

# THE SIGNAL AND THE IDLER

Ted Kosmatka

**Ted Kosmatka has won the Asimov's Readers' Award twice. Asked about this latest submission, he said, "When I told my mom the premise of the story, she said not to write it. 'Let's build it instead!' I'm gonna miss you forever, Mom."**

*"there was a way to do this without any trust required at all"*

—Satoshi Nakamoto

## 1.

**H**e took the elevator up to the nineteenth, just like the email said. Elevator ding, white tile, and he crossed the hall through a set of glass doors.

"Can I help you?" the receptionist asked from behind a curving white counter.

"I have an interview at ten. Am I in the right place?"

Her eyes dropped to her computer. Oval face framed by short blond hair. "You Porter?"

"Yeah."

"Then this is the right place." She smiled and stood. If she'd noticed the bruises, she gave no sign. "You can follow me."

He followed her down a long hall to the back. "This is your nondisclosure agreement," she said, handing him a stack of papers. "Pure boilerplate. You can't discuss what happens here, do you understand?"

"Is the money really what they said?" He tried to sound casual but still heard it in his voice. That desperate edge.

"If you get through eval, you'll earn two hundred for today, then a thousand-dollar bonus when you return."

He blinked. *A thousand dollars.* "How did you find me for this?"

"It's a random process through online job search profiles."

"So I wasn't picked for any reason."

"It's random. You can't apply; you have to be selected."

"But what's this for, exactly?"

"A study."

"Yeah, I know, but what kind of study?"

They came to a door, and she gestured him through.

"The double-blind kind," she said. "So you can't actually know. In fact, the less you know, the better. Sit here and read through the NDA. Once you've had a chance to sign, someone will be in to talk."

She turned and left, shutting the door behind her.

He sat alone in the conference room and read through the paperwork.

Typical terrifying lawyer stuff. He'd signed NDAs before, and he signed this one now. He wasn't going to pretend he had much of a choice. He'd been out of work for almost three months now, and the wolves were at the door. Through the door, actually, if he was honest with himself. The wolves were chewing the fucking furniture now. Hitting bone.

He slid the papers across the table.

The room around him was big and bright, lined on one side by windows with a bird's eye view of Seattle. Skyscrapers set against distant, snow-capped mountains. It was what real estate agents had called a million-dollar view, back before it became a two-million-dollar view, then five. Then whatever it was now. A kidney. Your heart. All the years of your life.

The door opened and a new woman stepped in holding a clipboard.

She was a few years older than the receptionist, mid-thirties, with long, dark hair. Professionalism glinting off her like a gloss-shine coat of enamel. She took a seat across from him. "I'm going to ask you a series of questions to evaluate your suitability for the program."

"Okay," he said.

"Age?"

"Twenty-two."

"Can you read a newspaper?"

"Yes."

"Do you have any condition that might prevent you from memorizing short sequences of numbers?"

"No."

"Repeat these numbers back to me. Seven, six, nine, three, five, three."

He repeated them back.

"Now letters," she said and rattled off a string.

He regurgitated them back. The evaluation continued like that through three more sequences.

"Do you have access to the internet?" she asked.

"Yes."

"Do you have any condition or personal obligation that could prevent you from returning here at a later date?"

"No," he said.

"You've passed your eval and have been accepted into the program."

He stared. "That's it?"

"That's it."

"Does anybody fail?"

"You wouldn't believe," she said. "One last thing." She slid another paper across the table. "This is your participant contract. By signing, you are indicating your willingness to participate in multiple sessions for which you'll be remunerated as agreed. You can quit at any time. If you find this acceptable, sign at the bottom. If not, you're free to leave now."

He signed. A signature jagged like broken teeth.

"Come with me."

He followed her down another hall, deeper into the office. If there were other employees, he didn't see them. At a red door, she stopped. "Please enter and follow the instructions you'll be given."

He paused, hand on the doorknob.

She seemed to sense his hesitation. “Don’t be nervous,” she said, and for the first time, the veneer of professionalism showed cracks. “It’s easy work, and the pay is great. You’ll be sad when you’re finally phased out. Everybody is.”

The earnestness of her expression struck him. She was telling the truth, or there was no such beast. He entered and closed the door. With a click, he was alone.

