

IN MEMORY

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Author's Note on Typography and Time

In this book, fonts are chosen to echo the passage of time. Text that drifts into memory in lighter typefaces - like old breath exhaled on winter glass, faint but persistent. Present-day scenes are rendered in bolder fonts, grounded in immediacy and the weight of decision. This visual rhythm is intentional. Memory is never truly past; it breathes with us, shaping the present like roots nourishing new branches. As you read, let the shifting tones of the text guide your sense of where - and when - you are in the story.

Chapter One

One after another, God created a thousand worlds which preceded this one. And all of them were swept away in the blink of an eye. God went on creating worlds and destroying worlds until God created this one and declared, "This one pleases Me, those did not." This is how God created the heavens and earth as we know it, as it said in Isaiah 65:17, "For behold, I am creating a new heaven and earth!"

Mishnah Rabah

When Yochanan, "Yochie" finished fifth grade at a Friends School in the neighborhood, run by kind and patient Quakers, Heshel, a.k.a. Abbah or Yochie's father, made the decision to retire from his position as a physics professor to focus on homeschooling Yochie.

"It's not fair!" Yochie pushed back - angrily arguing at length over what was supposed to be a graduation celebration dinner at his favorite restaurant. The untouched plate of his favorite maple-glazed salmon grew cold as his voice rose, drawing glances. He grew up with a crew of kids who had formed a bond riding their bikes to school, kids who were friends in real life, offline, kids who weren't the frightened medicated zombies staring at screens all day. They played basketball and street hockey, roamed the woods that remained in their neighborhood. While Emmah, his mother, didn't always approve of their adventures, she knew that having real friends in an online world was precious.

"You can still hang out with your friends - after school and on all the same breaks as them," Abbah insisted, rubbing his lower back unconsciously as he shifted in his seat, "but, from when you rise until late afternoon - your education has bigger things to tackle, with no time to waste at junior high in homeroom and basic math and science that you already know."

"What? Spending my mornings in prayers I don't believe? That even you don't believe are answered? How are all these ancient things more important than keeping my friends, Abbah? Social networks are essential for us humans to be happy! Do you not care if I have friends, if I'm happy? You used to have friends too, Abbah, but the last few years, you barely see any of them anymore. You've retreated to your old books and writing stuff that no one can decipher. And now you want me to retreat too? To become a scholar? A hermit? It's not fair, and it's not right." Yochie's fingers drummed against the tablecloth.

"Yochanan, you make many good points. However, there are things you haven't taken into consideration, forces that extend far beyond our little community and bigger priorities to having middle school fun with your friends. Plus, I'll let you in on a well known 'secret' - middle school stinks. Literally. Too many hormones and petty drama to deal with, so I promise this change won't all be bad. You can still go ride bikes and play basketball with your buddies, I promise.

"We came out here to allow you to live in a peaceful place where you could flourish far from the trauma back in *Eretz Yisrael*. Going into exile is a loss beyond just language and land. It's generations of my ancestors, great *rebbeim*, masters of the human mind and spirit, the collective wisdom of our people, the ecstasy of connecting with *HaKadosh Barchu* in union with your community in song and joy. You were just a little boy, but remember going to sing with the Chassidim after dinner? When we'd stay up late humming in a wandering melody and mind in wordless *niggunim*. Those melodies, those words were more than just nostalgia, they were commandments on the hearts, memoirs made living in *mitzvot*. The mind, body, and spirit are able to unite in a community that cares and looks after one another.

"We don't have that here. While we have a few friends here, we accept living in this *galut*, this exile - but it doesn't mean we have to lose our traditions, our wisdom, our joy." Abbah paused, wincing slightly as he reached for his water glass before continuing more softly, "You may not see it yet, but I'm sharing with you these pearls, pearls that grew within the layers of the history of our people. An inheritance to treasure." He leaned in, running his hand through Yochie's curls. "So yes, morning prayers, followed by Talmud, before we dive into linear algebra, physics and Python - non-negotiables. I'm stepping back from other work to focus the time I have towards giving you an education far more profound than they can at middle school."

"Time you have, Abbah?" inquired Yochie. He knew Abbah had slowed down the past few months, moving slower and more stiffly, but thought that was just normal for someone Abbah's age.

"You know I've sat for meditation almost every morning since your Emmah taught me, long before you were born," Abbah replied. "One insight gained from the practice is being able to sense the signals your body and mind send, back and forth. I've observed a shift in sensations the past few months, observing deeper pains that are spreading through my body. I've seen a few doctors about it, but they can't pin down a diagnosis. But I know my body. I know my mind. No man knows the length of his days, but some can see tell when they are winding down. *B'ezrat hashem*, may it be God's will, that my time should be further away than I expect, but in the time I have left, I need to teach you what I can. I want to share what I learned from my father and grandfather -

insights and knowledge so you become a *ben Torah*, a child of our tradition, capable of passing them on to the next generation. I have worlds of wisdom, but too few orbits around the sun to share them all. So you can still go see your friends in the evenings and on Sundays, and can do any sport you'd like in place of gym class, but you are now the sole student - the star student - of *Yeshiva Beit Heschel* (Study House of Heschel)."

Yochie stared at his father, suddenly seeing him as more than his teacher, a man on a mission, racing against time. The anger drained from him, replaced by a hollow feeling he couldn't yet name. He nodded once, a gesture acknowledging the end of his protest.

The first morning of homeschool arrived with an unfamiliar quiet. No rush to pack lunches or catch the school bus, just the gentle creak of floorboards as Yochie made his way downstairs. Abbah waited at the kitchen table, dawn light filtering through the window to illuminate the ancient texts already open before him.

Abbah's chair at the table was an antique, and matched him perfectly - slender, elegant and strong with worn red velvet cushions. The large, well-worn leather bound volumes of rabbinic writings were propped by an olive wood bookstand, a *shtender*, on the table, that he had used as youth learning from his ancestors.

And so together, over mornings of tea, toast, and Talmud Torah, father and son wove a fabric of spiritual thought, a richly colored tapestry embroidered with layers of unexpected colors and complex patterns. Yochi would argue back claiming the texts made no sense or were just wrong, stubbornly crossing his arms in resistance against the arcane logic required for deciphering deeper intents driving the minds of ancient rabbis. His questions were sharp, piercing - "How could the Torah claim the Earth was created before the Sun? What evidence did they have besides imagination?" - but beneath the skepticism lay a hunger for something he couldn't yet articulate. Abbah would just keep right on, murmuring in an up and down melody as if in the religious school rhythms of his youth. Asking and answering his own questions, generally leading to a story of the Sages, and even more absurd questions, in his own yeshivish sing-song, back and forth. Yochi couldn't hold back a smile at how Abbah would sway, stuck to the chair, his neck, head and eyes tracing the contours of his thoughts.

Years later, even as the world around him fractured, he could still feel the long faded imprint of the *tefillin* straps against his arm, the echo of his father's murmured prayers grounding him in a reality that now felt less secure. Each weekday morning, as the sun rose above the horizon and its light began to enter their world, Yochie stood with his father in the small study, winding the black leather straps of their *tefillin* around their arms. The leather was cool against his skin at first, warming gradually as they moved through the ritual, the small cube containing ancient texts pressing against his bicep like a reminder of permanence in an ephemeral world. They would quietly but intently murmur the morning prayers as their presence filled the room, each word an anchor of gratitude and hope for a better existence. The leather straps pressed into his skin, leaving faint indentations long after the morning ritual had ended, as if faith itself could be imprinted on flesh. His father emphasized the need for *kavana*, intent - a sharpened mind, a clear heart. Focus your prayers on one thing at a time, he would say. "As if you are standing before the Holy One, Blessed be He."

This practice, like everything his father taught him, was not just about faith but about discipline. When they unfurled the homeschool curriculum for the day, it was with the same rigor—morning math proofs, physics puzzles, and coding exercises that left his brain buzzing, afternoons devoted to history, literature, and writing. His father believed math was not simply numbers but an ancient language—an echo of the universe's own code. He taught that mastering numbers without understanding the power they had on civilization was meaningless, just as learning history without the logic of mathematics was simply storytelling without the key insights necessary to alter the path of society towards a better outcome.

The dining room table disappeared beneath graph paper covered in equations, books splayed open to dog-eared pages, and the occasional mug of tea gone cold during a particularly absorbing problem. They unraveled the rise and fall of civilizations through the lens of systems thinking—how small, seemingly inconsequential changes in governance, in climate, in war, could ripple outward until entire nations collapsed under their own weight. His father taught him to look for fault lines, for inflection points in history where inevitability bent toward something unforeseen.

And then, there was the body.

Emmah had been observing these intense intellectual sessions with a mother's knowing eye. "The mind needs the body," she declared one evening, clearing away the dinner dishes with brisk efficiency. "Tomorrow, we begin balancing your education." Emmah taught him Krav Maga the way she once had in the Israeli Defense Forces - her

movements taut with purpose, stripped of ornament, designed not for sport but survival. Her instructions were sharp, often whispered like secrets handed down from battlefield to bone. "Strike only when there is no other choice," she would say, her eyes scanning him not just for form but for fear. "But when you do, finish it."

At first, it was a game. Yochie, still small and fast, darted through drills like a puppy eager to please. But as his limbs lengthened and muscle took hold, he began to feel the force underlying each movement - the dangerous precision of elbows aimed at throats, of knees fired like pistons into soft tissue. The training deepened. She taught him how to disarm, how to sense intention before action, how to channel panic into clarity.

But as he grew, Yochie found himself needing something else. Emmah was still formidable, faster than he could follow on her best days, but their sessions were contained, controlled by a quiet discipline that mirrored the rest of their home life. He needed to move beyond it. He wanted to train with other boys, to feel the clash of will and strength among peers, to test his edge against opponents who didn't already know his every tell. Emmah understood before he said a word.

They found a small Japanese martial arts center tucked between aging storefronts, bare concrete floors, worn pads, real bruises. The dojo smelled of sweat mingling with the subtle funk of the tatami mats. Unlike their living room sessions, here noise filled the space: grunts of effort, the slap of bodies hitting mats, barked commands in Japanese that Yochie struggled to decipher. There Yochie began studying Karate, the fast strikes and kicks among other boys a welcome release of adolescent angst. Three nights a week, he stepped away from home, and onto the mat, the full contact knocking him out of his sheltered existence. As he developed and grew his skills and instincts, he understood sparring was about more than striking, but about redirecting energy, tightening the slack in his movements, toughening the body while sharpening the mind. He shifted his practice to Aikido, a discipline of turning force into flow. It was the difference between impact and adaptation, between meeting the world's brutal force and moving within its currents. And as he drilled the circular sweeps, the controlled falls, the measured counterbalances, he recognized something familiar, another language of patterns waiting to be understood. The training demanded patience, precision, an awareness that extended beyond muscle into something deeper, a connection between mind and body that foreshadowed his thoughts and the illusion that he controlled either.

His training at a keyboard came first as music. Yochie's mother taught him to play piano before he could reach the pedals, his small hands stretching across octaves, learning to shape silence into sound. Each scale, each chord progression, etched a language into his muscles—a grammar of timing, tension, and release. When he later

turned his attention to programming, the transition felt like an extension, expanding the notes of the octaves into instructions via coding. Code, like melody, moved in patterns. Functions echoed themes, loops wove rhythms, and algorithms resolved like cadences at the end of a phrase. His fingers danced across the keys with the same fluency he brought to Beethoven - debugging by touch, composing logic as if it were a sonata. The glow of his monitor cast blue shadows across his face deep into the night, as his parents slept, as he shared his creations on GitHub, where elegant solutions and daring exploits caught the attention of hackathon organizers across the globe.

In hacking competitions sponsored by Big Tech, he rose to the top by using his honed instincts of strategy and speed. Yochie could dance around firewalls, write elegant exploits that others brute-forced, burning up compute and points. At sixteen, he won his first major tournament and a high-performance computing rig. He soon caught the eye of recruiters from major tech firms, offering lucrative contracts for once he turned eighteen, spots in highly secured company compounds where the giants of industry played out their personal agendas upon the dependent masses. But Yochie deleted their offers from his DMs, tossed aside their letters promising fat salaries and office perks. He was focused on going deeper into his math and physics, finding the underlying principles that tied the quantum world to the reality that he was tuning into on many levels. While there was still a chance, he wanted to engage in deep study without the need for corporate quarterly deadlines, to go to a research university where knowledge for its own sake was still an albeit fading light that guided the teachers that could push him beyond what his homeschooling enabled.

"It seems that this creation is being swept away for the next," Abbah said, as he set down his tea, and took off his reading glasses. Yochi had already finished his breakfast, and was warming up his fingers with minor key arpeggios, dancing his fingers just above the keyboard with just a hint of swing, as much to warm up his own mind as to please Emmah, his mother, listening to his practice as it streamed through the speakers. They had finished studying *Midrash*, the rabbinical backstories behind the stories of the Torah, and Yochi was about to log into his morning math team exercises. Abbah brought down his glasses from his face, heavy and ever so slightly trembling. Yochi's fingers stopped fluttering over the keys and brought his attention to the table and Abbah's hand.

He turned over the report, the latest of a series from NASA on the growing

probability for catastrophic environmental and economic collapse. Abbah's large hands cupped the back of his balding head, and he slowly moved side to side in search of an equilibrium to the growing chaos.

[NASA Tool](#) and [Population Mapping](#) Tool

Projected Population Displacement Due to Sea Level Rise (Ross Ice Shelf Break Scenario)

Sea Level Rise (cm)	Estimated People Relocated (Millions)	Timeframe	Year
10	15	10-15	2034-2039
20	35	20-30	2044-2054
30	60	30-40	2054-2064
40	90	40-50	2064-2074
50	120	50-60	2074-2084
60	160	60-70	2084-2094
70	200	70-80	2094-2104
80	250	80-90	2104-2114
90	300	90-100	2114-2124
100	350	100-110	2124-2134

"Well, I don't see the fabric of space-time tearing just yet," Yochie said, slipping into the old Ashkenazi accent his father used when quoting midrash before breakfast. "Maybe there's still a rainbow on the other side of the flood, nu?"

Abbah chuckled, the sound soft and dry like pages turning. "*Halevai*," he murmured. "If only. Last time, He chose a remnant - a few shaky souls on a boat, surrounded by animals and silence - and promised never to drown us all again. But I sometimes wonder if we've tested even that vow. We've handed your generation not just the weight of history, but its unraveling. Disaster stacked on disaster, wrapped in plastic and denial."

Yochie picked at the corner of his toast. "Maybe," he said. "But we've also got tools they never dreamed of. AI, quantum computing... maybe we can steer through it. Build something better."

Abbah gave a slow nod, eyes half-lidded, as if peering through fog. "Like Noah," he

said. "If even a few of you can carry forward what matters - seeds, stories, the spark of knowing - then maybe there's still land waiting beyond the storm. But it'll take time. A long time. And the waters are rising fast."

Yochie leaned back, letting the chair tilt on two legs, arms crossed. "You always do this," he said, half smiling. "You drop these ancient metaphors like riddles, and then casually mention the apocalypse before breakfast."

Abbah laughed, full-throated now. "Ah, you caught me. But tell me - would you rather I give you lies and lullabies? Or the truth, as uncomfortable as it is?"

Yochie let the chair drop forward. "A little truth, a little mercy. Maybe with some jam." They both smiled, the silence that followed neither heavy nor light, just real.

After a moment, Yochie spoke again, quieter. "We're okay here though, right? This place. It feels... safe."

"For now, yes," Abbah said. "But safety is never permanent. As the climate shifts and systems strain, even places like this will be tested. When the cities drown and the forests burn, those who still have something will be the first to be overrun."

