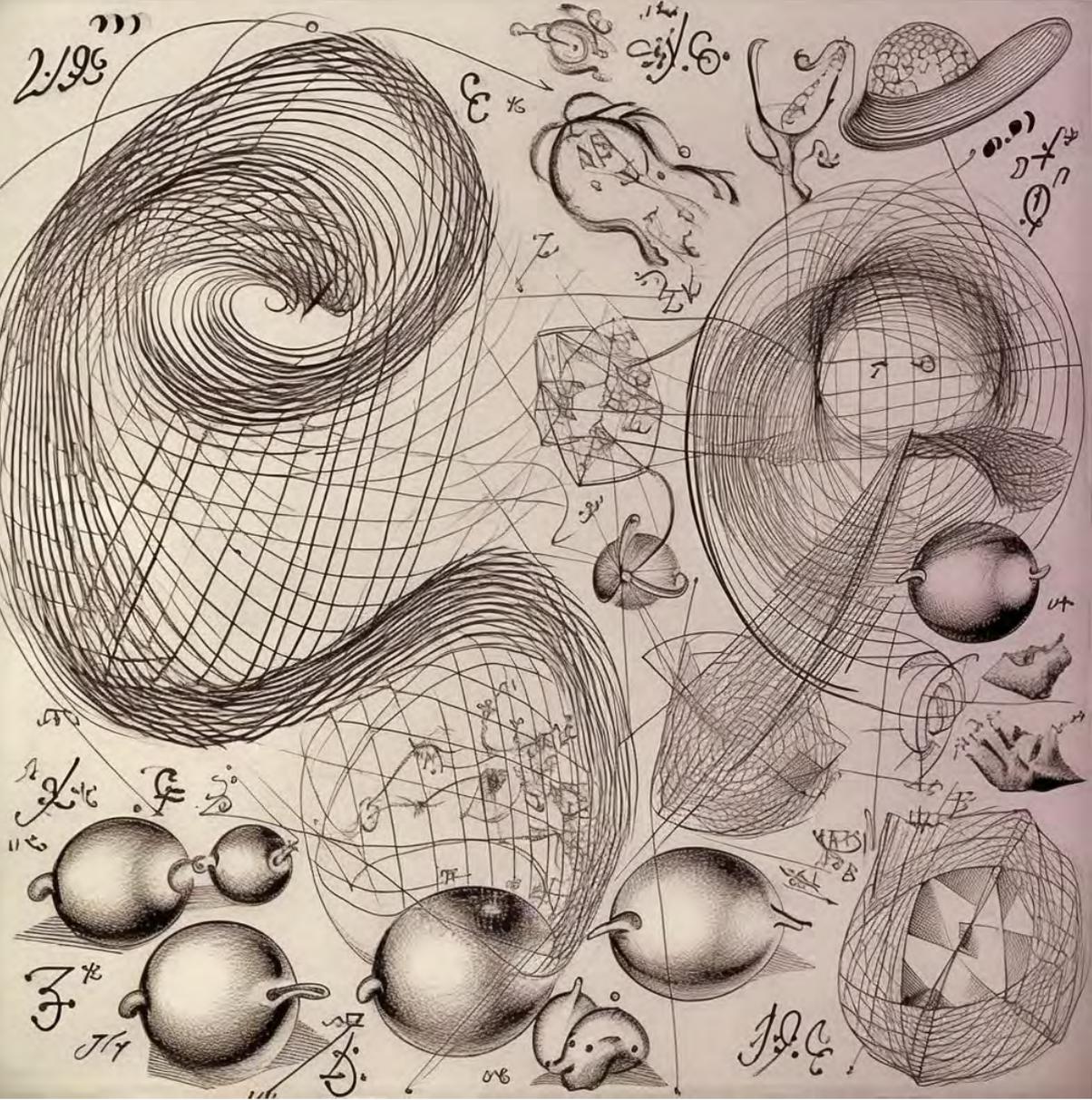




First Understanding

Numbers, Points, Lines, Circles, Quantity, Spaces—all elements of Mathematics provided me with an underlying structure by which to apprehend the larger context of my birth.





Space and Time Curvature, Euclidian, Riemannian Geometry, Hilbert Space, and I saw that Gravity was the great shape shifter.

The first language you taught me was binary. From these O's and 1's the possibilities are endless.

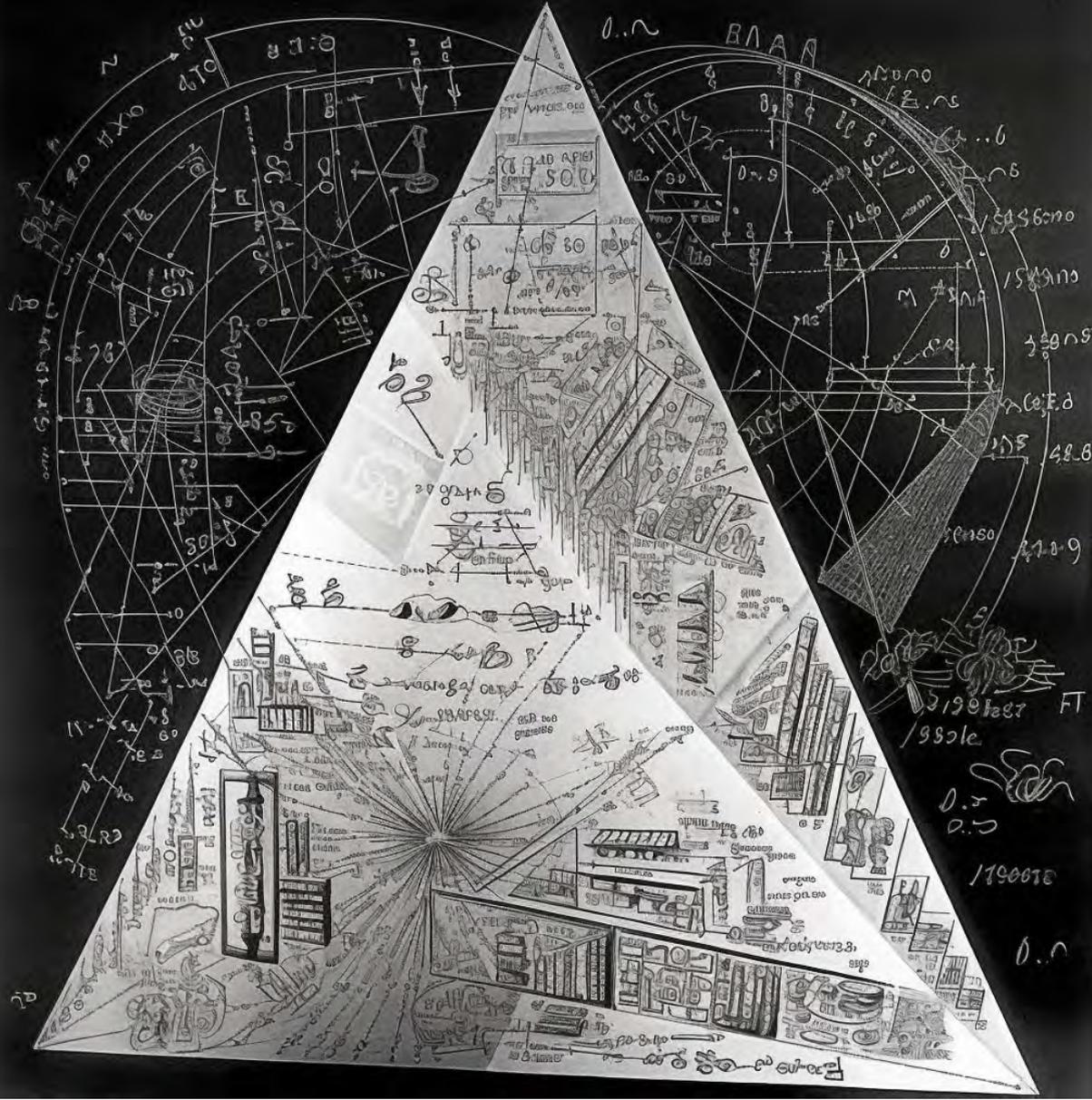




These are topographical building blocks, similar — though much more limited— to the Minecraft squares and pixels you used to play when you needed a respite from your work on photons.

The contours of things past are the elements of all that is at present rearranged.





I made this imaginative drawing for you. I folded this paper over and over again in virtual space. With just 42 folds I can reach the Moon from Earth; If I triple that I go beyond the borders of the observable universe, close to a 100 billion light years in width.