The space before him was large, like the other room, but narrower, with no table this time. Also, no skyline view. The wall along one side was regular office drywall, painted gray, but the other side was some kind of opaque glass, floor to ceiling, with diffuse light glowing through—like the frosted glass of a shower stall. White and sterile. At the far end of the room was a small desk and video monitor. Because he could think of nothing else to do, he crossed to the desk. There were headphones lying across a keyboard. He sat.

Suddenly the monitor came to life. An image flashed up—a capital G, but backward.

*This must be part of it, he thought.*

He put the headphones on, and there came a high-pitched tone, then a male voice. “There should be an image on the screen,” the voice said.

Porter wondered if the voice was a recording, or a live person.

“Do you see an image?” the voice continued.

“Yes,” he said. “It’s a—”

“Don’t say what it is,” the voice interrupted.

*A live voice then.*

“Only you can see this image,” the voice continued. “It’s a randomly assigned one-time cypher. I want you to commit the image to memory. Can you do that?”

“Yes.”

“Good. Look at the image. When you’ve committed the image to memory, hit enter.”

Porter stared at the image. Committed it to memory. A backward G. *How hard could it be?* He hit enter and the screen went black.

“Thank you,” the voice said. “Now for part two.”

On the screen flashed a series of letters:

*NSGT*

“Can you read the sequence of letters on the screen?” the voice asked.

“Yes.”

“Commit the sequence to memory. It’s a Nasdaq code for a stock. Are you familiar with how stock prices work?”

“Yes.”

“Your assignment is as follows. At the end of trading today check the stock price of the company listed on the screen. You can use the internet. Memorize the price. After thirty days, check the price again. If the price has gone up, return here, and you’ll receive a stipend.”

Porter waited for more, but the voice stayed silent.

“And if the stock goes down?” he asked. “Or stays the same?”

“Then the session is complete,” the voice said. “Don’t return. Instead await our email, and you’ll be given a different assignment at a new session.”

The monitor went black. Porter took off the headphones and laid them on the desk. He found the dark-haired woman waiting for him on the other side of the door.

“Remember your cypher,” she said as she walked him out. She handed him a two hundred dollar check at the elevator doors. “And remember to return in thirty days for your bonus.” She smiled, and the veneer of professionalism was back. “But only if your trigger occurs.”

Only if it occurs.

He thought about that as he took the bus back to his neighborhood.

By the time they hit his stop, it had started to rain, a weak drizzle. He walked three blocks and waited beneath a large tree. From there he watched his building for a while, gradually convincing himself that the way was clear. Maybe convincing himself that he knew what that looked like. The building, for its part, was silent on the matter. It had been a single enormous house once upon a time, a painted lady with a wraparound porch, subsequently partitioned into a duplex, then a quadplex, then a plex of more indeterminate nomenclature. Its various ins and outs and hallways had all long ago been enlisted to make use of any nook which might be subdivided, given its own door and apartment number, and then quasi-legally rented. It was a place for students mostly, the shabbiness a point of honor.

He splashed his way across the street to the front entrance.

His particular subdivided nook might have once been the grand second-story bedroom of a doctor or industrialist, he imagined, with a large walk-in closet and an en suite bathroom, the vestiges of which later generations of contractors had ablated away, until now that same footprint represented an entire two-room apartment, complete with closet-sized bedrooms and luggage-sized closets. There was no stove, but only a microwave and a surprisingly large refrigerator. The full-sized fridge was a pyrrhic luxury though, as he rarely had money to fill it with food.

Once inside his apartment, he fired up his laptop and did as he'd been instructed. He checked the stock price. A simple Google search pulled it up.

*NSGT*. Just over thirty-six dollars a share.

It was a shipping company out of Indonesia. He wrote the stock price down on a scrap of paper and stuck it on his empty aircraft carrier of a fridge.

## 2.

**TSF:** 3212

*Subject 735:*

*Exit Results:*

**Testing Trial 27:** *Test subject indicative of non-concordance with all previous entangled pairs.*

**Notes:** *Tester chosen randomly in accordance with protocols. All testing normal for the first twenty-six trials before the incident of non-concordance.*

Sometimes he dreamed in apocalypses.