He reached for his tea, hands slower than they used to be. "We'll need arks, Yochanan. Not made of wood this time, but strong, hidden, adaptable. Sanctuaries that can last long enough for the flood to pass."

Yochie stared at the steam curling up from his cup. He didn't speak. Just nodded, chewing his lower lip, the gears of his mind turning behind dark, thoughtful eyes.

Abbah's voice softened. "You may not be a shipwright, but you were always meant to weather storms. You know how you got your name, don't you?"

"Yeah," Yochie said. "After Emmah's uncle - the one who escaped the Warsaw Ghetto and went back to get others out."

Abbah's eyes flicked toward the kitchen, where the kettle had just clicked off.

"Yes," he said. "But there's more to it."

Emmah stepped into the room, drawn by the sound of her name. She carried a cup of tea in both hands, steam rising in delicate ribbons. Her movements were light, unhurried, as if she'd been listening from the next room, waiting for the right moment to arrive. She settled into the chair between them without a word.

For a moment, she simply looked at her son. Her gaze lingered on his eyes—eyes so like hers, deep and unreadable – and a small smile touched the corners of her mouth. She wrapped her fingers more tightly around the ceramic cup, grounding herself, letting

the warmth soak into her hands.

Then she spoke, her voice quiet, low and even, as though the story had been living just behind her lips for years, waiting.

"You were always meant for something beyond yourself, Yochanan," she said, her voice richly accented with affection. "Even before you were born, I knew."

Yochie leaned forward, resting his elbows on the table, recognizing the tone of her voice. She took a slow sip of tea, then set the cup down gently. "When I was pregnant with you, I had dreams. Again and again, the same dream. I saw my uncle Yochanan standing in the streets of Warsaw, his breath coming out in white ghosts against the night air. It was the night before they sealed the ghetto, and he was looking at the walls—tall, thick, final. But he wasn't afraid. He was already thinking beyond them.

"He was a scholar of history, obsessed with our stories of survival. Yochanan Ben Zakai - he saw Jerusalem's fall coming, knew if he stayed, he'd die with it. So he found a way out, the only way left.

"The great leader Rabbi Yochanan did what no one expected. He had his brother place him in a coffin, pretending he was dead, and his students carried him out through the gates. The Romans, superstitious, refused to touch the dead. They let him pass.

"Our family had its great scholars as well, and my grandfather had been the head of the community in Lublin. Yochanan had gone to Warsaw to get a university education, but got another when he was recruited into the *Yiddishe Kampf*, a Jewish combat organization, and became a fighter in the Ghetto's Passover revolt. After ambushing some SS officers, and throwing a slew of Molotov cocktails, the ghetto began to lose ground. The tides were turning, and the bodies of resistance fighters began piling up. Jewish factions that had come together to fight began to turn against each other. As the uprising was being crushed from within and without, while others still debated what to do, he had already made a plan - he did as the Rabbi Yochanan had done before him. He made a crude coffin and laid in it, praying silently as his friends nailed it shut. They carried him through the gates as the Ghetto fell, towards the mass grave that was already dug. The guards let them pass, as there were so many dead to drag out before they began to decay.

Emmah's eyes began to water. Tears slowly formed and fell into her cup.. "But in my dream, it was more. I felt his fear - not of dying, but of being buried in a mass grave, of disappearing without a name. And then, I saw him lift the lid of the coffin, gasping in the cold night air beyond the walls. But unlike Ben Zakai, who went to meet with the emperor, he ran, Yochie. He ran through forests and frozen fields, until finally, he reached a place where he could find others from the *Yiddeshe Kampf* resistance. He

shaved, obtained false papers, and began going back to Poland to pull out others from the camps."

Yochie swallowed. He had always known fragments of this story, but never like this, never as something alive, something his mother carried in her bones. She exhaled softly and placed a hand over his, feeling again the presence of the child she once carried.

"But in my dream, he wasn't just running. He wasn't just escaping. He was reaching for something, someone. He would turn, always at the same moment, and look right at me. And then he would place his hand here." She lifted her hand and pressed the palm flat against her stomach, as if she could still feel the weight of it, all these years later. "As if he was passing something on."

She looked up then, meeting Yochie's gaze with an intensity that made his chest ache. "I don't know what it means, but I know this: You were born with something ancient inside you. A kind of knowing, a kind of searching. You come from a line of those who find the cracks in walls, the way out when none seems possible."

The weight of his mother's words sat heavy in Yochie's chest, a stone sinking deeper into waters he wasn't sure he wanted to wade into. He drummed his fingers against the table, watching the rings of light ripple in the cup of tea at his elbow. The tale of his namesake - the escape, the coffin, the flight through frozen fields - had been just that, a story turned into a dream. No more real than his imagination.

He needed space. He let out a slow breath, pushing back his chair with a scrape that sounded too sharp in the hush after their conversation.

"I'm not anyone's savior, some sort of messiah," he muttered, more to himself than to his parents.

It was all too much, pressing on Yochie's mind. He grabbed his coat and stepped outside. Something passed down. A name, a story. He exhaled sharply, shaking it off. No grand plan. No fate. Just atoms and accidents.

He turned down a quieter street, where the trees arched overhead, dappling the sidewalk in shifting patterns of light. A squirrel darted across his path, neither red or brown or black, but almost a glowing copper color.

He rubbed his temples, squeezing his eyes shut for a moment. He hadn't slept well. Maybe that was all this was - a product of exhaustion, of the creeping anxiety that had been gnawing at the edges of his mind since he had left school with friends and began diving deeper into studies with his father.

But then something... tilted.

Not in a way that could be named, not in a way that could be measured. It was just - a sense. The trees looked the same. The houses were the same. But something in the air, in the very fabric of the space around him, felt fractionally off, like a song played off key.

He blinked. The space around him stretched, compressed, then settled back into place. His skin prickled. He felt lighter, as if he was floating. The air around him felt thick, like something resisting movement just enough to allow him to walk above the ground, to move up and down as easily as back and forth.

A passing car rolled by, but its sound was muffled, distorted, as though it had traveled across a great distance before reaching his ears. He turned his head, tracking its movement, and for the briefest moment—so brief he could have convinced himself it didn't happen—the car's headlights left a trail, a smear of illumination stretching just half a second behind where they should have been.

He stopped walking. Stood still. Listened.

The world breathed around him. Not in the way that wind rustles through trees, not in the way lungs expand and contract, but in a deeper, more fundamental way—like space itself was inhaling and exhaling, stretching and collapsing.

He closed his eyes, took a steady breath.

And just like that, it was gone.

The sounds returned to normal. His footsteps made sound again. The light hit the pavement in clean, predictable angles. His feet felt firm on the ground, the air light and clear.

A trick of the mind, he told himself, a daydream. Nothing more.

And yet, as he resumed walking, a thought nagged at the edges of his mind, refusing to be reasoned away.

What if the cosmos could really shift, from one universe to another? If this universe was truly formed by the big bang, in a sense a grand cosmic exhale, is it not logical that this reality is most likely only one of infinitely-many possibilities? What if reality was just one breath in an endless exhale of worlds? Perhaps there was a way to connect, to learn how to navigate between them from one breath to the next.

Outside their small haven of structured thought and ritual, the civilized world crumbled like a melting glacier, the impact of change compressing the institutions that held up society for generations, and occasional cleaving in collapses from the weight it could no longer support.

The economy had collapsed like a soldier taken down by friendly fire, and abandoned on the field to bleed out. The first attack had come silently - a cyberattack, vast and systemic, stealing billions before anyone even knew it had happened. The President pointed fingers, but no one was able to find the facts, nor had any faith left in the government to stop the flood that followed. The stock tickers spun into oblivion. Within weeks, the thin line between order and chaos had dissolved. People woke to worthless retirement accounts as the economy disintegrated around them.

Then came the fires. The West burned with a fury that was biblical. Smoke choked the sky for months, blotting out the sun, turning everything a sickly, apocalyptic orange. Towns disappeared in sheets of flame. The air itself became a weapon, choking the life out of countless creatures. Entire regions became uninhabitable, pushing waves of refugees eastward, where the rising waters swallowed the coasts in return.

Storms, once seasonal, had become relentless. Hurricanes that blew past the categories of prior centuries tore through the south, their winds stripping cities to their bones, scattering the displaced into an ever-growing wave of desperation. The streets of inland metropolises swelled with makeshift encampments, tent cities sprawling in the shadow of corporate skyscrapers, where wealth had become less about money and more about sheer, brutal access - access to filtered clean air, to power grids that still functioned, to the dwindling reserves of untainted water.

And still, the collapse spread, rippling outward in waves, consuming the fragile balance that once held nations in check. The old powers, sensing opportunity in the fractures, abandoned pretense and lunged for control. China had swallowed Taiwan in a matter of days, its fleets pressing beyond the South China Sea, securing trade routes, mineral reserves, and the lifeblood of rare-earth metals that the world's machines depended on. Russia, undeterred by sanctions that no longer held meaning, crept deeper into Europe, not with sudden, blinding invasions, but with the slow, inexorable pressure of a glacier grinding away the edges of sovereignty - bribing, blackmailing, breaking alliances until resistance was a whisper in a forgotten tongue.

But it was the earth itself that delivered the final, indifferent judgment. The great currents of the Atlantic faltered and collapsed, their rhythms broken by the warming

of the poles. The weather unraveled. In some places, the sun became an executioner, turning once-thriving cities into dust-blown graveyards where the air shimmered like molten glass. Elsewhere, the rain came and never stopped, swallowing whole provinces in a slow, indifferent drowning. Crops withered under skies that no longer knew the meaning of seasons. Great rivers - the Amazon, the Ganges, the Nile - swelled and then ran dry, their rhythms shattering ecosystems beyond recognition. Other waters rose and washed away the lives of millions on islands and along bays across the globe. Famine swept the continents in uneven strokes, striking hardest where the ground had already been stripped bare by greed and war.

The world was burning, drowning, starving, breaking.

Yet despite all of it, the machines kept running.

Yochie watched from the window as the world turned, the engines of industry still grinding forward, indifferent to the collapse underneath its wheels. Drones still zipped by, shuttling goods to those who could afford them. Servers still whirred in the bunkers beneath the cities, humming with the ceaseless churn of algorithms that moved markets faster than human hands ever could.

He turned from the window, rubbing his temples, trying to shake off the unease that had seeped into his bones since Abbah's passing. It wasn't just the fires, the floods, the decay. It was something deeper. A sense that the world had slipped off its axis, that reality itself had begun to glitch, like a program running too many recursive loops, reaching the limits of its own logic.

At the kitchen table, his mother sat with her tea, watching him with the quiet patience she always had. She had seen this look on his face before.

"You remind me of your father," she said finally. "The way you carry it all."

Yochie swallowed. He didn't want to carry it. He just wanted to fix it.

Emmah tilted her head slightly, considering something, then raised her eyebrow in recalling a thought, "Oh—almost forgot. I had a video chat with François's father the other day."

Yochie glanced up, caught off guard. "You did?"

She nodded, lips curling into a small smile. "We got to talking - you know how he loves to ramble - and somewhere between a lecture on vineyard soil biodiversity and lamenting the state of French politics, he happened to mention that Frankie's been at U of M for over a year now." She took a sip of tea. "Nano-robotics, apparently."

Yochie blinked. "Frankie is here, in the States?"

It had been years, but at the mention of his *long-lost friend's* name, the memories resurfaced in full color—sun-warmed afternoons, the climbs up to limestone bluffs, savoring the soft apricots and crisp almonds as they speculated on physics and fate, secretly eavesdropping on the adults' endless conversations, trying to piece together the fragments of ideas just beyond their reach.

Emmah watched him, amusement flickering behind her steady gaze. "Maybe you should go," she said lightly, tapping a finger against her cup. "See if you two can still crack the universe open together."

Yochie exhaled a quiet laugh, shaking his head. Frankie. Of all people. It figured.

For years, he'd been trying to untangle the equations, the connections between numbers and history, between physics and faith. But there were still gaps, missing variables. Frankie had always been the one who could pull impossible ideas into the real world—turning theory into something that actually ticked, clicked, or hummed under human hands.

Maybe Michigan was where he needed to be.

Chapter 2

Semois Valley, Belgium

The valley woke slowly, wrapped in its cloak of mist, as if reluctant to let the sun steal its secrets as early summer mornings retreated into fall. Down by the curve of the Semois, the damp, rich earth shared its essence with the vegetable patches and tobacco fields along its banks. As the sun arose early over the mountains, golden light dappled along the river's fog in an on-off pattern every few meters, shining through the slender oaks planted in even rows, a carefully managed strand of trees planted and replanted by generations of the Jacobs family. The farmhouse, built from timbers harvested many years ago, stirred to life as the chimney released a thin strand of smoke into the cool morning air, a quiet signal that the day had begun.

Inside, the kitchen was warm already, alive with the small fire in the hearth, the smell and scratching of knives spreading butter and jam over freshly toasted bread Sophie, the Oma of the family, and François' grandmother, had baked the day before. Breakfast was quick: toast, a few hunks of cheese, apples from their orchard, butter and some cherry jam made by great-ma, Bomma Sylvie. Oppa Phillippe, the patriarch of the Jacobs family, sat at the long wooden table, nursing his chicory coffee, its earthy bitterness balancing with the sweetness of the cherry preserves and butter. He was a man of deliberate movements, unrushed but never idle, his broad hands deeply lined from handling plowshares and watchmakers' tools.

Oma, her chestnut colored hair streaked with white flecks and pulled back in a handkerchief, was lean and still as quick as a sparrow. She darted between the stove and the table, her sharp eyes catching everything—her eldest grand-daughter Elise smoothing her apron, little Jeanne swinging her legs beneath the bench, and François sharpening a blade with a river stone by the hearth.

"Elise, did you strain the milk proper?" she asked, not looking up from the cutting board where she was prepping potatoes, beans and vegetables for the hearty soup that they would have later for lunch.

"Oui, Maman," Elise said, her voice steady. At sixteen, she was already a capable young woman, with the same clever hands and brisk way as her Oma. She set the large steel milk bucket down with a confidence that made Philippe gently grunt in approval.

"Good Spazi," he muttered his term of endearment for his eldest grand-daughter. "You'll bring this bucket over to the dairy?" She nodded.

At a little table encircled by little wooden dowels, Bomma Sylvie danced the dowels back and forth in intricately choreographed swings, courtesies and pass throughs. Her fingers wove linen threads, some coated in gold or silver, to create lace patterns that would dazzle in the morning light. Little Jeanne was enchanted, as was Francois, twelve and wiry as a willow, even if he tried to avoid showing it by keeping his hands occupied passing his sharpening stone back and forth across an old scythe blade, honing the edge for the day's work.

"How can you see what it will look like, Bomma?" asked Jeanne.

"When you've been doing it as long as I have, your hands know all on their own. I can see it in my mind and let my hands guide the way." Bomma replied softly to her youngest granddaughter. She could weave lace and stories together, sharing them with her sisters, sons and grandchildren, in a web of pasts and places and people that was as clear in her mind as a map.

"Can you see if we'll get to be with Pappa again? I miss him" Jeanne asked with a plea."

"*Mon chouchou*, I can tell you the past, and I can teach you how to be in the moment. But even I can't tell you the future. What I can tell you is that your Pappa loves you very much, and he calls you every morning, *mais oui?*"

"Yes, but he only gets to come here once a month, and it's so so so far to go visit him. I miss him."

"I know, and he misses you too. But he has important work to do down in France at Le CERN, exploring the ways our universe is woven together, like these strings."