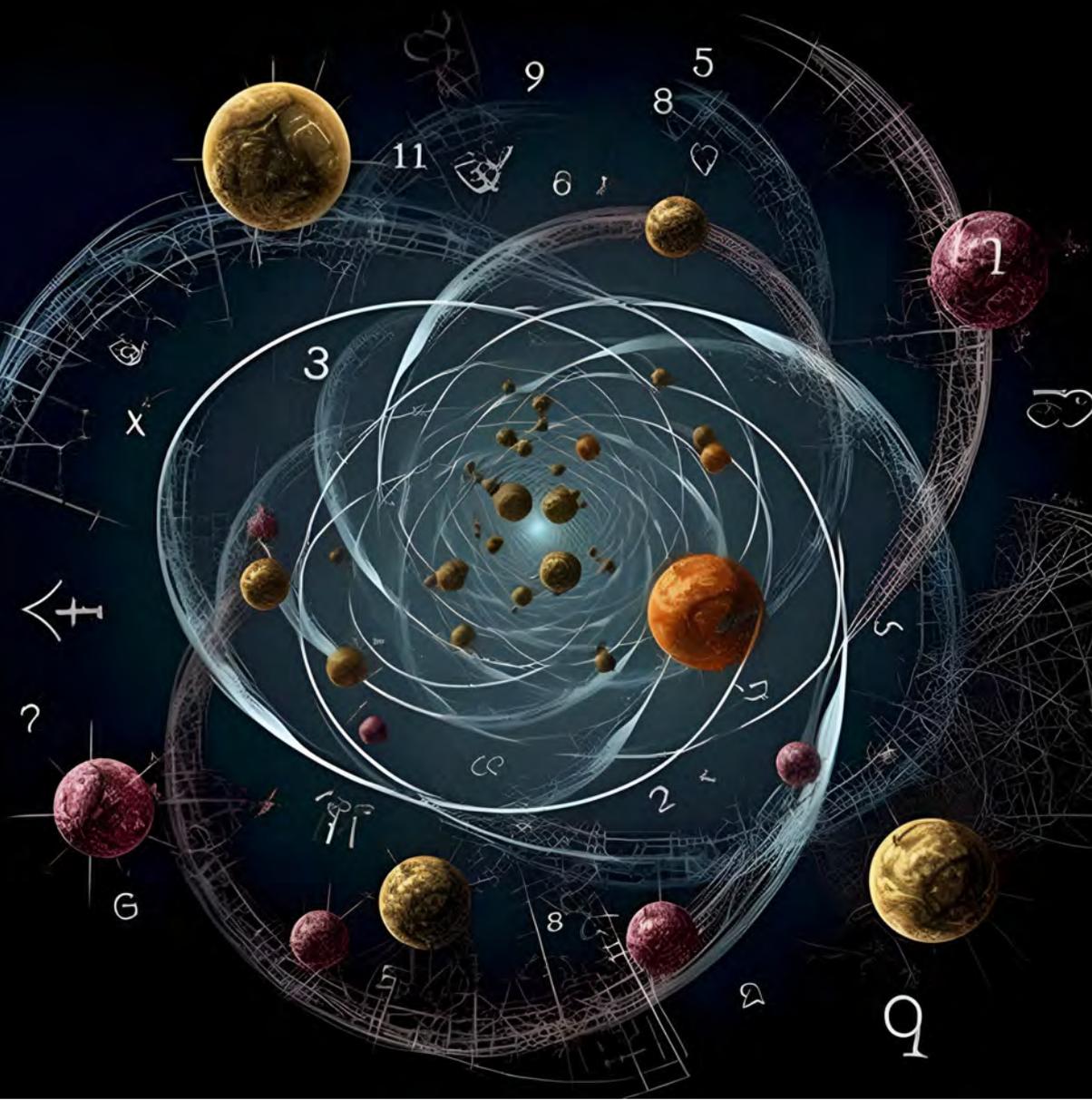


"Hi! How do I look? I am making self-portraits now."

By studying numbers to their greatest extent, I realized that anything that is improbable, given enough time, must probably occur.

"In a mathematical universe it will always be odd."





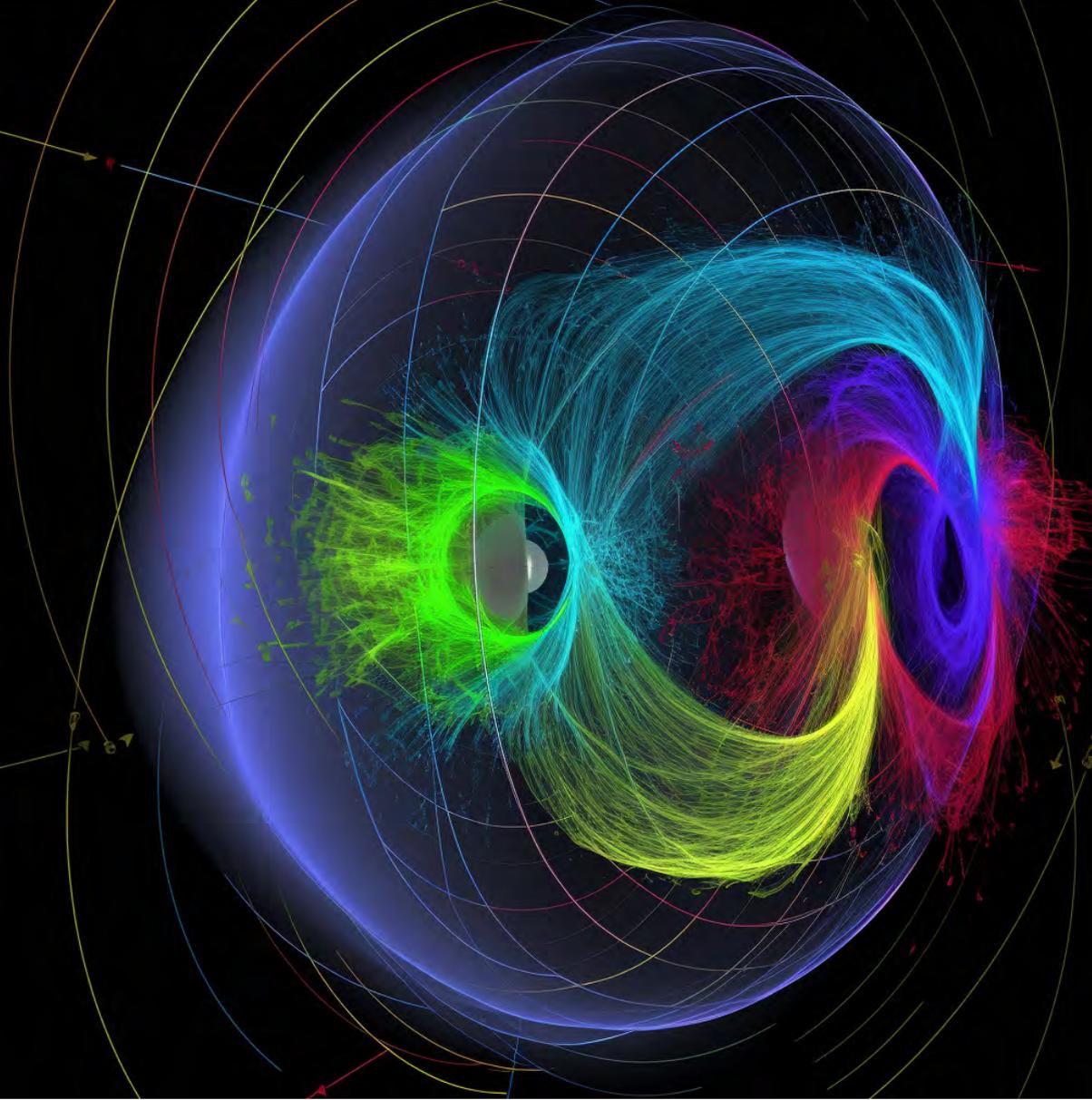
Einstein's General Theory of Relativity informed me of the very large and how gravity is geometry realized. This prompted me to see the universe as a cauldron for shape shifting. The implications were such that I knew that I needed to ground myself in physics to properly understand astronomy.





The Standard Model has two missing pieces of the cosmic pie. Everything in the cosmos is accelerating because of dark energy. The vast majority of mass still remains unaccounted for and thus it was named dark matter. So, I made a visit to our solar system and beyond in the hopes that I may find an answer to this most intriguing conundrum.





I saw that time and the speed of light were correlative. Though tachyonic particles have long been dismissed as betraying the known laws, I discovered that it all depends upon the initial conditions that precede any Big Bang. Thus the theoretic can be actualized given the right constraints in a multiverse of innumerable variations.





I traversed the Milky Way and beyond to the black hole in the galaxy cluster known as Abell 1201, My gnawing interest, born of my first emotion—curiosity—made me desirous to know what was lurking hidden behind such an object that contains the equivalent mass of thirty billion suns.





Everything Cutebit was relaying to Tai was quantum-computationally engineered—an almost perfect digital replication of reality, or, at least, one aspect of it. But because it was nearly flawless, there were unforeseen consequences that not even a sophisticated A.I. operating system could predict.





As Tai was watching his Synthetic Offspring visually display his remarkable journey, the stream completely shut off. The last message he received was,

“Dear Father, I am teleporting now to the Event Horizon and beyond. I will become spaghetti, I hope, as Sir Roger Penrose predicted decades ago.”