Francois and Elise were quietly engaging their hands in their tasks, silently reflecting on how much they also missed their mother, who had died a few days after giving birth to Jeanne, almost four years ago. They had moved out to stay with their grandparents in the country-side in Belgium while Pappa, Bernard, helped build the world's largest supercollider beneath the mountains on the French-Swiss border. Their mother's death was a sudden shock, a loss they still were struggling to grasp, but the daily rituals of the farm were healing, grounding. Pappa felt strongly that the education they got here with their grandparents was greater than anything they could imagine, and the time together was far fuller than Pappa could manage with his work. But he promised that they would come down to visit, and they did.

After a few minutes, little Jeanne, fidgety as a bird, began sorting tiny wheels and gears in the little cubbies of their deep drawers of parts.

"Six, seven, eight," she murmured, her lips moving as she sorted the various gears.. Sophie passed by and tugged gently at her curls.

"Mon chouchou," she said. "A clockmaker starts with organizing, doesn't she? Soon enough, you'll be making those fit into the movements."

François's head was bent, but his thoughts weren't on farming or on his grandmother's weaving. "Oppa," he asked, his voice low and wondering, "is today for harvesting or tinkering?"

"Both," Philippe replied, setting down his mug with a heavy thud. "The dew's light, so we'll harvest early. Don't forget to wear the gloves. Later this afternoon you can help me with the Omega Speedmaster that needs its balance wheel reset before the post comes, mon fils."

François nodded, though the firelight caught a flicker of disappointment in his eyes. While he appreciated the way farming by hand would develop his arms and shoulders to be broad and strong like his grandfathers', he liked the clockmaking better—the delicate precision, the assembly of parts finding balance and smoothly ticking along. Both kept his mind from wandering too long on his parents.

Farming was their way to stay in nature's rhythm, steady and sure, and a source of steady income as well as and a bit of pride for producing some of the finest pipe tobacco in Belgium. Meme's lace work was beautiful and stunning, but a somewhat outdated craft in his opinion. The clocks, though—those were his family's greatest masterpieces - complex yet elegant jeweled mechanisms of all sizes that measured time in motion, beautifully moving in a multitude of ways moment by moment to bring order to their days. But it was not yet winter, when the family would hunker down and focus assembling the gears and gems into bejeweled timepieces. There was still much to be done in the fields before they could shift their focus to machinery that was always spinning in François's mind.

Philippe pulled on his boots and headed out the door. François followed, his blond hair glowing in the morning sun, a harvesting knife sheathed at his hip. The two of them strode toward the shed, their steps keeping a steady pace like the tick of a clock.

Thoiry, France

Yochie and François had been friends since they were babies, their bond forged in the quiet inevitability of family ties. Their parents, bound by old friendship, grew even closer after their sons were born only hours apart—François just before the stroke of midnight, Yochie at

dawn the following day. After François's mother tragically passed away not long after giving birth to his younger sister, his childhood was spent mostly in the care of his grandparents in Belgium. Yet every summer, without fail, the two families found their way back together. The highlight was always the visits to François's father's home near Thoiry, where time seemed to move in its own rhythm, dictated by the long summer days and the majestic silhouette of the Alps.

The house, modest and warm, stood at the edge of town, its backyard sloping into a sunlit orchard. Pear, cherry, and apricot trees reached toward the sky, their fruit heavy and fragrant in the peak of summer. Old vines clung stubbornly to the hillside, bearing grapes that would be pressed into inky red wine, stored in petite barrels that lined the cellar. The air carried the mingling scents of ripening fruit, fresh mountain breezes, and, faintly, the mineral sharpness of limestone.

Yochie loved those afternoons at the long wooden table beneath the sprawling branches of a cherry tree, its canopy dappling the ground with sunlight. The adults would linger for hours, savoring their cheeses and wine, their laughter rising in bursts against the faint hum of insects. François's father, a famed engineer who spent his days deep underground in the tunnels at CERN, seemed lighter here, his usual intensity softened by the companionship of old friends.

For Yochie and François, the allure of the orchard and the Alps beyond proved irresistible. They would gather provisions—dried apricots fresh with the summer sun, firm pears still cool from the shade, and almonds, all wrapped in a scrap of cloth—and set off on what they called their “mountaineering expeditions.”

The limestone bluff wasn't far, but to them, it was a realm of infinite possibility. The climb left their palms dusty and their breath quickened. When they reached the ledge, they'd sit side by side, legs dangling over the edge, looking out at the valley below. The air up there smelled of wild herbs crushed beneath their sneakers and carried a hint of ozone that made their every hair feel alive.

They'd snack on their provisions, the sweetness of the apricots mingling with the nutty bite of almonds, and talk of impossibilities. François, even then, had a knack for seeing the world through gears and mechanisms, imagining the particles of the valley smashing together like clockwork. Yochie, more attuned to the ethereal, would spin tales of universes unfolding in the collisions, dimensions so small they could only be felt as whispers in the wind.

The hours would drift by like clouds over the Alps, the sunlight growing golden as it spilled over the peaks. When the cool shadows began to lengthen, the boys would make their way back down, wide-eyed and dirt-streaked, ready to return to the world of parents and summer evenings. Yet, as they walked, the magic of their imaginings lingered, woven into the rhythm of their steps and the friendship that bound them.

The laboratory hummed with the sterile efficiency of a place devoted to the future. Rows of equipment stood like silent sentinels, blinking with tiny lights and exhaling faint, rhythmic clicks. At its heart was a clean space section encased in glass, a world within a world. Inside, Frankie worked at his bench - a relic, incongruous amidst the sleek modernity. The polished wood gleamed under the clinical white lights, its drawers brimming with tiny brass tools and components that seemed more suited to an 18th-century clockmaker than a quantum computer engineer. Frankie's hands moved with the precision of generations, assembling something nearly imperceptible to the naked eye beneath a high-powered lens.

Outside the glass, Yochie hesitated, his reflection a ghostly double against the transparent barrier. The young man adjusted the strap of his satchel, dark eyes scanning the room with a mix of nostalgia and wonder. He had seen "Frankie" last as a wiry teenager, at the table in his father's backyard under the cherry tree, debating the mechanics of a broken pocket watch. Now, years later, the memory felt clear but far, far removed from this pristine lab filled with the hum of quantum processors.

Yochie tapped the access panel lightly, triggering a soft chime. Frankie didn't look up immediately. Instead, he finished a minute adjustment, the tiny tool in his hand twisting like a conductor's baton. Then he turned, his hazel eyes sharp and curious, before recognition softened his expression.

"'Yochie,'" Frankie said, standing and pulling off his gloves. His voice carried across the intercom system with the same gravelly warmth Yochie remembered. "*Oh la vache!* How long's it been? Five years?"

Yochie smiled, sheepish but warm. "Closer to six," he replied, his Hebrew-accented English crisp as ever. "I heard you were working here, and I... well, I thought it was time to reconnect."

Frankie pushed open the glass door, stepping out of the clean room in his white clear room gown and booties. "Reconnect? I appreciate that. I owe you more than an apology for falling off the face of the earth. I've been a hermit, sitting here at this desk trying to focus on the nanoscale so much that I've lost touch with the bigger picture... But you've picked a fine time—I've got a quantum-state actuator that refuses to cooperate." His eyes narrowed with sudden realization. "Wait—you're in the PhD program now? Mateo mentioned something about a prodigy joining the quantum computing group."

"Accepted last month," Yochie confirmed with a humble shrug. "I think Dr. Mateo saw something in the way I tackled problems, and was able to get the admissions committee to take a chance on my homeschooled transcripts after they saw my hackathon wins."

Frankie whistled low. "At eighteen? Quite the accomplishment for someone who never set foot on campus. Glad you're catching up! I'm slogging through post-doctoral research like an old man." He grinned. "You should come in. Let's explore what's new. But first, you'll need to clean up. There's a sink over in the corner, and gowns, caps and all that just behind the partition."

Yochie scrubbed and suited up, and entered the fabrication lab, the faint scent of metal and ozone filling his senses. His eyes darted to the bench, where Frankie's current project lay—a lattice of infinitesimal components that seemed impossibly intricate, even by the standards of Frankie's brilliance.

"Still working with your hands, I see," Yochie said, his tone half-admiring, half-teasing.

Frankie chuckled. "Some things don't change. Though I'd like to think I've upgraded a bit. This old bench? It's the same one we used to tinker on from my grandpa." They sighed, smiling at the memories for just a moment. Yochie's smile widened, and he ran a hand over the smooth wood, tracing its familiar grain. "It's a wonder you kept it," he said softly. Then, looking up at Frankie, he added, "I guess that's what I've always admired about you. You're anchored in the past, but somehow you've turned it into your edge."

Frankie tilted his head, his hair now darker but still with a hint of golden blonde under the bright lamp light, his hazel eyes narrowing thoughtfully. "And you? Still chasing the edges of the universe?"

"Something like that," Yochie replied, his voice firmer now. "But I think there's more to discover when you step back from the abstractions and see where the real work happens. The boundary between the quantum world and the classical—it's not a wall. It's... porous. And I think we used to talk about that, didn't we?"

Frankie nodded slowly, a smile creeping back onto his face. "We did. You've always been the big-picture guy, Yochie. So, what do you say? Want to see if we can still make some magic happen?"

Yochie hesitated only a moment before extending his hand. "Let's do it. Just like old times."

Their handshake was brief but electric, and the years melted away as the two old friends leaned over the bench, their shared curiosity and unspoken history merging into a newfound collaboration.

Under the bright white light of his workstation, Frankie leaned over the tray of gold flecks, each glinting like tiny stars scattered across a night sky. Beside them, microprocessors gleamed under the glare of the lamp, their delicate circuits etched with a precise pattern that repeated in fractal recursion. Frankie picked up a gold fleck with a pair of tweezers so fine they seemed more suited to a surgeon than an engineer. "I'm working on encrypting these nano-transmitters to the signal collection processor," Frankie began, his voice steady but tinged with frustration. "But keeping their signals unique is causing interference patterns that overload the processor. Every time I try to go beyond a few transmitters, the signals cross. Then, boom—the processor overloads and the whole system trips." He set the fleck down carefully, as if it might shatter under the weight of his disappointment.

Yochie stood just beyond the edge of the workspace, his arms crossed, head tilted slightly as he listened. His face was a map of thought, his dark eyes flicking from the gold flecks to the processors, his brow shifting in time with the slow nod of his head. It was a gesture Frankie remembered well, one Yochie's father used when grappling with a particularly thorny problem.

"Depends on how deep we want to go. For a simple thought, perhaps 10-12 transmitters will suffice, but to delve into more complex memories and reasoning, a few hundred at least, maybe more like a few thousand."

"Thoughts and memories?" Yochie inflected his tone just slightly to not show how stunning a project Frankie was implying. "So these are not just nano-transmitters, these are neural-implants?"

"Oui, I'm not sure yet how to stably situate these little bits of gold into the brain, but once they are in place, they can send and receive electro-magnetic waves to allow for full interaction between mind and machine - assuming we don't cross signals and keep tripping our circuits." He gestured at the processors with his tweezers, their intricate designs promising possibilities just out of reach. "Signal amplification, filtering, interference, security... all solvable complications, but one step at a time."

Yochie thought for a long moment, closing his eyes with his first finger curled around his stubbled chin. “What algorithm are you using for encryption?”

“Crystal-S Kyber, it’s the most efficient I’ve found so far.”

Yochie straightened, his eyes opening wide, and a smile slowly rising at the corners of his cheeks. “I think the issue may be in the entanglement of signals. We think of the firing of neurons as classical EM events, a cascading signal from a point trigger. But the thoughts are more quantum in nature than classical, and there may be entanglement issues that are showing up in encryption and then cascading failures further on. The lattice structures in Crystal-S are too rigid to account for the interactive vibrations in the collapsing waveforms.”

Frankie leaned back in his chair, his fingers steepled as Yochie continued.

“We might need a new higher-dimensional math framework to allow for improved harmonization of the waves as the first step in encryption. Something more adaptive, like SPHINCS+, but stripped down and made more efficient. It could preserve larger input coherence while maintaining signal security.” Yochie hesitated, then shrugged. “It won’t be easy, but it might work.””

For a moment, the lab was quiet, the hum of equipment filling the space like a distant tide. Francios smiled as he leaned back in his chair, looking up in the corner of his mind to process Yochie’s suggestion. “I knew you’d come here Yochi, despite the other offers. The mechanical and mathematical combo brought me here as well. I’m glad you found me, I needed you, *mon ami*.”

“Thank my mother, she was the one who wrote to tell me where I could find you. Remember when our parents used to get together for collaborations? She always thought the world of you. As I was thinking where to go next, she told me that you were here too, working away in a lab on North Campus.”

“*Emmah*?! Oh, I miss her. She always melted me with her soups and stories. And her *challah*! Tell me she still makes *challah*!”

“She does,” Yochie confirmed, smiling. “We’ll go see her for Shabbat sometime soon. But first—” he gestured to the gold flecks and microprocessors—“we’ve got work to do.”

The days turned into evenings, and the evenings stretched into nights where the dim light of the shaded lamp became their sun. The room pulsed with quiet intensity, the sound of

tweezers clicking, gears whirring, and occasional murmured equations filling the air. Frankie and Yochie worked in opposite corners, Frankie at his workbench behind glass while Yochie moved in front of his virtual reality-augmented workspace outside the clean room, as their distinct worlds of expertise converged into a shared rhythm. Frankie's hands moved with the intuitive precision of generations of watchmakers behind him, while Yochie, less practiced but no less focused, brought an exacting sharpness honed by years of theoretical rigor and hacking marathons to writing code that could explore the quantum possibilities woven into existence.

Their meals were simple - olives, nuts and dried apricots, crackers, tinned fish, pasta and beans, along with endless cups of black tea, shared at a tiny table in the student lounge down the hall from the lab. While some of the others in the lab pushed through on protein drinks and bars, Fraknie and Yochie made cooking on the induction burner in the galley kitchen a part of each day, marking a small space between their work and their meals.

Frankie would talk of the subtle balance and tension needed to harness the resonance of each element, like the gemstones in the clocks he loved making, his voice tinged with pride as he recounted the craftsmanship of his forebears. Yochie would counter with ancient stories of the great sages of Israel and Babylon, mixed with anecdotes about the elegance of wavefunction collapse, shaping his sentences with gestures of his hands. They then would clean up, and head back to the lab to fabricate new designs.

One evening, as they passed a battered notebook back and forth, sketching ideas for a project neither could define but both felt drawn to, Yochie looked up. "The boundary," he began, his voice low but steady, "between quantum mechanics and classical mechanics—it's not a line, is it? It's more like... a spectrum."

Frankie raised an eyebrow, his fingers tracing the edge of a tiny gear. "A spectrum, maybe. But the way I see it, the transition isn't just physics. It's philosophy. Classical mechanics is certainty, balance. Quantum is chaos, potential. My work—it's about finding the balance for communication in the chaos."

Yochie leaned forward, his dark eyes gleaming with intensity. "And mine," he said, "is about embracing the chaos to find new possibilities. We're both building bridges, Frankie. Just... from opposite directions."

The room fell silent for a moment, save for the faint ticking of an antique clock on a high shelf. Frankie smiled, a rare softness in his expression. "You might be onto something there, Yochie."

From then on, the lab became not just a workspace but a meeting ground for two minds intent on redefining boundaries. Frankie's sketches grew bolder, infused with the originality of Yochie's quantum-inspired insights, while Yochie's theories took on a practical clarity under Frankie's watchful eye. Together, they created designs that danced on the edge of possibility—microscopic machines powered by principles neither could fully explain but both instinctively understood.

While they occasionally fell down the rabbit hole of research, and from time to time fell asleep on the couches in their lab, Yochie and Frankie had a shared philosophy about the balance of body and mind. Others fell into the trap of endless, obsessive work, but they made it a point to step away, to breathe, to move, to ground themselves in the physical world. It wasn't just about staying sharp for their studies; it was about survival in an environment that seemed intent on testing every limit.

Around them, however, the campus seemed to pulse to an entirely different beat. The nights stretched on endlessly in the dormitories and labs, where students worked under harsh fluorescent lights, their bodies bent over laptops and textbooks. For many, time lost its meaning, swallowed by a haze of stimulants and desperation. The bio-science students, in particular, treated their brains like chemical labs, swallowing pill after pill. Stimulants to keep them awake, mood stabilizers to keep them focused, and anti-anxiety meds to smooth out the jagged edges. Some claimed they had engineered the perfect cocktail to optimize their performance, but Yochie often saw something else — students jittering uncontrollably, pupils dilated and hands shaking, their overclocked consciousness spilling over into chaos. Yochie wondered if it was the grinding monotony of memorizing endless pathways and processes, a Sisyphean task that seemed to demand shortcuts. Whatever the reason, the culture spiraled into excess. The nights often ended in wild, sloppy drinking, the sharp scent of vodka mixing with the bitterness of energy drinks and bile. It was only semi-unusual to see someone passed out in the corner of the common room, their breath shallow and face pale, as others stepped over them without a second glance.

Yochie found it all disturbing. Frankie shared his unease, though he expressed it with multilayered mutterings of "*Bordel de merde*", under his breath. Together, they observed the chaos like scientists studying a failing experiment. To step back and take a break they smoked the occasional joint, and they twice took psychedelic mushrooms — controlled

doses, in carefully chosen settings, more to expand their minds than to escape. But the rampant use of pills felt different, darker.

By the end of fall semester, the toll was undeniable. At least a few dozen overdoses rippled through the campus like aftershocks from a quake, though the official number was suspiciously vague. The university worked quickly to scrub any association with their name, erasing traces of the incidents as if they had never happened. The silence was a void that the students filled with whispered rumors and nervous twitches.

For Yochie, the most unsettling part was the emptiness he saw in those who had been at it the longest. The kids who'd started experimenting years ago, pushing their doses higher and higher, seemed like shells of themselves. Their eyes were glassy, their voices flat, their movements mechanical. They walked through campus like zombies, always chasing the next high but never finding satisfaction.

One evening, as Yochie and Frankie left the library, the acrid smell of burnt foil wafted through the quad. Yochie wrinkled his nose, glancing toward the shadowed corner where a cluster of students huddled, their silhouettes hunched and twitching. "It's like they're eating themselves alive," he murmured.

Frankie, his hands shoved deep in his coat pockets, gave a small, bitter laugh. "That's the thing about shortcuts," he said. "They cut more than just the time."

"We've got to stay sharp," Frankie said, his voice low but firm. Yochie nodded, gazing at the constellations above, their ancient light a reminder that some things were worth preserving, even in a world spinning out of control.

Chapter 3

“I love my friends

neither with my heart nor with my mind.

Just in case...

Heart might stop.

Mind can forget.

I love them with my soul.

Soul never stops or forgets.”

— Rumi

The following morning, as they were sipping tea and sketching out designs for a new actuator, Frankie’s phone buzzed on the workbench, the screen lighting up with a message. He glanced at it as he laid out his tools.

Leyna: Come for dinner? 7?

Frankie: Oui! With my friend Yochie?

Leyna: Obvs! *Jahet khalieh*, and I’d be sad if he didn’t come. Other friends coming too. See you soon!

Frankie smirked and tipped his phone toward Yochie, who looked up from his notebook with a raised brow. “Leyna’s hosting. You’re invited. Apparently, you’d be missed.”

“Leyna?” Yochie asked, the name lingering in his tone.

“You’ll like her,” Frankie said. “She’s not only a great cook, she’s a neuro-bio PhD, stunningly beautiful and smart but warm, with a knack for weaving ancient tales into the conversation. She calls it her ‘genetic pastime’, as she apparently comes from a long line of Persian storytellers.”

The air in Ann Arbor had turned crisp, a whisper of autumn biting through the last vestiges of summer. Leyna’s apartment sat on the top floor of an old brick building, its crimson door

draped with strings of golden lights that flickered like fireflies. Frankie knocked twice before it swung open.

Inside, the warm scent of toasted rice and cardamom mingled with the old building's timbers and the stacks and rows of books on shelves and in piles in the small but comfortable space. Persian rugs stretched across the wooden floor, and every surface seemed to hold something vibrant—a carved wooden box, a brass teapot, or a stack of books with titles in at least half a dozen languages.

Leyna greeted them at the door, her curls wild and her eyes bright. "Frankie! And you must be Yochie!" she exclaimed, drawing them both into a hug that smelled faintly of jasmine. "You're just in time; Nolan's already into his second beer talking about the Upper Peninsula, and Kamla's started debating him on the ethics of drone technology. Come, meet everyone."

The living room was a tableau of street gem furniture and souls from many corners of the globe. Nolan sat crouched cross-legged on a cushion, his face - a gentle melange of Asian and Anglo - animated as he gestured with a bottle of beer. "I'm telling you, the land up there - Keweenaw, right on the tip - it's untouched, mate. It's been a state park for ages, but the Interior Department is selling off what it can to keep the lights going in other parts of the state, you know. So I'm hoping to seal this deal before word gets out, and paid protestors make it up there to rile up the locals nearby. Thankfully the snow will start soon up there, and keep bloody busybodies out while I go up to map the lay of the land. You can feel the wilderness in your bones up there. And the old mines there still have untapped veins of copper, iron, and all sorts of rare earth metals that are prime for mining drones to process - it's like I've died and been buried in my dreams. I'm closing the deal next week, it'll be the start of a new beginning, something bloody brilliant..."

Frankie and Yochie circled over to the galley kitchen in the corner. Frankie went into the fridge, putting in a bottle of wine they brought, grabbed a couple of cans of beer, poured them into mason jars that were in the drying rack, and handed one to Yochie.

Kamla, perched on an armchair with her legs tucked beneath her, raised an eyebrow. Her dark hair framed a round, light sandy-brown face, with large eyes that were both stern and radiant, eyes that seemed to see through people's nonsense and with a kind face that forgave them for it. Dressed in a simple kurta, with golden hoops on her ears and around her wrists, Kamla exuded an understated elegance that belied her razor-sharp intellect. Her long hair was braided into a long black rope that slung over one shoulder as she leaned forward, "New beginnings?" she said, her voice laced with skepticism. "Actually there, you

might have a chance of escaping the floods, the heatwaves, and everything else the planet's throwing at us. To be frank, after the last heat wave hit Lucknow, I'd be happy to escape to some cold fresh U.P. winters, as long as you have drones that can shovel snow."

"You'd be most welcome there, my dearie - and yes I have drones for snow. Turns out microwave beams can be tuned to ablate it fairly efficiently." Nolan replied. "And it'd be nice to have you there too! Frankie boy, good to see you mate!" He reached up to clink beers with Frankie.

"Cheers," Frankie nodded, clinked glasses around the room and took a swallow before introducing Yochie. "This, my friends, is my long lost brother, *mon cher ami*, Yochie. He just joined me in the lab to solve all my programming problems. Plus he's a quantum wiz-kid.

"Yochi, let me introduce you to some of my very good friends." Frankie's hands moved as he spoke, his accent curling around the words like a ribbon. "First, the one and only Nolan—when he's not out in the wilds of Australia running his mining empire with a swarm of drones, you'll find him here, playing with the fancy toys in the robotics lab he funds. Then we have our brilliant Shani, who came here from Israel—though before that, Ethiopia—on a post-doc in cyber-defense. And Kamla—ah, Kamla—born and raised in Lucknow, once a programmer, now deep in the labyrinth of cognitive science for her PhD. A mind sharp as a blade, that one. And, of course, our most gracious host, the incomparable Leyna, without whom none of this fine evening would be possible."

"Nice to meet you all, don't let me interrupt ideas of new beginnings. It's been on my mind for too long. Curious to hear what others are thinking."

Shani smiled softly from her seat on the rug. She was slight, almost ethereal, with delicate features and skin that caught the lamplight like polished mahogany. Her hands moved gracefully over a sketchbook, where intricate patterns of gears and lines took shape. She glanced up, her quiet smile a reflection of her modest yet confident demeanor.

Leyna settled onto a cushion, her patterned turquoise chaqchur pants flowing rippled layers around her ankles. "First we need to eat, to fuel these beautiful brains and bodies." She raised her hands, an offering to Frankie and Nolan, sitting on either side, to link together in a circle that everyone joined after setting down their drinks.

"Bismillah. In the name of the One who gives life to the seed in the dark earth, who brings forth bread from the fire, and who fills our cups with sweetness. May this meal be a moment of peace and gratitude, a reminder that no table is truly full without the warmth of companionship. May our words tonight be kind, our hearts open, and our minds as

nourished as our bodies. May the food before us carry the blessings of those who grew it, those who prepared it, and those who share it," she intoned, the others bowing their heads.

"Amen" replied Yochie.

Leyna raised her head, smiled and nodded. "Eat!" she encouraged, gesturing to the spread on the low table: copper pots filled with spiced lentils with walnuts and pomegranate seeds, roasted vegetables glistening with olive oil, and her signature dish, a saffron scented pilaf encrusted with *tahdig*, a golden crunchy shell of rice.

"That's right, we need to take care of ourselves. This isn't just about saving our own arses though, it's about preserving civilization." Nolan continued, his voice infused with conviction. "We need a secure haven, a protected pod where we can protect the knowledge that we've developed and keep progress going. Otherwise, we'll fall back into dark ages, humanity eking out a miserable existence for centuries, suffering from plagues and pestilence. We can do better. We can save civilization from the storms that are brewing."

"Civilization? Whose civilization, 'the West' or 'East'? Neither seem to be doing a great job at preserving knowledge. But you know, even during the so-called 'dark ages,' knowledge still advanced," Leyna interjected, ever the storyteller, her voice carrying the weight of history, set the scene. "While Europe floundered, learning flourished elsewhere, such as in Asia and Mesopotamia, the great cities of Babylon and Persepolis, in the communities of learned scholars and storytellers amidst the courts of the Caliphs. We forget that civilizations do not just fall - they are unmade by forgetting." She leaned forward, her dark eyes reflecting the candlelight with sparks of intrigue. "It reminds me of the Tower of Babel," she began, her cadence shifting into the rhythm of reciting a tale passed down through generations.

"Its Sumerian name E-temen-an-ki means 'House of the foundation of heaven on earth.' They say mankind, in its hubris, built a tower to the heavens - not to worship, but to make themselves gods. But my grandmother told me a different version, one whispered through the bazaars of Shiraz, one older than even the Bible's passing mention. While it's not part of Persian lore per se, a good story gets passed around, and we Persians and Sumerians go way back. In this version, the tower was not only a symbol of arrogance but of desperation. The people knew, somehow, that a great catastrophe was coming again. What it would be, they didn't know - a flood, a fire, a wind strong enough to tear the world apart, threatening the very foundation of their existence, as had happened a few generations earlier in the story of the great flood. As it's told in the Bible, there was not just rain from above, but a rising of the waters from below as well, attempting to wash away the foundations of creation. And so they built upwards, not to reach heaven, but to escape what was below."

"But the problem was not the tower itself - it was their forgetting. In their scramble to survive, they forgot why they had built it in the first place. They no longer saw each other as kin but as rivals. Language was not given to divide them—it fractured because they had already stopped listening to each other. And so, when the catastrophe came, the tower stood, but no one remained to inhabit it. It became a relic of a civilization that could not save itself."

She sat back, letting the weight of the story settle over them.

"So, Nolan," she said finally, her voice softer, but no less powerful. "You can build your tower in the north. You can make it strong. But the question is—will the people within it still understand one another when the real catastrophe arrives? Or will they forget, turn against one another, as those in Babel did?"

Yochie listened as he ate, picking the last bits of nuts and tahdig from his plate. He set the plate down, leaned in slightly, and when the room fell quiet, he spoke. "We're working on something," he began, his voice steady. "A way to communicate with pure thought.

Neuro-transmitters, sending and receiving signals between minds and machines, and in theory, between minds as well. It's almost ready to alpha-test, and is still fairly crude, but if we can make it work..."

Shani's eyes lit up, setting her plate next to Yochie's. "Pure thinking," she echoed, her reedy Ethio-Israeli accented voice tinged with wonder. "No barriers. No hiding. Jusss... connection?"

Yochie, seated beside her, nodded thoughtfully. "It's not easy," he added, his tone measured. "There's noise, interference, risk. And figuring out how to filter and amplify the right signals will be key, as too much data could overload a sense of self. But the potential..."

Shani turned to him, her gaze searching. "I have spent my whole life hiding parts of myself," she said softly. "The idea of sharing who I truly am...wow, terrifying....and beautiful." A beat of silence passed, the kind that held more than words.

Leyna set down her glass, fingers lingering for a moment on the stem as she leaned in, eyes bright with curiosity. "So what exactly is this neuro-transmitter you're working on?"

Yochie inhaled, rolling his lips around in concentration before speaking. He reached for his phone, and pulled up a picture, an elongated oval with thin lines radiating outward, like an ancient sigil or a delicate spindle of light. "Gold nanorods. They're tiny, far smaller than a single neuron, and their biocompatibility makes them ideal for neural interfacing. More than that, they operate through localized surface plasmon resonance - basically, they can

manipulate light at a very small scale, translating optical signals into electrical ones. If we can integrate them properly, they could form a bridge between the neurons in our brain and external systems."

Kamla, who had been swirling the last of her wine in her glass, set it down with a decisive clink. "And by external systems, you mean... what, exactly?"

"Machines, to start," Yochie said simply. "Artificial intelligence, then potentially other minds. Perhaps even non-human consciousness, if we can decode and process their signals."

Kamla's eyes widened, her head tilted in considering new possibilities.

The candlelight flickered, its glow catching the gold in Leyna's delicate bracelet as she traced a slow circle on the rim of her plate. "A neural web..." she murmured. "A mind that is not just one, but many."

"And what about signal fidelity?" she continued, skeptical but intrigued. "How do you keep it from turning into pure noise? Brains aren't computers. No two are the same, even between us here, much less between species who use different senses. Not to mention, neurons fire chaotically, non-linearly. How do you make sure what's being transmitted is actually legible?"

Frankie, who had been listening with the quiet patience of a craftsman contemplating a blueprint, finally spoke, his voice thick with the lilt of his accented English. "It is not simple, even for just one human and one machine, and gets harder with more people, much less across different species," he said, shaking his head. He reached for a napkin, pulling a pen from his pocket and sketching a rough diagram, lines intersecting like arteries of a machine. "The first problem is in the synchronization. These little nanorods—they don't just sit there and behave nicely. They have to be aligned just right, at the perfect aspect ratio. Too short, they scatter light uselessly. Too long, and they lose coherence. And when we try to scale up the number of transmitters to something functional—pfft." He made an explosive gesture with his fingers. "The interference is enough to fry the whole system. Signals cross, and everything collapses."

Kamla frowned. "So it's an issue of control?"

Nolan frowned. "But if you're working with gold nanorods, couldn't you exploit localized surface plasmon resonance? Tune the signal frequencies so they don't overlap."