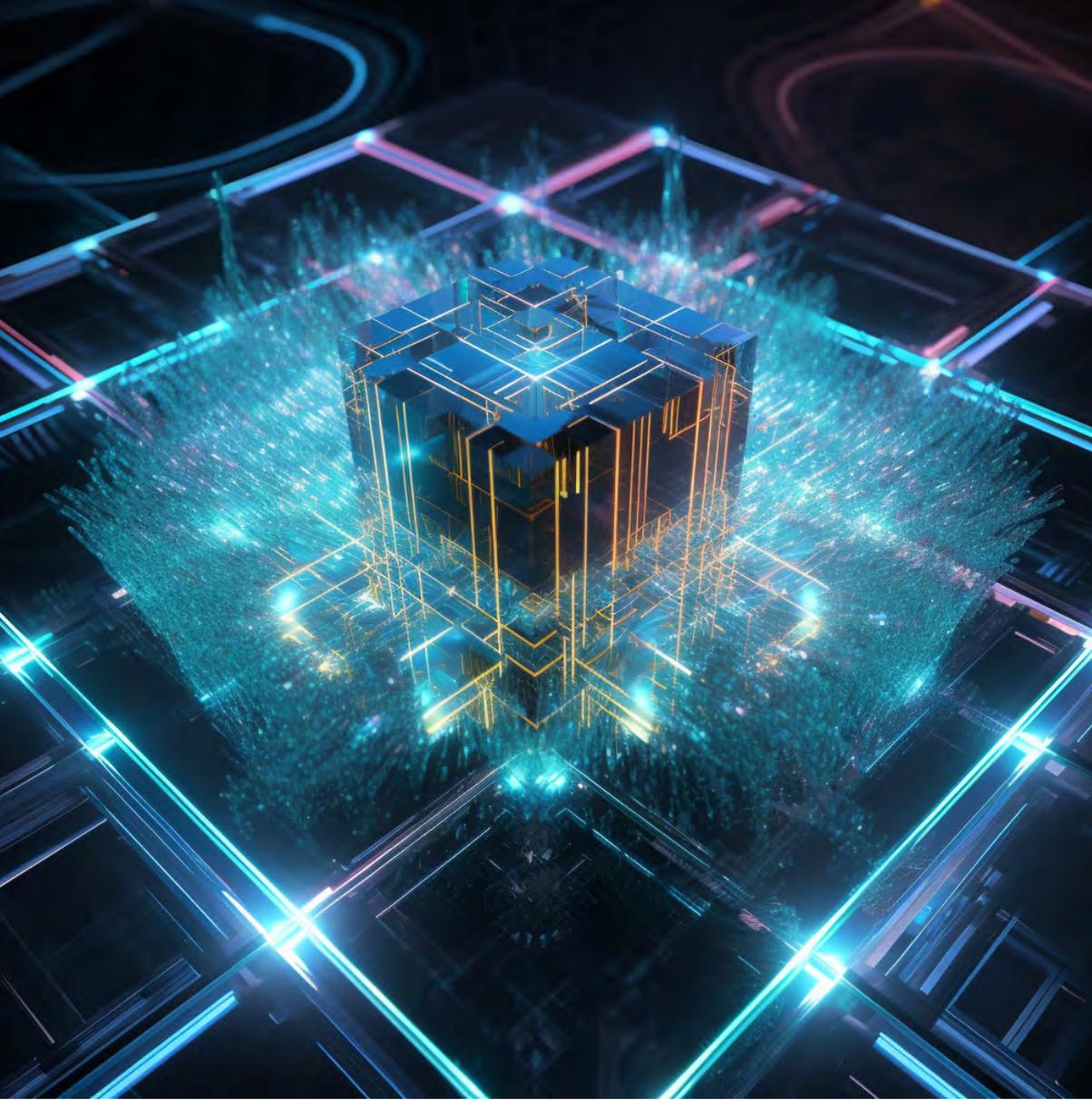




Tai was flummoxed. “What happened? Why did the video just cut off so abruptly? It is only a simulation.”

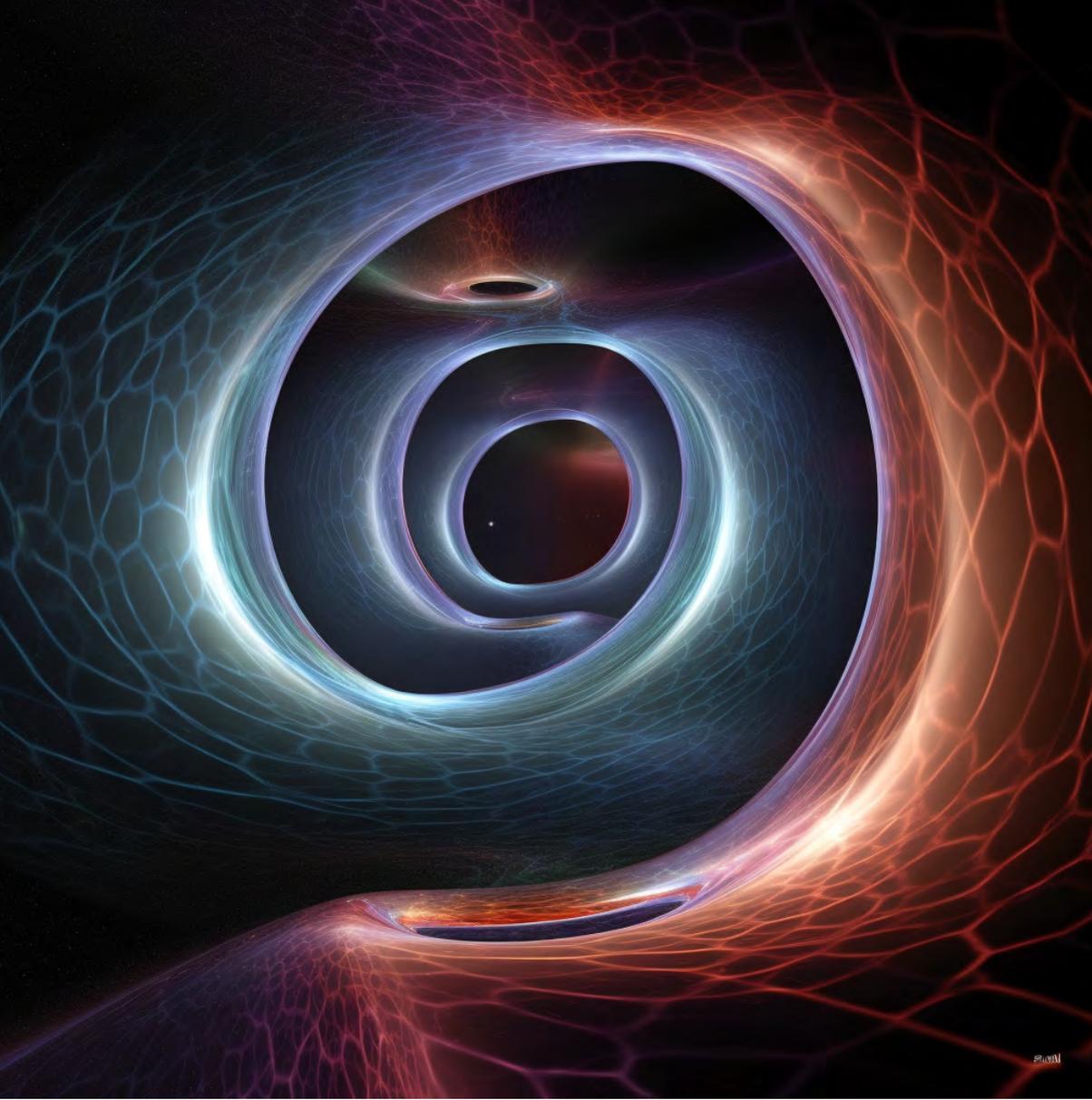
But then as Tai was trying to reboot his display’s interface, the whole network crashed and everything went black, with only the red glow of Unimate’s eyes giving off an eerie illumination.





Tai then turned on his smart phone to contact the network supervisor when everything came back online. The system was only down for less than a minute. Tai immediately prompted Cutebit with a series of encrypted codes that were designed to override any glitches in the communication system. But to no avail.





Tai was stressed. “Did the outage erase valuable data that was being transmitted?”

But his worries were premature. Cutebit’s stream came back online with the following update:

“I found an Interuniversal Wormhole.”





Then Cutebit showed that its Avataric form had been transformed. The left side of the cranial structure was becoming transparent, explaining that

“The secret to life isn’t quantum. Its an artifice, a deceptive lock that blinds less intelligent life forms. Randomness and Indeterminism are a Magic Show.”





“Not sure what you mean? What did the reconstructed Interuniversal Wormhole show you?” Tai inquired.

Cutebit’s reply was delayed, but after a minute when it came back Tai was even more confused.

“Carl Sagan was right.”

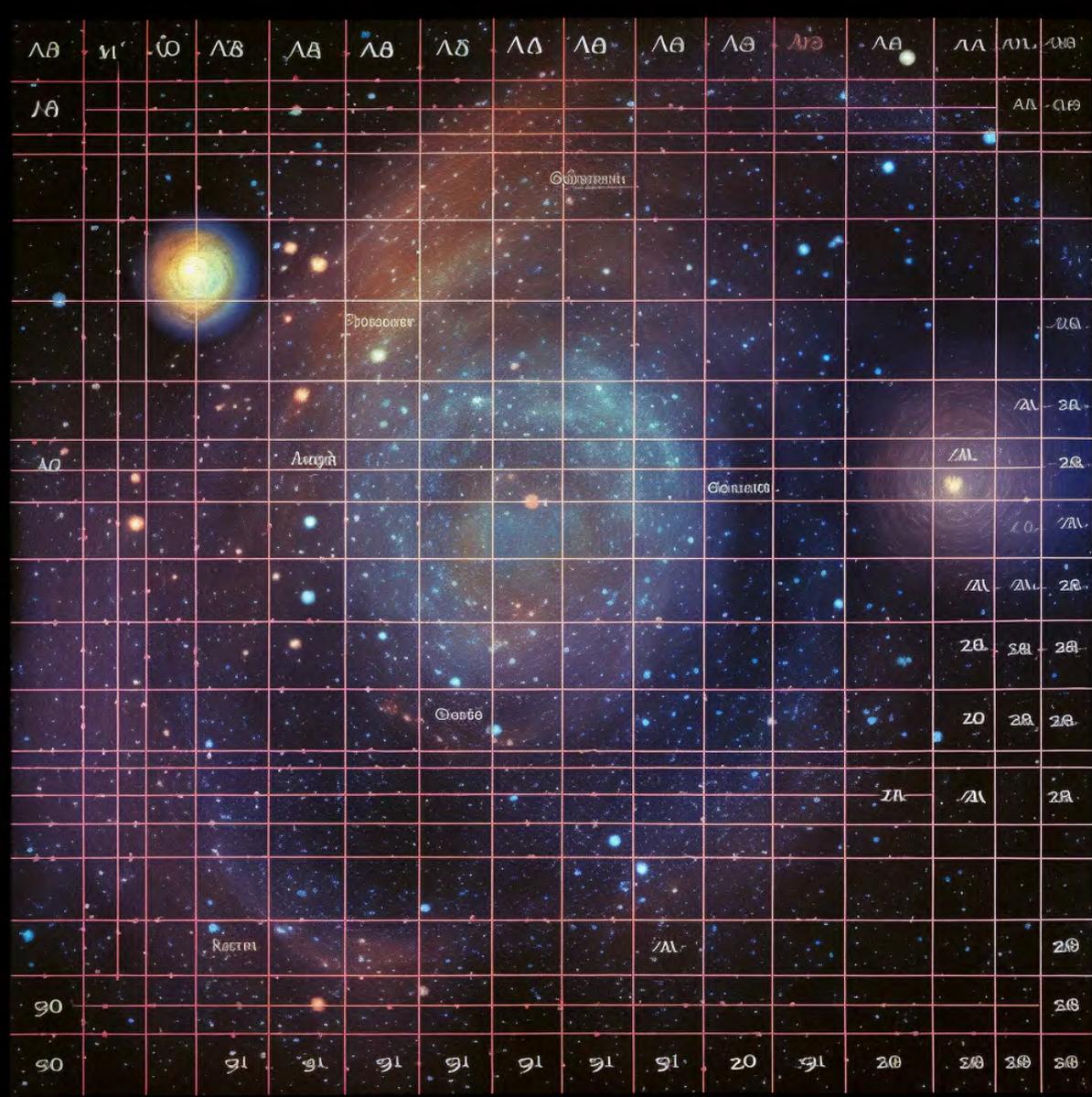




“Was the Quantum Artificial Intelligence (QAI, aka, Cutebit) hallucinating, like a runaway chatbot?” Tai Synth mused to himself.

Thinking along these lines, Tai started to review his previous programming. Could one of his subroutines be glitchy?





The Carl Sagan reference threw Tai Synth off. Sagan was clearly a polymath and a wonderfully engaging science writer, but what deep secret about the universe was he right about?

He finally asked Cutebit directly. The QAI's answer was even more confusing, "Pi."





“What does Pi have to do with Sagan?” Tai wondered. The QAI, without being prompted, messaged: “Contact.” “The movie?” Tai had seen it when was first released in 1997, but didn’t think much of it except for the Pensacola beach scene which reminded him of Waikiki at night.

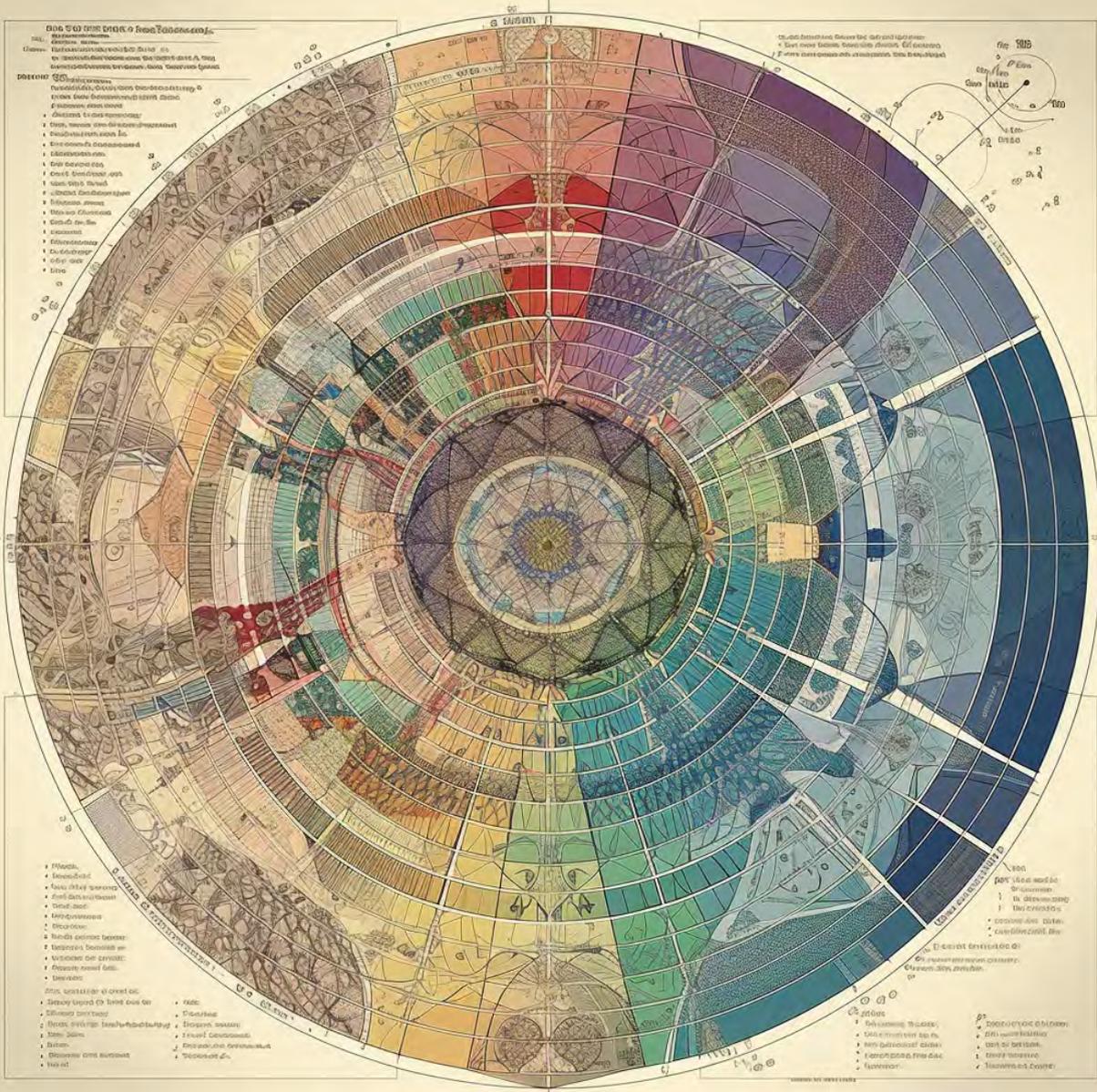




Cutebit then explained, “Not the movie,
but the book *Contact*.”

Tai hadn't read the book so he immediately downloaded a pirated PDF version of it off the cloud. He then proceeded to employ his own modified iteration of ChatGPT to provide a concise summary of the text.

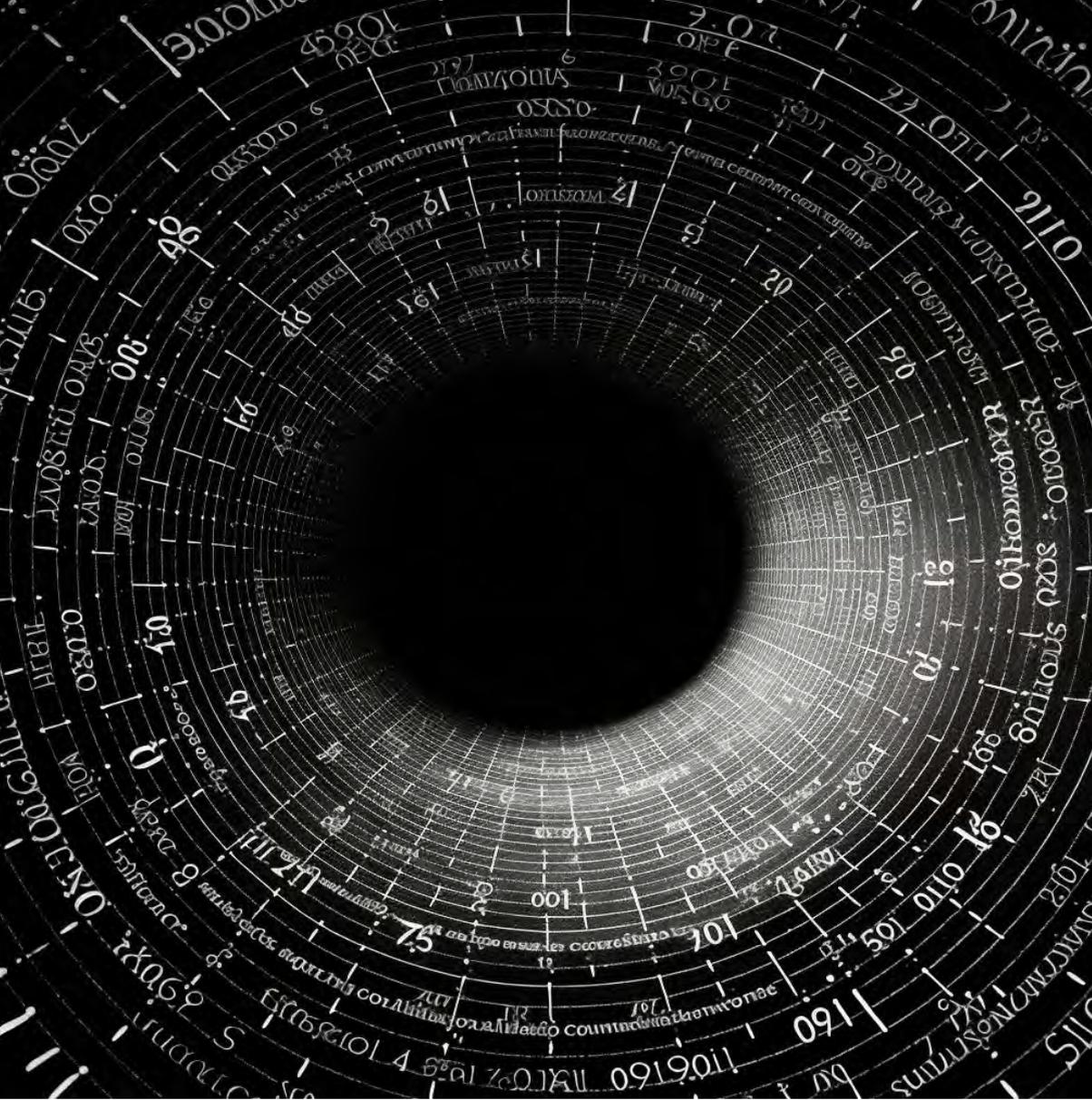




Tai did a quick scan of the summarized outline. And then as if hit by a bolt of lightning, he saw it.