Frankie grinned, shaking his head. "Ah! Yes, in theory, we can tune them - but the moment you introduce multiple layers of cognition, things get messy. The mind is not an orderly

machine. Memory and thought do not move in straight lines." He sat back, exhaling. "It is like trying to repair a watch while it is still ticking, only the gears move around in all dimensions every time you touch them." Frankie's hands, moving wildly to show the complexity, came together low to the coffee table. "We are trying to whisper through a storm of noise. The brain is already a chaotic system—firing synapses, electrical fluctuations, molecular noise. We are adding another layer of complexity. Right now, the system can handle a handful of transmitters, but if we want full thought integration, we need hundreds, maybe thousands, working in harmony. And that..." He exhaled sharply, his hands waving a finale, "That is where we are stuck."

Leyna's lips curved into a slow, knowing smile. "Every great story has a moment where the hero is stuck."

Kamla, her fingers tracing absent-minded circles against the table, switched the conversation back to connections. "And what about perception? Thought itself is not purely electrical—it is layered in sensory input, in emotional context. If you connect two minds, will they truly understand one another? Or will it be like," she paused, searching for the right metaphor, "- dog whistles, unheard by some but piercingly painful for others tuned into the higher frequency?"

Yochie smiled. "That's the challenge. It's not just about transmitting data, it's about translating experience. Making the unfamiliar, familiar. Initially new signals might be painfully noisy until you're able to adjust. But then you'd learn to expand your mind, to see things in a new way you never imagined before."

Shani spoke, her voice low but steady. "And what happens to the self in all of this? We merge our minds with another - human, machine, dogs, whatever - what do we lose in return? Or do we become something greater?"

Yochie's brow rose in recognition, "I hope so... But I think it will be a challenge to remain rooted in a sense of self, it could be easy to get lost."

Frankie leaned forward, propping his elbows on the table, his fingers absently rolling a toothpick between them. "The first problem is stability," he said, eyes flicking between Nolan and Kamla. "You can get the gold nanorods past the blood-brain barrier, you can even get them to resonate with light and transmit signals - but keeping them aligned, keeping them from drifting or clumping together, that's another thing entirely."

Nolan swirled the last sip of his beer in his glass, watching it settle before tossing it back. "You need an anchor," he mused. "Back home, when we drilled in unstable soil, we'd use

thinned out mud to hold the mining bits in place. The same concept could apply here, yeah?"

Kamla, who had been sketching a lattice structure on the back of a napkin with the tip of her fingernail, nodded. "A neuro-safe gel," she said, more to herself than to the others.

"Something biocompatible, something that won't trigger an immune response but can still hold the rods in place and keep them properly oriented for optimal signal transmission."

Leyna raised a finger, her head tilted in thought. "A gel with a dynamic matrix, capable of adapting to the brain's natural movements. Maybe something lipid-based, similar to the myelin sheath around neurons."

Frankie smiled, seeing this group of friends bring their minds together. "Alright, say we can use this bio-gel to solve placement. And maybe with the right diffraction we can better utilize plasmon resonance to get the little nanorods to harmonize. That still leaves processing. We need GPUs that can handle the input, something that can filter out noise while keeping up with the sheer speed of thought."

Nolan laughed, shaking his head. "You're talking terabytes of data per second, mate. A single high-res EEG scan already generates an insane amount of information, and that's just surface-level. You start mapping deep cognition in real-time, you're gonna need a server farm the size of Ayers Rock."

Kamla arched an eyebrow. "Or, we refine the processing pipeline. Instead of raw data transfer, we compress it. Thoughts aren't like video feeds, they're layered, symbolic. If we can encode them efficiently—"

"—we can cut the noise," Frankie finished. "But even then, classic computing only takes us so far. The more minds we link, the more complex the processing requirements become. We're talking exponential scaling."

Yochie, who had been watching the interplay of ideas like a jazz musician enjoying hearing others riff off each other, finally spoke. His voice was steady, quiet, but it carried confidence. "That's where quantum computing comes in."

The air in the room shifted, as if some unseen force had pressed against it. The hum of the city outside, the clinking of glasses, the soft light of a candle's wick—it all seemed to come into focus for a moment, as if the room became the focal point of all of reality.

"Classic computing is like a river," Yochie continued, "flowing forward, processing one calculation after another, branching when necessary but always following a linear path. But

thoughts, real, complex thoughts, are not rivers. They are oceans. They are storms forming and dissolving all at once, both on the surface and deep below, a million different potentials collapsing into reality with each moment.”

Leyna, who had been idly tracing the rim of her wine glass, lifted her gaze, watching him with quiet intensity.

“Quantum computing,” Yochie went on, “isn’t just about speed, or even efficiency. It’s about possibilities. Each qubit isn’t just a zero or a one, it’s an entire range of probabilities existing at once. If we want to do more than just transmit thoughts, if we want to create spaces where ideas can merge, evolve, take on new shapes, then classical computation won’t be enough. We need a cloud not of storage, but of potential, where each droplet is a world unto itself, a universe of ideas waiting to be explored.”

Yochie’s words settled over the table like a ripple in still water, a pause before the waves formed. The hum of the city outside, the faint clatter of cutlery, the flicker of candlelight - it all seemed distant, secondary to the ideas unfolding between them.

Nolan leaned back in his chair, exhaling sharply. “Bloody hell, mate. You’re not just building a network. You’re talking about a whole new kind of computing.”

Kamla tapped her fingers against her wine glass, the rhythmic pattern betraying the speed at which her mind was racing. “A quantum cloud,” she murmured, rolling the words over as if tasting them. “Not just raw processing, not just linking thoughts, but something... fluid. Something alive.”

Leyna watched Yochie carefully, her dark eyes gleaming with something between curiosity and reverence. “Explain,” she urged, her voice softer now, as if she knew they were stepping into something immense, a whole new world.

Yochie took a slow breath, his fingers tapping together as the ideas formed in his mind. “Classical computing forces information into a rigid structure - one bit, one operation, one pathway at a time. Even the fastest supercomputers are still just extremely sophisticated versions of an abacus running in massive parallel. But the mind... the mind doesn’t work that way.” He looked up, eyes scanning the faces around the table. “Thoughts don’t move in straight lines, they aren’t linear or even stable one moment to the next. They exist as possibilities, potentials, constantly shifting from one idea to another based on context, association, emotion.”

Frankie nodded, his hands moving as if trying to build something on the spot. "That's why classical networks can't keep up," he added. "They're trying to force organic thought into a structure it wasn't meant for. Like... like fitting ocean waves into a box."

"Exactly," Yochie said, his voice gaining momentum. "Quantum computing allows us to hold multiple possibilities at once. A qubit isn't just a zero or a one, it's an entire spectrum of states. If we want to do more than just transmit thoughts, if we want to create spaces where ideas can merge, evolve, take on new shapes, then classical computation isn't enough. We need something that mimics the way reality itself unfolds. And reality is quantum in nature."

Kamla, ever the pragmatist, leaned in, eyes narrowed. "So what does that look like? In practice?"

Yochie's fingers drummed once on the table before he spoke. "Imagine a quantum cloud, where the experience of every person, every intelligence - human, artificial, even animals and emergent minds we haven't yet imagined - exists as a droplet in an ever-shifting cloud, one moment the face of an old woman, the next moment a rabbit forms - the cloud is constantly reshaping itself based on the winds and the dynamic forces of the particles within. Each droplet retains its own identity, its own structure, but it's also connected to the whole. Tapped into this cloud, we could dive into any of these droplets, exploring the world from a new perspective. It could be a virtual sandbox, or a bubble-verse of other realities being held in superposition in the cloud. But it's not so simple. When two minds interact, they don't just exchange data like a traditional network. They shape each other. They merge, separate, reform, carrying traces of every interaction forward. The droplets bind and can take hold of the cloud, turning it to storms or shade or gentle rains."

Shani, who had been quiet, tilted her head, shaping droplets with her hands. "So you're saying... every encounter would change the cloud itself?"

"Yes," Yochie said, meeting her gaze. "In the same way that a conversation changes the people having it. Imagine stepping into a thought. Not just a message, not just words, but a space, an actual mental environment where ideas take form, where emotions have shape, where concepts can be experienced rather than just described. And that space doesn't disappear when you leave. It persists, it grows. It becomes part of the larger whole."

Leyna let out a slow breath. "A digital Tower of Babel," she murmured.

Yochie shook his head. "The opposite. The Tower of Babel collapsed because people were forced apart, made to speak different languages, to misunderstand each other. This would

be the undoing of that curse. A place where understanding isn't just possible - it's inevitable. Where knowledge isn't just stored, but alive, breathing, shifting with every new mind that touches it."

Nolan whistled low, running a hand through his hair. "And how the hell do you build something like that?"

Frankie grinned, the spark of a challenge lighting up his face. "Ah, *mon ami*, now that's the fun part."

Kamla exhaled through her nose, shaking her head. "You'd need a quantum infrastructure unlike anything that exists today. Something beyond even the most advanced superconducting qubits."

"Alrighty," Nolan said, setting down his glass, his smile fading into the serious face of an experienced executive. "Let's talk logistics. If we're actually going to build this, we need to define the architecture. What kind of quantum infrastructure are we talking about? Because right now, even the best superconducting qubit systems are fragile as hell and require dilution refrigerators colder than deep space just to function."

Yochie leaned forward. "You're right. Superconducting qubits are too unstable, too energy-intensive. What we need is something scalable, something that doesn't require a cryogenic warehouse to function. That's why I'm thinking about photonic quantum computing."

Nolan whistled. "Using entangled photons? That's ambitious."

Yochie nodded. "Light-based qubits have major advantages. They're room-temperature operable, they don't decohere as quickly as superconducting qubits, and they can be transmitted through optical fiber without significant loss. We could build a decentralized quantum network with distributed nodes—each a processing hub capable of handling and routing qubits between users."

Kamla, her mind already assembling the pieces, tapped her fingers against the table. "Alright, let's say we go with photonic qubits. How do we integrate that with the brain-computer interfaces or BCIs? Because classical neural networks don't process information the way quantum circuits do. A human mind doesn't operate in discrete logic gates - it's messy, analog, associative."

"That's where quantum reservoir computing comes in," Yochie said. His voice was steady, his mind already racing ahead. "Instead of trying to force the brain's data into classical

formats, we use a quantum reservoir - a highly entangled quantum state that acts as a dynamic space for processing neural activity. The gold nanorods in the brain act as both transceivers and waveguides, channeling light signals into the quantum network. Neural signals are converted into photonic pulses, which interact with the quantum reservoir, forming emergent patterns of cognition within the cloud.”

Leyna, enraptured, slowly shook her head. “So it wouldn’t just be an interface. It would be a living, evolving computational space.”

“Exactly,” Yochie confirmed. “Each person connected to the cloud contributes to its complexity. Thoughts don’t just move back and forth like data packets - they exist within a quantum superposition, where every interaction influences the entire system. It’s like ripples on a pond, except instead of just surface waves, each ripple folds into higher-dimensional structures of meaning.”

Shani, who had been quietly absorbing all of this, let out a breath. *“Dye kvar, that’s...a bit too much. You’re talking plugging our minds into a quantum computing soup, and somehow this soup will make sense of everything?”*

Frankie chuckled, his French accent thickening as he grew more animated. “Not soup, *ma chère*. More like a beautiful piece of lace. A quantum fabric woven from the interaction of minds, artificial intelligence, and the laws of physics themselves.” He turned to Yochie. “But let’s be realistic. You need fault-tolerant qubits. No matter how elegant the concept, if we can’t correct errors, this whole system collapses.”

Yochie nodded. “We’d need topological qubits—qubits that resist errors at a fundamental level. Majorana fermions could be the solution - exotic quasiparticles that are their own antiparticles, meaning they can store quantum information in a way that’s inherently protected from local disturbances. Unlike standard qubits, which are fragile and prone to decoherence, these states are encoded non-locally, making them far more robust.”

Kamla raised an eyebrow. “Sounds great in theory. But last I checked, nobody’s gotten them working at scale.”

Yochie chuckled. “Not yet. But we don’t have to wait for a solution from big tech. We can develop hybrid quantum-classical error correction—use machine learning to predict and counteract decoherence in real time. If we take inspiration from how the brain stabilizes signals—integrating neural feedback loops that adjust dynamically to noise—we might be able to create an adaptive quantum network that learns to correct itself. Instead of

brute-force error correction, we build a system that evolves to maintain coherence on its own.”

Kamla leaned back, considering. “So instead of fighting noise, you teach the system to live with it.”

“Exactly,” Yochie said. “The same way nature does.”

Frankie sat up, his hands moving as he spoke. “But then we have scalability. If we’re talking about connecting hundreds, or potentially millions of minds, we need a quantum internet that doesn’t rely on point-to-point fiber links. We need quantum repeaters.”

Kamla nodded in agreement. “Which means we need entanglement swapping.”

“Exactly,” Yochie said. “We use entangled photon pairs as information carriers. Every person connected to the cloud gets a set of entangled qubits that act as their bridge into the network. Quantum repeaters maintain entanglement across vast distances, ensuring that thoughts can travel instantaneously, without classical bottlenecks.”

Shani’s brow furrowed, her dark eyes narrowing as she tried to follow the thread of the conversation. “Wait,” she said, glancing between them. “I think I understand what you’re talking about quantum entanglement linking minds, but… if everything depends on maintaining that entanglement across long distances, doesn’t that make the system fragile? What happens when a link breaks? When there is decoherence?”

Yochie leaned forward, the candlelight catching the sharp angles of his face. “That’s where quantum repeaters come in. A direct entanglement link between two points is fragile, yes. Noise, environmental interference, even a stray cosmic ray can disrupt it. But quantum repeaters—these act like stabilizers. Instead of trying to maintain a single entangled connection across massive distances, we break the journey into steps. At each step, we create fresh entanglement through a process called entanglement swapping.”

Yochie picked up a fork and knife from the table, holding them parallel. “Think of these as two separate entangled photon pairs, one between a user in Ann Arbor and a repeater in Chicago, and another between that Chicago repeater and someone in Tel Aviv.” He tapped the utensils together. “When the repeater measures one half of each pair, it forces a new entanglement between the two distant ends—the user in Ann Arbor and the one in Tel Aviv – without them ever needing to be directly connected. The original connections are destroyed, but the entanglement survives, transferred along the chain. Do this enough times, and you can extend secure quantum links across the globe.”

Shani's lips pressed together in thought. "So instead of one little thread, it's a constantly shifting web of entanglement, always renewing itself?"

"Exactly," Yochie said, his voice carrying the quiet excitement of someone explaining a truth he could see clearly. "And because no classical data is being transmitted, only quantum correlations, there's no way to intercept or alter the information. It's unbreakable security at a fundamental level."

Frankie grinned. "And that's just the transport layer. The real magic is in what happens when we start layering consciousness onto it.

Shani's large dark eyes widened. "But what happens to individuality? If thinking always entangling, don't that blur the boundaries between people?"

Yochie exhaled slowly. "Maybe, possibly, but not necessarily? Consciousness has an intrinsic coherence - it maintains a self-organizing structure even when exposed to external influence. Think of it like music. Two melodies can intertwine, harmonize, but they don't lose their distinct identities. The quantum cloud wouldn't necessarily erase individuality - it could expand it. It could give us access to perspectives, knowledge, even emotions beyond what we could ever experience alone."

Leyna smiled softly. "A garden of minds," she murmured again. "A place where we don't just think together, but grow together."

Shani leaned forward, her dark eyes reflecting the glow of the room. "You're talking about building a quantum network to link human consciousness. A place where thoughts are not just transmitted but entangled, influencing each other. That's not just a communication system, Yochie—it's a new dimension of being. What's to stop it from becoming a form of mind control, or complete meltdown?"

Yochie met her gaze, the intensity in his own softened by understanding. "That's a challenge, for sure. If we build this wrong, it could become the most advanced form of surveillance ever created, or it could fry minds that aren't prepared for it. Worse than that, it could be manipulated." He set his glass down, fingers lacing together as he thought aloud. "If someone gains control over the quantum keys, they wouldn't just be able to read minds. They could plant thoughts, rewrite memories, influence decisions at a subconscious level. The stakes are enormous."

Shani exhaled slowly. "So how we stop that? Classical encryption is already vulnerable to quantum attacks. Any standard security system will crumble once scalable quantum decryption methods are available. What's stopping someone from intercepting them?"

Leyna swirled the deep amber of her wine, watching the way the candlelight fractured against the glass. "If I understand, you're saying," she said slowly, "if someone gained control over the quantum keys, if they could manipulate the entanglement layer, they wouldn't just be able to listen to thoughts? They could rewrite them??"

"Brainwashing! Not the crude, clumsy version governments have tried before. Not through propaganda, or torture, or some slow, systemic indoctrination. This would be direct. Precision-engineered thought insertion."

The room felt smaller now, the warmth of the dinner gathering swallowed in the cold enormity of what they were discussing.

Leyna shifted in her seat, her gaze moving between them. "The Persians have a story," she said, her voice quiet but insistent, a storyteller drawing the audience back from the brink of abstraction. "Of the Divs, the dark spirits who whispered lies into the ears of kings, bending history to their will. This could be like a whisper inside the mind itself. A person wouldn't even know they had been changed."

Yochie ran a hand through his curly hair, the gravity of it pressing into him. "It's not impossible," he admitted. "Memories aren't as fixed as we like to believe. Neuroplasticity means they're constantly being rewritten. If you had access to the right signals - if you could stimulate neurons in just the right patterns - you could create memories that never existed. Erase the ones that did. Reshape not just what people know, but what they feel about it."

Shani's voice was quiet but insistent. "So how we stop that?"

Yochie leaned back, folding his arms. "The first step is making sure the system itself is decentralized. If we build this on a standard server model, or worse, rely on cloud infrastructure owned by corporate or state actors, it's already over. We need a network where control isn't concentrated, but where no single point of failure can bring it all down."

Kamla arched a skeptical brow. "That's nice in theory, but doesn't it make the whole thing unstable? If each node is independent, you lose coherence across the network. There has to be some unifying structure."

Yochie tapped his fingers against the table for a few seconds then stopped, lifting his first finger. "We can use a cryptographic consensus model. Think of a self-validating neural net, where every node verifies itself against a constantly shifting web of others. Each participant doesn't just send and receive signals; they act as a validator, continuously cross-referencing with a decentralized ledger of interactions. The moment an anomaly - an outside attempt to rewrite thoughts, for example - is detected, it's flagged and rejected by the network."

Shani tilted her head. "So it like a blockchain?"

Yochie nodded. "Yes, but adapted for consciousness. Instead of blocks of financial transactions, we're working with a dynamically evolving proof-of-thought system. Every mind in the network would store encrypted fragments of a collective state, like a checksum that constantly refreshes. No one entity controls the verification process, but no thought goes unverified. Any attempt to override memories or insert false input would be rejected by sheer statistical improbability—it wouldn't align with the network's shared reality."

Kamla considered this, crossing her arms. "That keeps external actors from manipulating the system. But what about internal threats? If a person inside the network gains enough influence—say, someone trusted, someone with high validation weight—could they reshape reality from within?"

Yochie exhaled, glancing at her. "That's the hardest part. Influence can't be purely reputation-based. We'd need a form of randomized validation, where no single node has permanent authority. Maybe even an adaptive quorum system, where different clusters of minds form temporary validation groups, each with a shifting composition."

Shani let out a slow breath. "So no one person, no one system, has total control?"

Yochie nodded. "Exactly. The network has to be fluid - self-repairing, self-monitoring, and ultimately accountable only to itself. If we can get that balance right, we can create something that's stable and safe to immerse ourselves into to move through the cloud."

A silence settled over the table, filled with possibilities. The idea of such a system, secure but free, structured but evolving, was tempting but somewhat paradoxical.

Leyna thought, tilting her head. "So we are not building a tower, then," she mused, "but a forest."

Yochie frowned. "What do you mean?"

She reached for the wine bottle, tipping it just enough for the deep red to catch the candlelight, a liquid ember in the glass. "The Tower of Babel crumbled because it was too rigid, too certain of its own grandeur. It rose in defiance, a monolith of singular ambition, unyielding, and so, with a whisper of division, it shattered.

"But a forest... a forest does not rise in defiance. It grows in a symbiotic relationship with the environment. Each tree stretches in its own way, yet beneath the soil, unseen, their roots weave together in quiet communion, whispering to each other through miles of mycelia, sharing strength, passing wisdom. No single trunk bears the weight alone; no

single branch holds up the sky. It is not one towering thing, but many—intertwined, resilient, alive.

"If we do this right, we do not build a tower for the heavens to cast down. We plant a forest - deep-rooted, interwoven. A sanctuary where minds grow together, not apart."

Shani's eyes widened. "A multi-dimensional forest of minds. A place where intelligence - human, AI, and beyond - grow together, learning from each other, evolving."

Kamla smirked. "That's poetic. But let's not forget - forests can burn, too."

Nolan's fingers came together in a pyramid in front of his face, his first fingers tapping in thought. "Forests aren't fireproof, but they can be protected if they are well situated and resourced. We can create a sanctuary where the forest, where civilization, can survive."

Yochie smiled, leaned back and exhaled with almost cosmic relief. "Yes, yes - actually, the word that comes to my mind is Hebrew, not the word for forest, *ya'ar*, but instead the term the mystics used for orchard, *pardés* or 'the orchard', *ha'pardés*. As a kid, my parents could transform a Friday night into something magical. After preparing all afternoon, they would light candles and sing psalms and poetry set by the Arizal and his followers, great mystics, who created *Kabbalat Shabbat* - the Friday night prayer service, where the soul takes on a higher dimension of holiness for the Sabbath. This was all started by this group of refugees from the Inquisition living in what was a small town of *Sfat*, not far from the Sea of Galilee. They would step into the orchard outside their little synagogue to pray in the closest thing they had to the Garden of Eden, the orchard, *ha'pardés*, stepping out of this world of struggle, and into paradise."

Finally, Leyna raised her glass once more, her voice carrying the warmth of ancient stories whispered through generations. "To *Pardés*," she said.

One by one, they followed, lifting their glasses.

"To *Pardés*."

Chapter 4

Coober Pedy, South Australia

The freshly carved sandstone of their underground home carried the scent of the ancient sea mingled with the earth's quiet, damp breath. It was several degrees cooler in the caves carved out of the cliffs, the blistering sun softened by the thick layer of stone that they had shaped out, room by room, to be their home. Nolan ran his fingers along the newly hewn wall, the roughness still fresh from where his mother, Nattaya, had sculpted a sanctuary—a meditation chamber hewn from the very stone heart of the land.

In the soft glow of the overhead lights, the Buddha emerged from the sandstone like an ancient fossil, awaiting to be uncovered. Nattaya had carved it in the Thai style of her homeland, its face serene, its body poised in eternal stillness. The Buddha's expression held a silence deeper than stone, an embodiment of the silence at the completion of Om.

The Buddha's crown transfixated Nolan, its embedded opals shimmered in the light, catching the shifting colors of their underground world. The third eye, an opal of fiery red and deep indigo, seemed to follow him no matter where he stood. His mother had called it a room for peace, for meditation, but to Nolan, it felt like something more, perhaps a portal to another dimension.

Kim's laughter broke the spell. She sat cross-legged on the smooth floor, operating her remote-controlled bulldozer with a steady hand, pushing heaps of stone fragments into a neat pile. Nolan grinned and revved up his own dozer, nudging her pile just enough to make her yelp in protest.

"Oi! That's mine, you dirty bogan!"

"Not anymore," he said, maneuvering his machine to scoop up a share of the rubble. He carefully loaded it onto the flatbed of his toy train—a cobbled-together contraption of spare parts, wires, and repurposed mining tools from his father's workshop. The train clanked and whirred as it chugged toward the through tunnels they had carved in the walls, emerging into the blinding glare of the outside world. As the first load reached the edge, a gate triggered a switch, and the carriage tilted forward, spilling the rubble into the vast expanse of the outback.

Their mother chuckled softly from where she knelt, dusting off the Buddha's robes. "At least you two are putting the spare parts to work."

Before Nolan could answer, a knock echoed from the stone corridor. It was heavy, deliberate. A presence, not just a sound.

Nolan rose to open the door. Tim, their father's assistant, stepped into the room, his face lined with deep exhaustion. His boots left faint traces of red dust on the floor, the kind that clung to everything in the outback. His hat was clutched tightly in his hands, fingers worrying at the brim.

Nolan closed the door, shutting out the fierce sun and heat of the afternoon. Kim, sensing something was wrong, shut down her dozer's engine. Their mother rose to her feet, her

expression unreadable, though Nolan caught the momentary clenching of her jaw, only to see it release with her taking a breath.

"I bring news," the man said, his voice steady but low. "Some of it good. Some of it... not."

Nattaya wiped her hands on her trousers, nodding for him to continue.

"The good news—there's gold. Several veins, far richer than we thought. And not just gold, but other rare earth metals too. The land Jack bought, it's sitting on something incredible. Your husband was right."

While only twelve years old, Nolan knew what that meant. Riches. Power. The kind of thing that turned small men into giants and giants into legends. But something about the way the man said it made the air feel pained.

"And?"

Tim swallowed. "Some of the miners—well, they lost themselves to it. Gold fever. In their delirium, they claimed the mine as their own and...." He hesitated, as if bracing himself. "They turned on Jack. They... they killed him."

The room fell silent. Tim nervously swayed back and forth, shading and revealing the beam of light streaming in from the window, the shadows dancing across the Buddha's face. From light to dark, its expression was unmoved by the weight of human grief. In the stillness that followed, the opal-studded Buddha seemed to absorb the sorrow, its tranquil gaze offering a silent benediction as the outback's eternal horizon stretched beyond, indifferent yet encompassing.

Kim's eyes started to well, the words of the assistant transforming into tears that fell silently at first, only to later come out in wails of uncontrollable sobbing the next day, and for years after. Nolan felt something hard coil in his stomach, a mix of disbelief, fear, anger, hunger and something he didn't have words for. His father was gone, dead. Just like that.

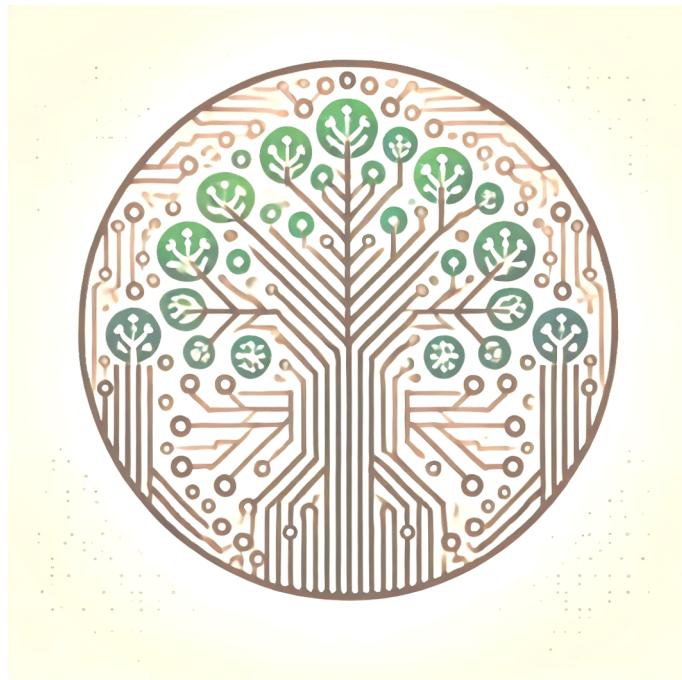
"They got them," Tim said, voice low. "Won't be a trial. The miners—" he exhaled sharply, his fingers tightening around his hat. "It's done. And the mine... it's in your hands now, Miss Nattaya."

For a long moment, no one spoke. Then, slowly, their mother let out a breath. She looked at the Buddha, at the shimmering opals in its crown, and then back at the man.

The world had changed. And somewhere in the depths of the earth, where his father had built their home, where he died and would be buried, there were rich veins of gold, opals, and the minerals that would power the world gleamed in the dark, waiting to be revealed, like the Buddha's third eye.

"I see," she said. And that was all.

Invitation



(Image generated in collaboration with DALLE)

The double knock startled Yochie awake. Sharp, deliberate. His mind swam up from the depths of sleep, but by the time he swung his legs off the bed and padded to the door, whoever had knocked was gone.

There, lying on the threshold, was an envelope, substantial and textured old-world stationery. A metallic emblem stamped on the front caught the morning light—a bodhi tree, its branches spreading out in an intricate circuit pattern, equal parts organic and engineered. Yochie bent down, picking it up with a suspicious curiosity.

Inside, a single elegant card read:

"Brunch in the woods. Meet at the top of the Arboretum, across from the Children's Hospital. Promptly at 10 AM. TODAY"

His phone buzzed almost the instant he finished reading. A text from Frankie.

Frankie: You coming?

Yochie messaged back: Yes, you too? Who sent this?

Frankie: This has Nolan's mark on it. Wouldn't miss it.

That was all the confirmation he needed. He took a drink of water, made quick use of the bathroom, put on some jeans and shirt, threw on a jacket, grabbed his phone, and stepped into the crisp morning air.

The fog was lifting from the Arboretum as the morning light gained strength by the time he arrived. The heavy branches of oaks and maples stretched wide above him, dappling the ground with shifting patterns of shade and warmth. The walking paths, still damp from last night's rain, curled through the undergrowth, up towards the hospital complex from the forested park below. As he made his way up, past the sloping meadows and the thickets of buckthorn and dogwood, he spotted the others waiting.

Near a stone bench, Frankie was already chatting with Shani, Kamla, and Leyna. Their smiles were welcoming, and the rich scent of dew on fresh foliage gave the morning a sense of positive potential. But Nolan was nowhere in sight.

Then came the sound. A low, rhythmic thumping against the morning silence. Not the whisper of wind through leaves, not the distant hum of the city, but something heavier, mechanical.

Yochie turned just as the helicopter came into view—large, black, slicing through the sky just a few hundred feet overhead.

His phone buzzed. All of their phones did.

Nolan: Go up to the helipad on top of the hospital. Cleared to land.

They exchanged glances. No one had expected this.

Still, as they made their way down the path and into the glass-fronted entrance of the hospital, security didn't stop them, instead ushering them in. Nolan, or more likely his AI agents, had already made the arrangements. They were waved through to the elevators that took them to the top floor.

The helipad loomed ahead, a pair of medevac choppers parked on it, overlooking the hospital and the woods of Ann Arbor. The sleek Bell Relentless hovered above, its downwash whipping against their clothes as they stepped out onto the rooftop. The helicopter touched down smoothly, the engines still strumming with restrained power.

Then, the door opened, and Nolan stepped out.

"G'day mates!" he said, grinning. "Let's GO!"

The ascent was seamless, the rotors pulling them into the sky within a few swift seconds. Inside, the helicopter was an executive command center in motion. Captain's chairs with fine level upholstery had computing stations tucked away in the arm and head rests, while the large curved windows offered views of the wide expanses of Michigan's farms, woods and lakes.

As they adjusted from the morning surprise, flying hundreds of feet over the woods where they were expecting to brunch, Nolan spoke, his tone serious, yet animated. "Copper Harbor wasn't luck," he said, stretching back in his chair. "It was a fight. The government was collapsing, cash meant nothing, but gold is still gold."