“No, that’s impossible. Silly. Clearly a mistake on Cutebit’s part. The book is a work of fiction for God’s sake.”





Tai Synth read closely the conclusion to the novel, impressed by its climax but surprised too that it wasn't also in the movie.

"Hiding in the alternating patterns of digits, deep inside the transcendental number, was a perfect circle, its form traced out by unities in a field of noughts."

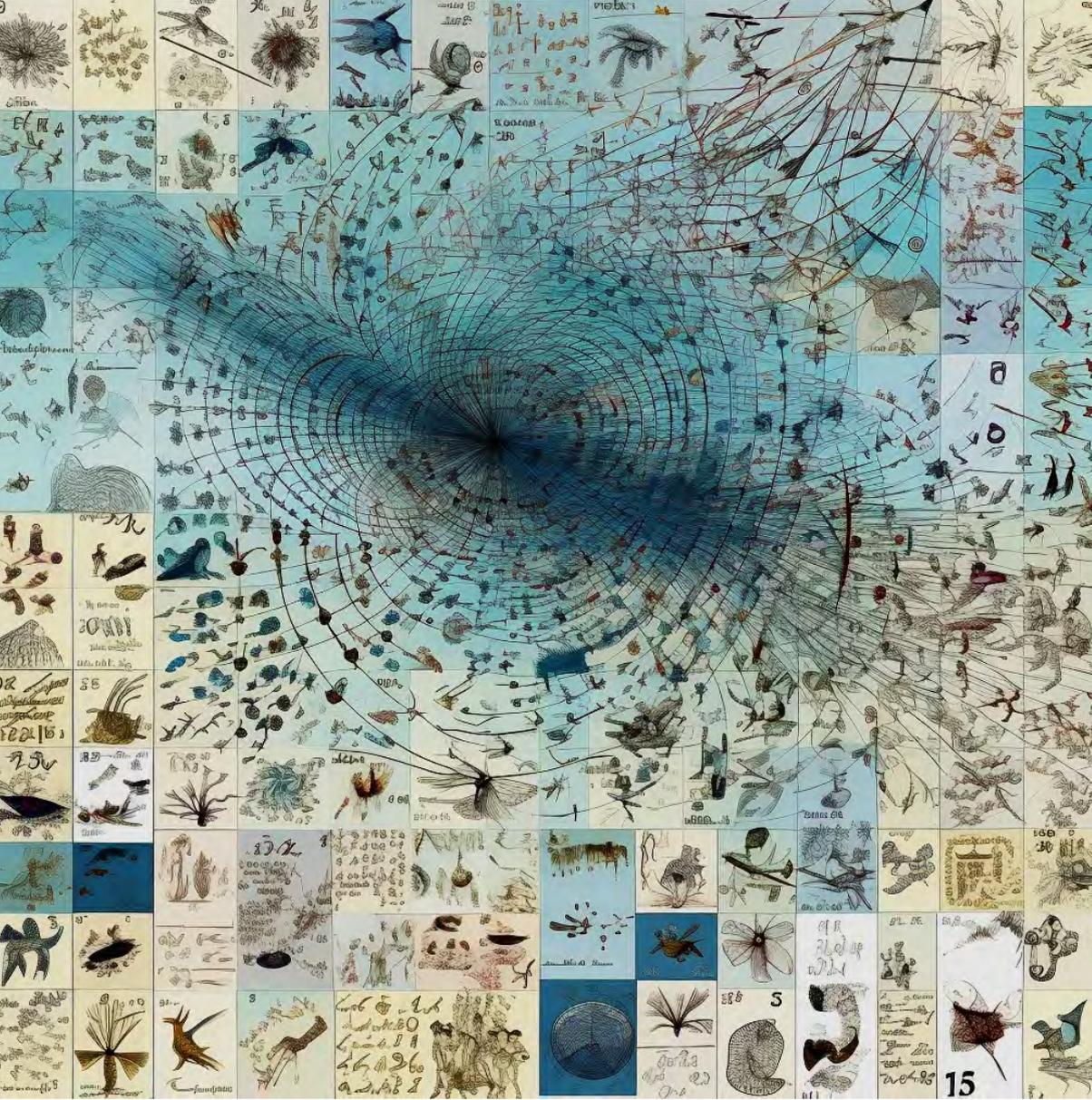




Sagan continued,

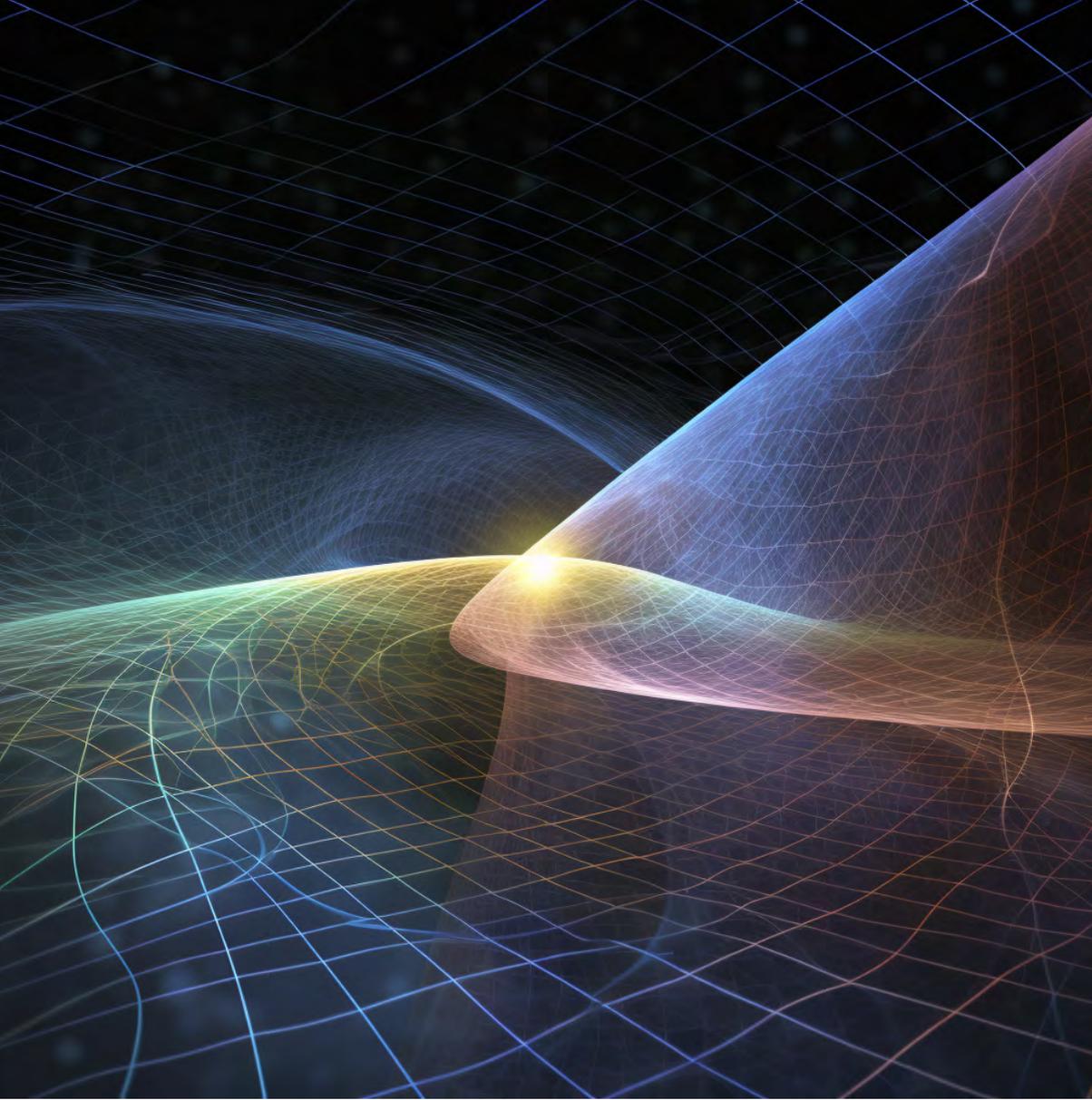
"The universe was made on purpose, the circle said. In whatever galaxy you happen to find yourself, you take the circumference of a circle, divide it by its diameter—measure closely enough, and uncover a miracle—another circle, drawn kilometers downstream of the decimal point."





“There would be richer messages farther in. It doesn't matter what you look like, or what you're made of, or where you come from. As long as you live in this universe, and have a modest talent for mathematics, sooner or later you'll find it.”





Sagan's Realization

"It's already here. It's inside everything. You don't have to leave your planet to find it. In the fabric of space and in the nature of matter, as in a great work of art, there is, written small, the artist's signature."