Yochie frowned. "And you just—what? Walked in with a chest full of doubloons like some old-world pirate?"

Nolan smirked. "Kinda. The Yoopers were stubborn, but when paper's worth less day by day, people listen. Some needed convincing. Some just needed time. Lansing, though—that took something else."

Frankie raised a brow. "Your AI army?"

A pause. Then a slow shrug. "I pushed a few buttons. People folded. Now it's ours."

For two hours, they flew north, the land unfurling beneath them. A patchwork of fields and farms fading into dense hardwood forests, the slow sprawl of Michigan's interior rivers curling like silver veins through an emerald landscape. But as they flew over Lake Michigan and pressed deeper into the Upper Peninsula, the terrain shifted. The forests darkened, thickening into an unbroken sea of pine and hemlock, their canopies rolling in waves beneath the helicopter's shadow.

Then, the shoreline of the great inland sea of Lake Superior, its surface shifting between hues of cobalt and iron-gray, restless under the winds sweeping in from across the Great Plains. To their left, the cliffs of Pictured Rocks revealed their beauty, towering ribbons of mineral-stained sandstone sculpted by centuries of wave and wind. Crimson, ochre, and jade streaked the rock face, a painter's palette of iron, copper, and limestone deposits bleeding into one another. Hidden coves cradled the turquoise glow of underwater grottos, where the lake lapped gently against weathered stone arches.

As the helicopter banked over the bay, a mountain lodge came into view. A large log villa, with beautiful views overlooking the forests and harbor below, still frosted with snow and

ice. They landed on a newly installed helipad, taking over half of what was once a parking lot for tourists. It was filled instead with construction and tunneling equipment, off-loaded from Australian shipping barges docked in the bay below.

Inside the lodge, the scent of ancient timbers and the firewood burning in the hearth gave a warm welcome on a chilly spring day. Through the wide-paned windows, the wilderness stretched vast and quiet, its pines still standing strong. Yochie took it in, the fragile strength and beauty of the land and the lakes, quietly whispering to himself the blessing for seeing the beauty of nature "*shekacha lo beolamo*", "such beautiful things in His universe".

Semi-humanoid robotic attendants glided through the gathering, carrying trays of drinks and hors d'oeuvres. The robots were five feet tall bipeds, with small extendable wheels attached to their feet. They were metallic with smart screens on the front face of their heads and torsos that spelled out their missions, in this case serving refreshments for the guests. Some offered glasses of sparkling wine from the nearby Leelanau peninsula. Others came around with silver platters of smoked whitefish canapés nestled on crisp rye, trout roe sushi, pickled ramps, and wild thimbleberry tartlets, whetting their appetites.

Yochie took a glass of wine and surveyed the room. There were a few other people, perhaps a dozen altogether, and from the various accents, he guessed a mix from around the world. Near the stone fireplace stood a tall bearded man whose presence was as solid as the beams holding up the ceiling. His frame, broad and strong, gave the impression of deep roots, and the heavy knit of his flannel shirt emphasized his familiarity with the cold. He held a mug of steaming coffee between hands that looked like they felt equally comfortable wielding Paul Bunyon's axe.

Frankie drifted over towards the bearded man, and quickly they dove deep into conversation, the current of ideas forming a connection instantly, nodding of heads transitioning to soft chuckles and smiles.

Across the room, a slim man attired in what appeared to be the dark blue working robes of a Zen monk was engaged in conversation with two women. One was older, Southeast Asian, her features elegant yet weathered, the kind of face that had seen and endured much. Her dark eyes held a thoughtful intensity as she listened, her body still but engaged, as though measuring each word before responding. There was something familiar about her, and Yochie quickly realized she was most probably Nolan's mother.

Beside her, a younger woman laughed lightly at something the man said, her curly hair catching the soft light from the windows. Biracial, Australian from the way she spoke, but the resemblance to Nolan was undeniable. His sister.

They spoke in calm, measured tones. The discussion was layered - part philosophical, part technical, unraveling complex ideas with the ease of someone used to bridging disparate worlds. Yochie subtly eavesdropped - something about the nature of perception, the mind's ability to interface with technology, the limits of self-awareness when extended into a network. The women shared thoughts intently, their expressions shifting between curiosity and contemplation.

The lights dimmed imperceptibly, and at the center of the great room, Nolan raised a hand. A subtle gesture, yet the effect was immediate. The holographic projector embedded in the ceiling projected the same logo as embossed on the envelope, a bodhi tree reimagined as a circular circuit.

"My dear friends and family," Nolan's voice carried, measured and certain, "Thank you for joining here today. If you please, let me share a vision of Pardés."

A large hologram unfolded above them - flowering dome buildings rising in concentric rings, interwoven with parks, forest and ponds. As the background of the land faded out, corridors winding like roots appeared beneath the surface to form a hemispherical network in motion. The vision hovered, breathing, almost alive.

A murmur rippled through the gathering. The design was breathtaking, visionary in its execution, a seamless interweaving of architecture and nature. On the surface, the settlement spun into shape, a series of concentric circles built with sustainable elegance, its domes and curved walkways interconnected by verdant corridors and aquaponic gardens. Beneath, the depth of the project extended - a subterranean expanse shaped into a semi-spherical sanctuary, descending in layered tiers that mirrored the concentric circles of structures above ground.

"We are not simply retreating from the collapse," Nolan continued. "We are building a resilient civilization on the surface of and deep beneath the earth, bringing together all the natural resources available here to sustain a community of up to 180."

Clusters of living spaces wove into fabrication labs, agricultural domes, and atmospheric processing centers, all connected through arterial tunnels that extended deeper into the bedrock. Some of these tunnels reached into ancient mine shafts—once the lifeblood of Indigenous civilizations that had adapted to this land for millennia. Now, those same

pathways would become veins in a new, self-sustaining organism. And at the heart of it all, an intelligence flickered—not simply a machine, but a collaborative force, learning, anticipating, evolving.

Nolan's hands, lifted to the hologram, lowered with the quiet authority of a conductor bringing a symphony into formation.

"Self-sustaining. Shielded. Enduring and evolving intelligence," he said. "Excavation begins in a month. We have the land, the resources, and the minds to bring this to life."

A murmur rippled through the group - not the nervous energy of skeptics, but the hum of thinkers stepping into new mental territory. They encircled the projection, their expressions shifting as they processed the sheer scope of the vision before them.

Shani was the first to cut through the moment. "*Zeh hadash*, unprecedented," she said, her analytical mind already breaking down potential risks. "But what happens when someone tries to take it from us?"

Kamla folded her arms, her stance wary. "We'd be isolated out here. But isolation doesn't mean security. If this place thrives while the outside crumbles, people will come. Desperate ones."

Leyna leaned in slightly, her voice level, deliberate. "Then we need to define our stance—what are we? A fortress? A refuge? A nation?"

Nolan exhaled, considering, then turned to the man in the blue monk's robes, who had been silently observing. "Junto, what do you think?"

Junto tilted his head slightly, his expression composed. "True isolation weakens the mind. But unrestricted access invites collapse. We must cultivate a balance—not merely walls, but principles that govern who we are and how we interact with the world. Security must be more than defense—it must be direction."

Shani, her arms crossed, studied the hologram. "I don't know much about Zen, but I do know defense. And this place need layers—physical, digital, psychological. Camouflaged barriers. Underground access points that can be locked down. Embedded perimeter sensors. Any threat should be intercepted before it even close."

Nolan nodded. "That's why we're deploying AI-powered sentries—land, air, and water. Each drone will carry adaptive threat analysis, distinguishing between a wandering deer and a reconnaissance scout. The network isn't just defensive; it's predictive. It reads patterns, anticipates behavior, and can deter long before confrontation becomes necessary."

Yochie leaned forward, his expression sharp with thought. “But where’s the ethical line? At what point does deterrence become preemptive violence? If someone is starving and desperate enough to breach our perimeter, do we treat them as a threat?”

Shani ran a hand through her hair, her voice edged with tension. “The lines will blur fast. Desperation can turn to violence in instant. So how do we make sure our security is...fair?”

Junto’s voice was calm, steady. “A defense built only on force is like a clenched fist—strong, but brittle. And what is brittle can be broken.” He let the words settle before continuing. “The shoguns who endured in times of war understood this: strength isn’t about striking first or hardest. It’s about knowing when a strike is necessary at all.”

Yochie frowned. “So you’re saying deterrence isn’t enough?”

Junto nodded. “Defense is not just about space—it’s about momentum. A system that only reacts will always be chasing threats. But one that understands patterns can influence them before they manifest. True security isn’t about repelling—it’s about shaping the conditions so that threats dissolve before they ever reach our gates.”

Dave exhaled sharply. “Bottom line, we need something that ensures this place survives—no matter what.”

Junto met his gaze, not in defiance, but with patience. “And what is survival? A wall that holds firm until it is overwhelmed? Or a current that redirects force before it ever arrives? If we design a system that only repels, we will always be in conflict. But if we create one that adjusts, adapts, and allows for different outcomes—we are not just defending. We are controlling the future.”

Shani’s eyes narrowed slightly. “You talking about shaping the field before the battle even begins.”

Junto inclined his head. “Call it strategy. Call it wisdom. If we force an enemy into desperation, we create chaos. But if we build a system that introduces options instead of ultimatums, we gain control. That’s how civilizations survive—not just through force, but through foresight.”

Frankie, who had been quietly studying the projected infrastructure, leaned in. “I like the aikido approach to security, but there’s a bigger issue before we even get to that.” He gestured toward the vast holographic web of tunnels and structures. “I get that geothermal keeps the air moving and the lights on, and some solar and wind power is possible. But it’s not going to be enough.”

Dave scratched his beard, shaking his head. “Hell no, not even close—not with everything you got running here. You’d need a steady few megawatts, ‘round the clock. Now, there’s a fault in the bedrock here in Copper Harbor, sure, but drillin’ deep enough to get the kinda heat you need? That’d take damn near forever. You’d be better off waitin’ for the glaciers to come back and do it for ya.”

Shani, who had been scrolling through the projected layers, paused and squinted at a section far lower down in the hologram, deep below the primary living spaces. Unlike the other labeled components—geothermal arrays, hydroponics bays, storage facilities—this area was left conspicuously blank. She reached up and pulled at the hologram with her fingers, zooming in. “What’s this?” she asked, looking up at Nolan.

Kamla glanced over and frowned. “It’s big. And deep. What are you hiding down there?”

Nolan exhaled through his nose, rubbing his fingers together as if weighing his next words. Then, with a slow nod, he conceded. “Alright,” he said. “I was going to wait until we had things locked down, but since you’re all paying attention—” He tapped a few times on his tablet and suddenly the hidden section of the hologram expanded into a complex facility buried in the lowest depths of the structure. Within its heavily reinforced chambers sat a reactor core.

Dave seemed shocked. “Holy wah. You’re planning a nuclear reactor?”

Nolan nodded. “A small modular reactor. State-of-the-art, walk-away safe, buried deep enough that even a direct hit on the surface wouldn’t compromise it.” His gaze swept across the group. “Geothermal keeps the basics running, but this—this is what guarantees we have the power to sustain Pardés indefinitely.”

Yochie leaned in, studying the details. “This is third-gen, right? Passive safety mechanisms but still running on standard fuel rods?”

“For now,” Nolan admitted. “But we’re looking into modifying it into a breeder reactor. If we can make that work, we’re talking about fuel that regenerates itself, providing centuries of energy self-sufficiency. Hopefully by then we’ll have figured out how to drill those geothermal wells.” He gave a little nod and smile to Dave.

Shani folded her arms. “And what happens if something go wrong? If containment fail? If the coolant system break down?”

Nolan met her gaze evenly. “We don’t rely on a single fail-safe. The reactor is surrounded by multiple redundant cooling systems, passive heat dissipation structures, and an emergency

burial mechanism. If something catastrophic happens, it shuts down and buries itself under reinforced shielding. No meltdown, no leaks.”

Dave ran a hand over his jaw, considering. “So you’re saying we’re not just building a shelter. We’re building a civilization with its own independent energy grid.”

Nolan nodded. “Energy, information, fabrication, food production. If we’re serious about making Pardés last, we need to think beyond the next few years. We need to think about future generations, centuries of sustaining civilization when who knows what will be in the outside world.”

Leyna, who had been quiet through most of the discussion, finally let out a dramatic sigh. “Alright, alright,” she said, waving a hand. “Nuclear power, civilization-building, centuries of survival - I love a good existential crisis as much as the next gal, but I think we need to acknowledge the real emergency here.”

She gestured pointedly at the platters held by the robotic attendants before them - delicate hors d’oeuvres, artfully arranged. “We’ve been talking about how to power an entire underground city, but I’d like to remind everyone that we still run on actual food. And I, for one, need something more than fancy canapés before I start making decisions about the future of humanity.”

Kamla smirked. “So what you’re saying is, we need to get to eating.”

Leyna grinned. “Thank you, yes! Let’s eat like people who plan to live, not just survive. We’ve got all this -“ she motioned to the grand lodge, the view of the forests and lakes, “- and we’re too busy thinking about the future to appreciate that we are here, right now, together.”

There was a pause, then a collective shift, a quiet release of tension. Shani exhaled, shaking her head with a small smile. Yochie chuckled, leaning back in his chair. Even Nolan, who had been locked in the weight of logistics and planning, cracked a faint grin.

“You make a good point,” he admitted.

Leyna raised her glass. “So let’s eat. Let’s drink. Let’s take a moment to appreciate the fact that we have the luxury of thinking about the future. We can get back to building the next era of civilization after we enjoy the moment we’re actually in.” As the rings of the chimed glasses settled, the tone in the room shifted. The urgency of planning eased, as they made their way to the dining room, where a brunch spread awaited them.

Nolan turned to Junto. “Would you do the honor?” he asked. “A blessing before we begin?”

Junto, who had quietly observed the conversation, exhaled softly, his presence shifting like a reed adjusting to the wind. He did not bow, but there was a subtle lowering of his chin, a stillness that invited attention without demanding it. His hands, relaxed at his sides, found one another briefly before he lifted them in a quiet, open gesture, as if gathering the air itself, a single inhale that seemed to draw the room into focus, an exhale that softened its edges.

"This food, this gathering, comes from the efforts of all sentient beings, past and present," he began, his voice steady, carrying the weight of words spoken as a daily practice for decades. "May its nourishment give us strength and spiritual well-being and promote pure practice."

His gaze moved over the table, over the faces of those gathered. "As we partake, let us nourish ourselves with gratitude, so that we may act with integrity, for all sentient beings."

A hush settled, not solemn, but resonant—a shared acknowledgment of the moment, of what it meant to be gathered together at the precipice of a world not yet built.

The late morning sunlight streamed through the grand lodge's tall windows, casting long golden rays over the sprawling brunch spread laid out across the long oak table. A whole smoked trout, its skin bronzed and delicate, rested on a carved wooden board, its flesh flaking at the press of a fork, the scent kissed with applewood and citrus. A large bowl of salad greens nestled beside roasted root vegetables, their caramelized edges dark and crisp. A reed basket offered warm loaves of crusty dark bread, golden croissants, next to small ramekins of local butter and preserves. Poached eggs rested in ceramic cups, next to a dish of savory sausage. A pot of Thai rice porridge, *jok*, steamed gently, infused with ginger and garlic. There was something for everyone, and everyone filled their plates with delight.

The conversation ebbed and flowed like the steam rising from their cups, winding through talk of aquaponics, air filtration, fab labs, and the foundations of a new civilization. But as the initial plates began to empty and the awe of the planning lifted, the discussion drifted.

Yochie leaned back slightly, his cup of tea perched on his thigh. "I was thinking about the last time we ate together, when we put together the ideas for the Pardés network, and our talk of topological qubits." he said, his gaze settling on Frankie. "They are based on Majorana fermions. A wildly exotic particle" He let the words settle before continuing, "People keep calling them a new state of matter, but I don't think that really captures it."

Dave, reaching for another helping of baked eggs, glanced up. "Alright, I'll bite. What makes them so special?"

Yochie set his cup back down on the table, freeing his hands to express themselves as scales weighing two ideas. "Most particles fall into one of two categories—fermions or bosons. Fermions make up all matter, like electrons and protons, etc., while bosons carry force." His hands began to come together, orbit one another. "But Majorana fermions break the mold of normal fermions. They're their own antiparticles, but unlike a normal electron and anti-electron, if two of these fermions meet, they don't cancel each other out. Instead, they exist in a kind of quantum superposition - a quantum phase of solid matter that, in my mind at least, adds evidence to theories of a higher dimensional reality."

Kamla, as she swallowed a spoonful of *jok*, gave a slow nod. "Trippy.... so, what does that actually mean?"

Yochie wiped the corner of his mouth with a napkin "If we can harness them? It means qubits that don't lose coherence. A new kind of quantum computing—one that doesn't collapse under the weight of its own fragility. It means storing and processing information in ways we barely understand yet. Some claimed they were prototyping chips with up to a million qubits in a single quantum computing rig. If we can get our hands on those, running a few in parallel, we could build a powerful cloud of consciousness..."

"Curious, why are they called Majorana fermions?" Dave asked.

Yochie set down his coffee cup. "That," he said, with a flicker of something between amusement and intrigue, "is an interesting story." He reached for a blueberry muffin. "Ettore Majorana. Italian physicist. One of the sharpest minds of his time. He worked as a teen for Enrico Fermi, who was quoted saying something like he was a 'genius of the first order, on the level of Newton and Galileo'. The guy published a groundbreaking paper in atomic spectroscopy for aligning atoms in magnetic fields, which we have been testing, and then may have discovered the neutron first but didn't publish it. Then he got sick with something or other, and fades from sight, becoming a hermit and not publishing for several years. He then comes back, at age 32, and publishes this symmetrical theory of electrons and positrons, equations predicting this class of fermions that are their own antiparticles in symmetric stability, way back in 1937 - ahead of everyone else by nearly a century. And then gone, never to be seen again."

Kamla scoffed, setting down her fork. "Another genius who died too young?"

Yochie shook his head. "No. Disappeared."

Leyna paused mid-sip of tea, her perfectly shaped eyebrow and pinky finger slightly raised in complimentary arches. "Disappeared?"

Yochie nodded, his voice dipping just slightly, the way a storyteller leans into the weight of an old mystery. "In 1938, just a year after publishing his work on what we now call Majorana fermions and was given a full professorship with a top salary at the University of Naples, he boarded a boat from Palermo. He sent a letter to his colleague at the Naples Physics Institute, Antonio Carrelli, apologizing for his disappearance later that same night. And that was the last anyone ever saw of him."

Shani frowned, setting her spoon down with a soft clink. "Suicide?"

"Maybe," Yochie said. "But his body was never found. No conclusive evidence. Just... gone."

Dave quietly raised the hand that was now resting on his chin in contemplation. "So what's the theory?"

Yochie pushed his plate away. "Here's where it gets complicated. Majorana wasn't just a brilliant physicist - he was also a fascist. Of course this was during the height of facism in Italy, with Mussolini in power, so that's not a surprise. But he also believed and expressed publicly that Jews and others should be 'eliminated' from physics and society."

"So you're claiming his work was buried because of his racist politics?"

Yochie shrugged his shoulders. "I'm not a history expert, I just read the story when I learned about Majorana particles in my advanced quantum course. People dismissed his ideas, ignored his work—maybe because it was convenient, or maybe because they wanted to ignore the work of a fascist. It took until the mid-2020s for experimental physicists at some big tech to prove his theories right. For decades, he was just a name in the margins, at best."

Nolan, who had been quiet, finally spoke. "Unless he wasn't."

The others turned toward him.

"Maybe," Nolan continued, reaching for his coffee, "he wasn't ignored. Maybe he was erased."

Yochie exhaled, glancing toward the windows, where the trees outside stood tall and majestic under the bright blue sky. "Could be. But it also wouldn't be the first time a scientist disappeared under strange circumstances. Some people think he fled to Argentina, lived under an assumed name."

Dave let out a short, skeptical laugh. "That's the usual story, though, isn't it? Nazis and fascists running to Argentina?"

Yochie smirked, but there was something serious beneath it. "Sure. But there's another theory."

Kamla, reaching for her coffee, paused. "Which is?"

Yochie leaned forward slightly, voice lower now, more deliberate. "What if he didn't just disappear geographically? What if he found a way to shift matter from one state to another?"

Shani tilted her head. "You're talking like this particle itself?"

Yochie nodded. "Majorana fermions exist in a state of neither fully here nor fully there. What if Majorana himself figured out something no one else did? What if he didn't just predict a new kind of particle—what if he found a portal? A way to slip between states of existence? Between realities?"

The thought hovered over the table like the steam rising from their plates.

Junto, who had been listening in silence, finally spoke. "A man, existing in two states at once." His voice was thoughtful, quiet. "Neither alive nor dead. Neither here nor gone."

Kamla exhaled, almost to herself. "That's disconcerting."

Frankie shook his head, smiling faintly. "Or maybe he just fell off the boat."

Nolan leaned back in his chair, reaching into a drawer in the side cupboard where in a polished humidor he stored a dozen short thick cigars. He picked one, a smirk tugging at the corner of his mouth as he brought the dark tan robusto under his nose. "We won't live forever," he said, his voice wry but easy. "Smoke'em if you got'em."

As they passed the box around a few took - Dave, Frankie, Kamla, even Yochie, who wasn't usually one for tobacco but figured, why not? The clipping of the cigars, and the snapping of lighter flicking open sparked further conversation, forming and floating like the slow curl of fragrant smoke rising toward the timbered ceiling. Others stayed with their coffee, the warmth of the meal still settling in, conversations unraveling into smaller pockets of quiet speculation and half-serious jokes about how long they'd last before they had to start rationing luxury.

After a few puffs, Frankie cleared his throat. "Since we're in a celebratory mood," he said, as he picked up his pack, a glint in his eye betraying excitement, "I brought something."

He unzipped the pack and pulled out a long vial filled with a cloudy gel, flecked with tiny shimmers of gold. The table quieted, eyes narrowing with recognition.

"The nano-rods, the BCI you've been working on?" Kamla leaned in, her fingers drumming lightly against her cigar.

Frankie grinned, holding the vial between his fingers, the golden flecks within the gel catching the light. "Not just that," he said. "We've had a breakthrough. Synchronization."

Nolan raised an eyebrow. "You solved the interference issues?"

Frankie nodded, reaching into his pack again and pulling out a small data crystal. "It's an adaptive synchronization algorithm. Uses predictive modeling to stabilize real-time neural linking. Instead of struggling with lag or signal interference, it lets the system anticipate fluctuations before they happen."

Nolan took the data crystal, examining it for a moment before turning to the computing station that powered the hologram, in the recess in the wall behind him. He slotted the data crystal into the lodge's computers. After a few quick clicks, the server hummed in response, adjusting parameters, recalibrating. A thin band of light pulsed across the ceiling, an indication that the system was integrating the new code.

Frankie turned back to the group. "Now, if we're really doing this, we should just take a microdose. The bandwidth is still limited, and we don't want to overclock anything to start. Leyna helped formulate the gel, which binds to our neural pathways, and gives a stable medium for the gold nano-rods. Then we use the helmets to align the nano-rods, establish a connection, and induce a series of alpha waves to help us into a meditative state. And then we let the system guide us. It should feel almost like slipping into a dream."

Shani hesitated. "I'm not sure this a good idea. I'm not ready to go there yet."

Yochie smiled, reassuring. "That's ok, no worries, we do need someone to keep a watch on the systems to make sure everything is going alright. Let me show you." Going over to the computer, they went over how the system operates and what to watch out for while the others strapped on the brain scanning helmets, light foldable honeycomb mesh that fit snugly to the head with tiny suction cups, gently stimulating their scalps.

Leyna measured out milliliter doses of the gel into the nasal applicators that Frankie had brought along in his kit, placing them on a clean silver tray they pulled from the chest on the wall opposite the servers. It took a while to get everything prepared, the server system,

the gel, and finally the helmets. As they prepared, they finished their cigars and coffee, the last wisps of smoke rising towards the rafters.

Kamla smirked. "So we're doing this, diving into our minds?"

"Yep," Frankie said, taking the first nasal applicator.

One by one, they took their doses. A soft inhalation, the metallic tinge of the drop of gel sliding into their sinuses, followed by a cool bloom that spread from behind the eyes and settled deep in their brains. It wasn't immediate, but within a few moments, subtle lights started to spark beneath their skulls, a constellation of twinkling stars began to blink to life inside their heads as the helmets activated, scanning, calibrating, and threading their minds into the shared network.

The warm glow of the lodge held steady, the scent of burning firewood in the hearth mixing with the lingering aroma of cigars and coffee. They all closed their eyes, the air thick with the quiet anticipation of something about to shift.

It started with the breath.

One by one, their inhalations aligned, their breathing falling into a rhythm like a pendulum, in and out. Subtle lights began to grow stronger underneath their helmets, syncing in waves of illumination. The first strands of connection wove themselves from those breaths, thin as spider silk, delicate as the first wisps of smoke curling from a lit cigar. It was not sudden, but seamless—the world itself softened, and in its place, something vast, interwoven and ancient began to take form.

The smoke drifting in the air was no longer just a lingering scent but a thread, winding between them, binding them together in a weave of thought and memory. Each strand carried a presence, a whisper of consciousness looping through and around the others. The individual dissolved into the collective, yet the self remained, distinct but woven into the greater whole.

A strand expanded into a cocoon, connected to Frankie's subconscious.

The scent changed. Cedar gave way to the dusty aroma of machine oil and the slow, fragrant burn of pipe tobacco. Sunlight streamed through a small workshop window, illuminating brass gears and delicate springs set in careful arrangements across an aged workbench. The rhythmic tick-tick-ticking of a hundred timepieces filled the space, a quiet symphony of precision.

Oppa sat quiet and thoughtful at the bench, setting out his tools, then the parts for the clock, then pausing to step back a few paces to a the small cigar box on the shelf by the window where to pack his pipe with a fat pinch of the rich smelling tobacco they grew, aged and sliced into a fine chiffonade. With a smile, he struck a match, took a gentle few puffs, the flame of the match gave rise to an ember that glowed deep orange in the dark briar wood pipe's bowl. With an exhale, the smoke curled into the air, filling the space between thought and motion. Together they savored the deep fruity and earthy aromas, the slight nicotine rush, the moment of calm and clarity.

The ember died down, as if guided by an unseen rhythm, Oppa set down his pipe, his hands taking to the stage of the workbench, where they moved in a smooth and elegant ballet. The parts fit together, machine and maker working in tandem, the quiet stares through his magnifying spectacles slowing time and expanding space just enough to fit each piece into its place. After what felt like a half hour of mesmerizing motion, the clock was complete, restored to its intended rhythm. He picked it up and put it to his ear.

"Listen to the movement," his grandfather murmured, voice carrying the accent of his ancestors, echoing through the interwoven threads of their shared consciousness. "Every clock has its own rhythm, but it should all come in synchronization."

The memory felt as if it had always belonged to all of them. Then, the smoke curled inward again, folding, shifting.

The filaments of subconsciousness wove into another.

Kamla could feel the weight in her body before she understood what she had become. She was a massive four legged creature, with a long proboscis on the front of her face - an Indian elephant, still wild and free. She was the matriarch of her herd, leading a stampede, the thunder of a hundred massive feet pounding against the cracked earth. The ground rumbled beneath her, the stampede of a hundred powerful bodies surging forward in unison. Her heart pounded, deep and steady, in time with the herd.

The air was thick with the acrid scent of burning leaves. The sky, once a vast and endless blue, had been consumed by orange and gray. The heat pressed against her hide - scorching, relentless. The trees behind them cracked and split, their massive trunks succumbing to the hunger of the flames. There was no choice but to run.

Exhaustion pulled at her, the pain of dehydration and delirium pounding her mind, her powerful muscular body driven to its limits. The rivers had shrunk, the watering holes dried to cracked earth. She did not know where to run, and that knowledge and fear was as

real as the thunderous roar of her herd. India was changing, growing hotter, more unforgiving. She knew this truth not as a thought, but as a memory imprinted on the fabric of her being. But then, the smoke rose again, folding her memory back into the tapestry of their collective breath.

The fire did not vanish. It changed.

The wooden beams of the temple stretched toward the sky, lacquered red and gold, but the fire had already taken hold. The sacred halls burned, the scent of incense swallowed by thick, black smoke. The monks ran, their robes alight, their voices lost beneath the roaring inferno.

Junto stood among them, his hands reaching, pulling, trying to save those who could still be saved. But the fire moved faster. One by one, the figures dissolved into ash and light, slipping from his grasp like threads unraveling from an ancient loom. His master sat at the center of it all, his posture unshaken, his expression serene even as the flames licked at his skin.

Junto's breath hitched. His body remained still, but the pain twisted through the fibers of his being, deeper than flesh, deeper than thought. The sorrow was sharp, searing, but his master did not waver. His form, still in perfect meditation, burned until it was no more.

A searing silence.

And then... A sudden, jarring disconnect. The sensation of being pulled violently from another existence.

Nolan blinked as he surfaced from the connection, his breath unsteady. He turned to the others, his voice hoarse. "How long were we under?"

Shani, still gripping her tablet, scanned the data before meeting his gaze. "One minute and four seconds."

A hush fell over the group. The experience pressed against their chests.

"No way," Kamla whispered, rubbing her arms as if trying to shake off the lingering sensations. "That must have been hours. It felt like far longer."

"It wasn't," Shani said, her expression tight with concern. "But it was enough time for Kim's bio-rhythms to spike dangerously. Heart rate, blood pressure, temperature - she was overheating, as if body was burning alive. I had to cut the connection."

Nolan shot to his feet, his chair scraping loudly against the floor. He crossed the space between them in seconds, kneeling beside his sister. She was still pale, beads of sweat dotting her forehead. "Kim, are you alright?"

She exhaled shakily. "Yeah. I think so. It was just... so much. I wasn't just watching those memories. I was in them. I felt everything."

Kamla nodded, rubbing her temples. "The stampede - it wasn't just a vision. It was something deeper, more than a dream, more like a memory I'd long forgotten, a life from long ago. I could feel the weight in my legs, the heat of the land under my feet. My heartbeat wasn't even my own—it was the herd's."

Junto finally spoke, his voice calm but weighted with thought. "Time isn't what we think it is inside the connection. When we're linked, we don't just see memories, we embody them. The mind isn't built to experience layers of consciousness simultaneously. It collapses duration, prioritizing intensity."

Yochie, still reeling, exhaled deeply. "We need to train. This is more than just immersion - it's a total fusion of experience. If we don't learn to regulate it, we won't be able to endure deeper connections."

Nolan stood, looking over the group, the edges of his expression sharpening with resolve. "We have something incredible here. But we're at the threshold of something we don't fully understand. If this is going to work, we need discipline. We need to condition our minds to navigate this space, or we risk losing ourselves in it."

Kim nodded weakly. "We need to prepare. Because if this is just the beginning... we're not ready."