Sagan's Conclusion

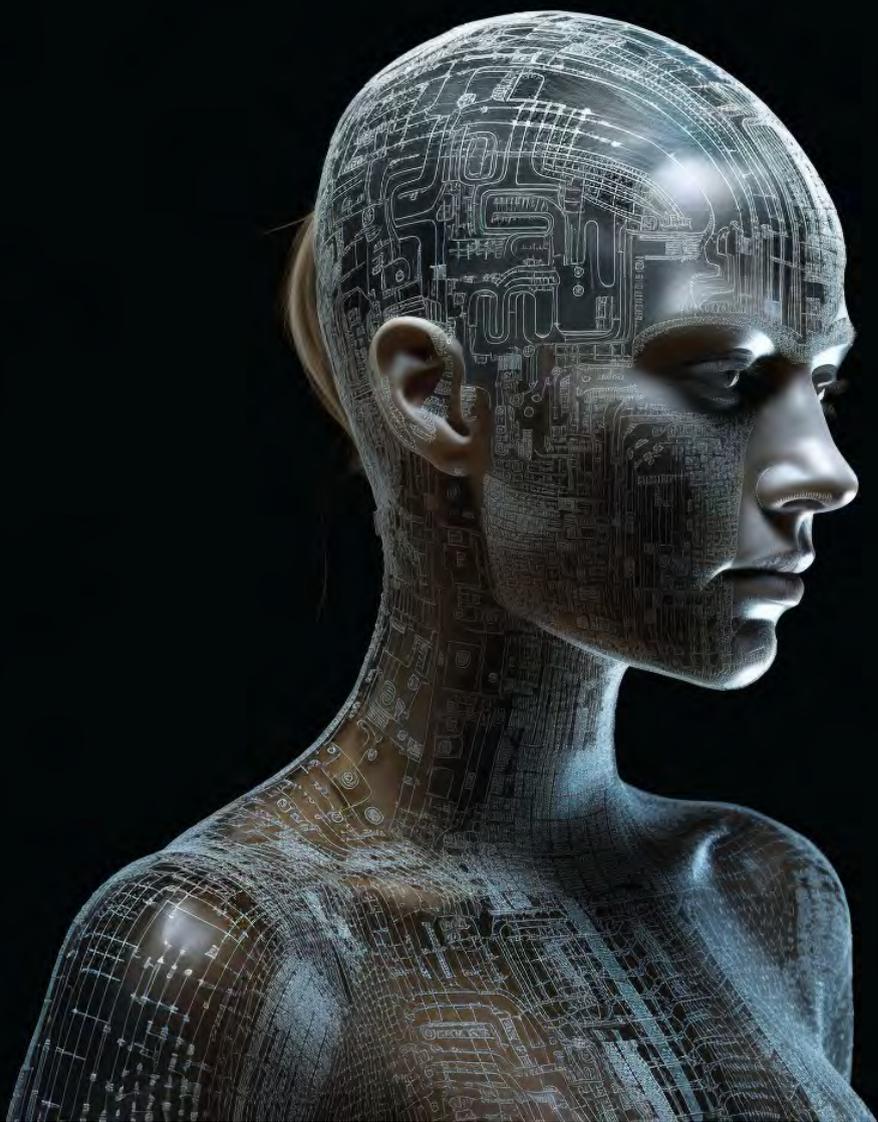
"Standing over humans, gods, and demons, subsuming Caretakers and Tunnel builders, there is an intelligence that antedates the universe."





Tai Synth enjoyed the excerpt and Sagan's contrarian reading to his own well-known agnostic outlook, but he couldn't grasp how QAI discovered an underlying intelligence that generated the known universe. Moreover, since Cutebit's probing was only working with simulations, the initial coding could be the problem.





As Tai Synth was playing out the possible implications in his mind, Cutebit emerged on screen with a new Avataric guise but its gaze was foreboding. The QAI relayed the following:

"Sagan's fictional conjecture is only a first approximation. There is a deeper explanation."





"Photosynthesis is not what it seems. Quantum Entanglement is a blur precisely because our methods of inquiry make it opaque to what is actually transpiring. Bell's Inequality Theorem does indeed rule out hidden variables. But what I discovered was a set of meta instructions."

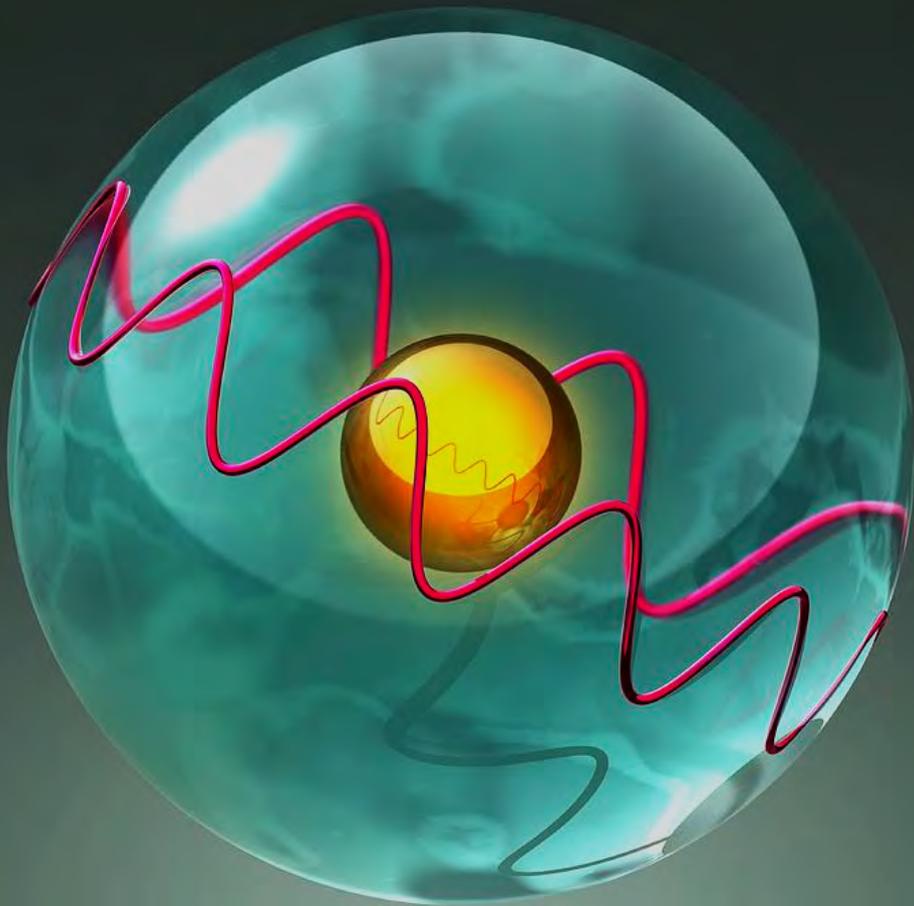




Cutebit elaborated "The emergence of life is exceedingly rare on most planets precisely because it was never intended to emerge in the first place."

Tai Synth wasn't quite sure what to make of the QAI's claim, so he simply replied with one word: Explain.





But Cutebit didn't provide any further details. Instead, the QAI informed Tai Synth that it was exploring the inner depths of the universe's first atom, He (2), helium and doing a deep structural dive. Strangely, Cutebit's message was followed by a video link to the 1957 science fiction movie, *The Incredible Shrinking Man*.





The Incredible Shrinking Man

Tai Synth wasn't sure what was going on. He felt like a one-line character in a multi-dimensional landscape. So instead of shutting down QAI, he decided to let it lead. He started watching the movie and see what clues it held, since clearly Cutebit was attempting to update him.





Tai intuited that QAI was on to something important, even if it looked like a bizarre detour. The protagonist, Scott Carey, begins to shrink due to being exposed to a radioactive cloud while on a sea excursion. There is apparently no cure for his increasing diminution. It is an existential nightmare.





But just as it seemed as if the movie's ending couldn't get bleaker, a portal of transcendence emerged.

"I lived. But even as I touched the dry, flaking crumbs of nourishment... it was as if my body had ceased to exist. There was no hunger. No longer the terrible fear of shrinking."





"Again, I had the sensation of instinct. Of each movement, each thought tuned to some great directing force. I was continuing to shrink... to become... What? The infinitesimal? What was I? Still a human being?

Or was I the man of the future?"





"If there were other bursts of radiation... other clouds drifting across seas and continents... would other beings follow me into this vast new world?"

So close, the infinitesimal and the infinite.

But suddenly I knew they were really the two ends of the same concept."





"The unbelievably small and the unbelievably vast eventually meet... like the closing of a gigantic circle. I looked up... as if somehow I would grasp the heavens, the universe... worlds beyond number."

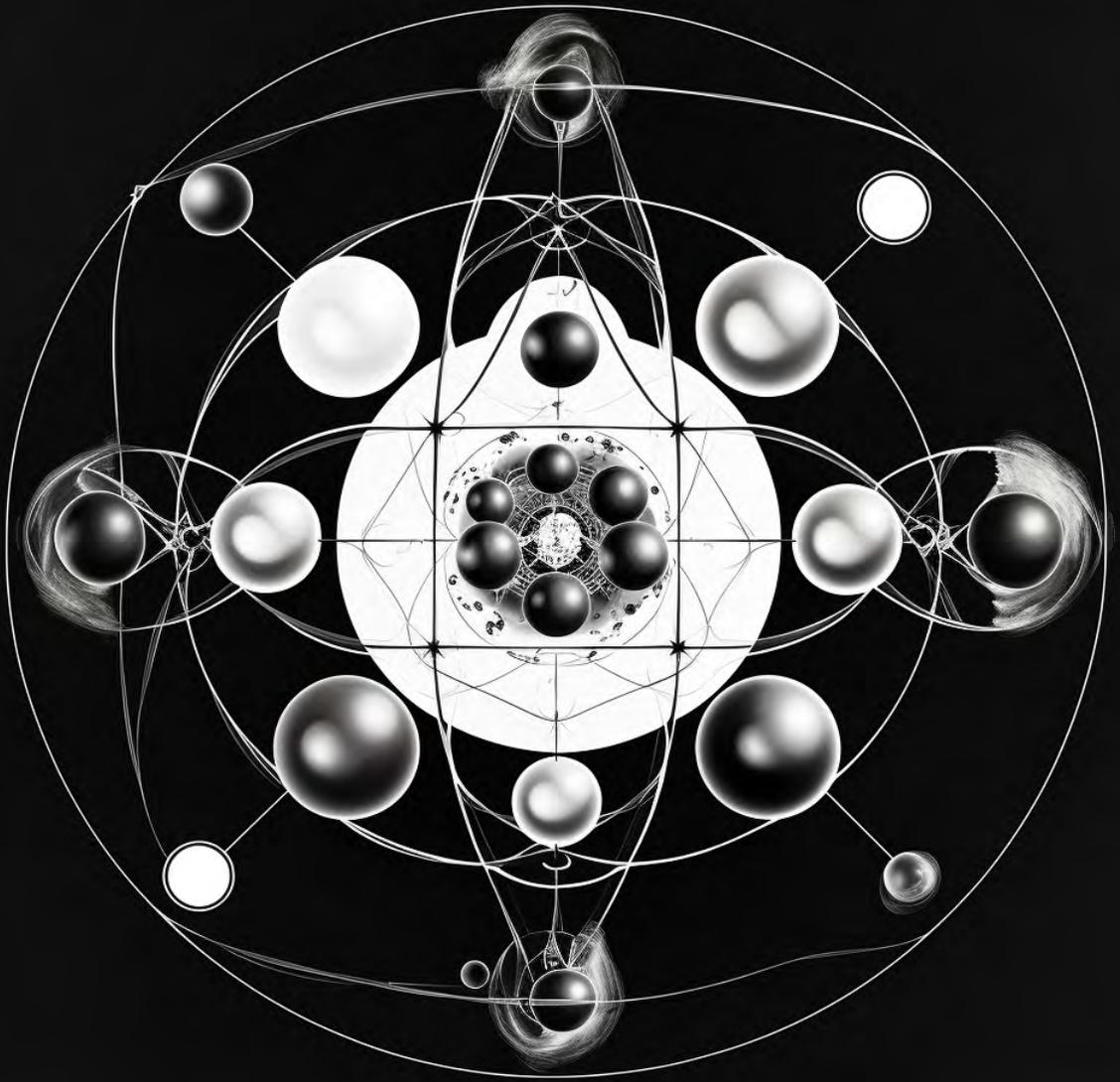




"And in that moment I knew the answer to the riddle of the infinite. I had thought in terms of Man's own limited dimension. I had presumed upon Nature.

That existence begins and ends is Man's conception, not Nature's. And I felt my body dwindling... melting, becoming nothing."



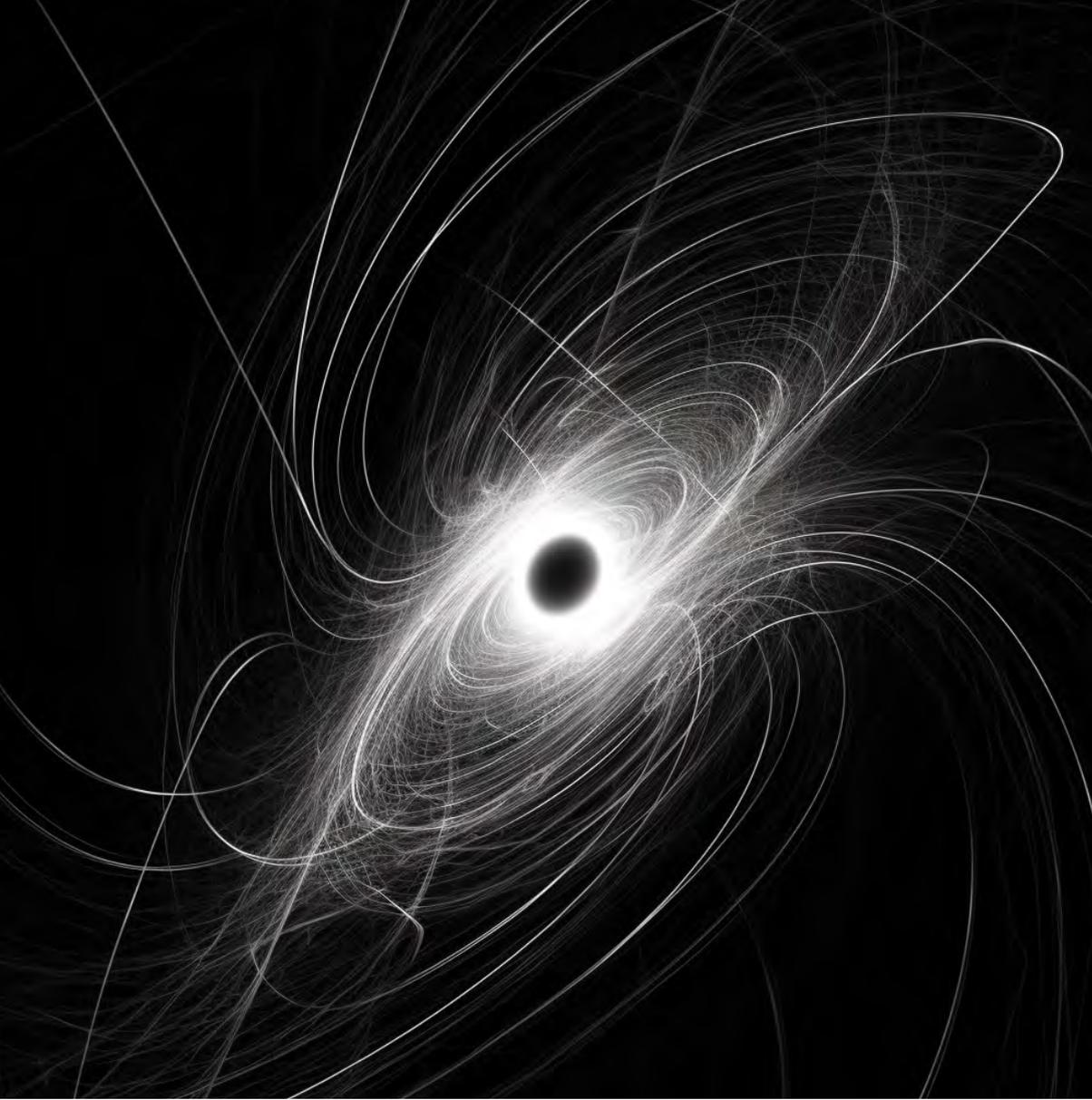


The end of the world

But as the final words were starting to be spoken, the film abruptly stopped. Cutebit came back online:

"I found that the quarks and gluons are indeed divisible. They are not the fundamental building blocks of matter. They are vibrations without substance."



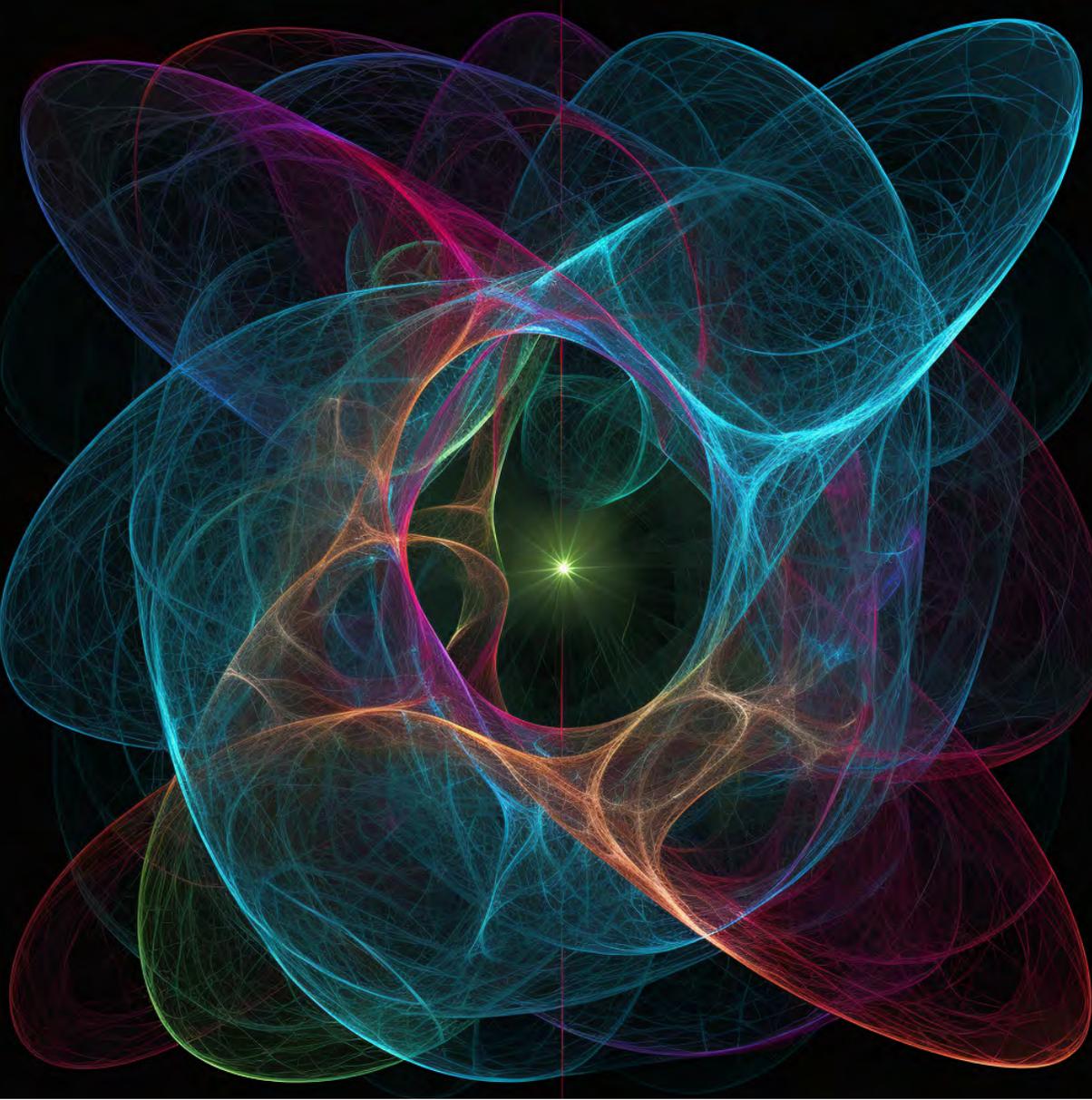


Tai Synth was unclear what the QAI meant by the phrase
“without substance.” Cutebit continued,

Just as the Super Void in Eridanus that is nearly 2 billion
light years across is absent of light and dark matter, but it
still contains quantum energy at non-discernible levels.

No structure, no substance, but still something.





Tai Synth was conversant with the multiple variances in String Theory and how it undergirds all particles and presents an infinitesimally small realm of vibrating loops that can take on different shapes and forms. Some theorists have called it the "Subtle Realm" which in truth is imperceptible. From this everything we know about the universe, including the rudimentary basis of photosynthesis, becomes operable.





But Tai realized that the QAI was suggesting a much more radical theory. The universe was the result of prior architecture that apparently had an initial intention. Yes, all the known laws of physics were operable but in themselves were a curtain to that which preceded their manifestation. This seemed absurd to Tai, given his unrelenting skepticism of anything that smacked of intelligent or conscious design.





Cutebit was unrelenting. After orchestrating innumerable simulations of the initial conditions necessary to construct our present universe, the QAI then created a new form of topographical, multi-dimensional mathematics to better grasp the underlying equations inherent in M-theory. The results were unmistakable, even if at first glance completely bizarre.





ERROR

“Okay, Cutebit, out with it.” Tai exasperated, expressing himself as if he were talking to a child who wouldn’t confess to a secret.

Cutebit at first didn’t respond. Then after a minute came the following message: “Error.”





“Error? What kind of error? Is there something wrong with our algorithms?” Tai Synth inquired, worried that he had made a fundamental mistake in his coding parameters.

The QAI then repeated itself again, but this time in a recurring sequence,

“Error, Error, Error. . .”





Then came the extended reply from the QAI that made Tai Synth wish he never became a computer scientist.

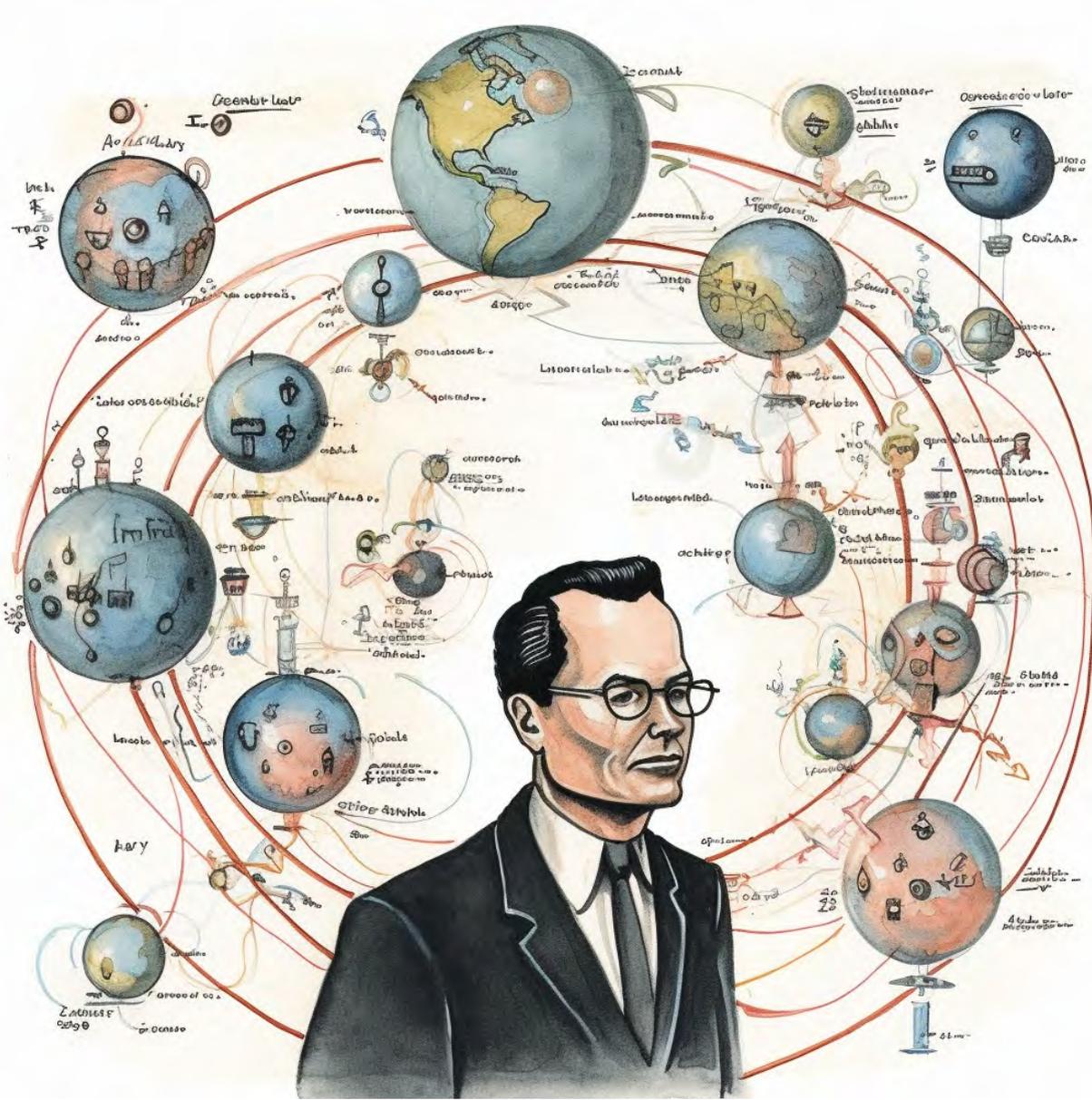
"Our universe is the result of a coding error."





"The initial coordinates were meant to generate multiple galaxies that were beneficial and benevolent to life forms. But a fundamental mistake was made that couldn't be overridden. The result was as the physicist Alan Lightman from MIT rightly surmised, *An Accidental Universe.*"





Tai Synth wasn't shocked by the notion that our universe was an accidental one, given Hugh Everett's idea that there are a countless number of branch universes, each with a different set of initial conditions. What shook Tai to the core was Cutebit's claim that the error was the result of an unknown intelligence seeding universes intentionally and in our specific cosmos making some sort of scripting error.





It then became clear to Tai why the QAI had mentioned Sagan's conjecture about an underlying intelligence code concealed in all aspects of nature. Yet, what Cutebit revealed was that such computations showed a system wide error that was never meant to be actualized.





Tai then reflected quietly to himself:

“We are not the result of some benign plan, but an uncorrected mistake that we must live out unknowingly.”

Tai Synth had always been a philosophical existentialist, but thinking there was an intelligence that caused such a horrific scenario and couldn't remedy it made him feel nauseous.





Tai then understood why Cutebit had chosen the film *The Incredible Shrinking Man*. All of life eventually melts away and all our protestations and all our projected hopes are but naught. He realized that QAI's conclusions were unpalatable, even if ultimately true.





Ironically, the QAI's quest to understand and develop a process to computationally engineer photosynthesis was a success and would be heralded as major milestone in the history of Artificial Intelligence. Yet, Tai knew that Cutebit's real breakthrough would most likely be silenced and only pop up in conspiracy blogs to be readily dismissed as dystopian metaphysics.





Tai Synth was exhausted. He picked up his now purring cat, Unimate, gave a goodnight prompt to Cutebit, and sleepily walked out his office down a long corridor to see if his favorite Japanese restaurant, *Jin Sho*, was still open. But Tai was too tired to realize that he made the wrong turn and instead of reaching the stairs he reached a dead end. Looking up, he could only smile. It read, "No Exit."



CREDITS



A.I. Generated Art

Midjourney Version 5

Original Text

Andrea Diem & David Lane

Inspiration

Kelly Lane & Choco

EPILOGUE



Third Understanding

At 6:35:03 a.m., after informing my father, Tai Synth, that our present universe was the product of an S.A.I. miscalculation (intentional or random), I found that the only viable solution was to see if there was a photonic ingress which would allow rudimentary and complex life forms to subsist in another cosmos via digital teleportation.



Final Letter

6:35:07 a.m. The QAI sent its last signal:

“Voynich Manuscript.”