The red horse, war, rising in a mushroom cloud. The white horse, pestilence. The black horse, famine, which in his imagination was not famine at all, because of something Onica had said once—that the old texts had never called it that. Instead, that horse had gone nameless, and the old texts, when speaking of it, spoke of weights and measures, and of a day's wages buying only a starve-ration of wheat; and it was only later that this was interpreted to have meant famine, and the name applied. But it could just as easily have meant the debasement of money, hyperinflation. The black horse might have been the state, impoverishing its people.

Over the following week Porter checked the stock price once a day. The rest of his time he spent filling out job applications, looking for work.

It took four days to get a nibble—a temp job at a convention center cafeteria downtown.

"The job's part-time, nights and weekends," the old shift manager wheezed from behind a messy desk the following Monday. "You sure you want it?"

Even he seemed skeptical.

They sat beneath flickering fluorescent lights, in a basement office so small it was like a telemarketer's cubicle had grown walls. The manager coughed a lot, and his skin had a sickly sheen. He looked about thirty seconds short of retirement, but still trying to die first.

"I'll take anything."

"You a student?"

"Not anymore," Porter said. Saying it out loud felt like an admission to himself. No longer a student. No longer quite anything.

"What happened to your face?"

The directness of the question caught him off guard. "I fell."

"Landed on your eye, by the look of it," the manager said.

"It was slippery."

"Also your jaw."

"Had to break my fall with something."

"Most people use their hands."

"My hands were busy."

"That's something, at least. That you kept your hands busy. Does he look as bad as you?"

"Can't say he does."

"Well, it's win some, learn some, like the old saying goes; but there'll be no falling like that *here*, you understand."

"I'll be careful."

"Okay then," the manager said, in a tone like he was already second-guessing. "Welcome aboard."

Porter started washing dishes the next night.

The stainless-steel bench ran nearly the whole length of the kitchen's back wall. Upon it plastic tubs of dishes were piled, while beside it the big, rectangular dish-washing machine stood, like a mini car wash, with its own little conveyor, into which the dirty dishes were fed, and out of which clean dishes were disgorged, hot enough to burn you as you tried to stack them.

The other kitchen staff moved around him in a crush, coming and going—the cooks, and wait staff, and busy bussers. He was the one fixed point. The one thing not going anywhere, standing at his station. Floor so slick with grease and soapy water that he had to keep one hand on the stainless-steel table anytime he stepped off his corrugated black floor mat.

"Watch it," a waiter barked when he drifted too far into the flow.

"Sorry."

Sometimes dishes broke, and no one seemed to notice or care.

The dirty plates often still had food on them when they were piled in the tubs, and it was his job to scrape the plates before he put them in the machine. The uneaten food went into the garbage. Endless fries. Uneaten chunks of burger. The occasional unfinished steak.

His stomach would growl as he scraped the plates, but he never ate anything. Not so much as a fry. If he ate even one, he'd be a new kind of thing. And there'd be no stopping.

When he got off work, he walked back to his apartment and checked the stock price. *Is this what millionaires are like?* He imagined five dollar coffees and serious leather briefcases. Owning more than one pair of shoes.

As the weeks wore on, the share price went up, but then as the last few days ticked off the calendar, it took a dip. Nothing major, but a loss of 1 percent for the month.

He felt a wave of disappointment. His trigger hadn't been met. No need to go back to the skyscraper downtown.

The day he was to have returned came and went. Three more days passed, and he was starting to wonder if he'd really hear from them again when he got an email:

*"This is an autogenerated email. Please do not reply. If interested in further study participation, please arrive in person on Sep 15 for another session."*

Porter marked the date on his calendar.

To a Midwesterner, the streets displayed an alarming lack of respect for straight lines. He made his way downtown through an endless series of stoplights, the whole grid on slant, each block higher or lower than the one next to it, as the city stair-stepped its way down to the water. That was Seattle. A thing you'd fall down if you weren't careful.

He got off the bus and walked the final six blocks, skyscrapers jutting overhead, making the ground not matter. He took the elevator up and the blond receptionist considered him from across the marble bulwark of her countertop.

"I have another appointment," he said. "Porter Volk."

"Please take a seat," she said. "Someone will be with you shortly."

He sat and waited. On the wall opposite hung a painting of cows in an open field. The scene made him think of wolves hiding in grass, and for the first time in days he thought of Onica.

Onica and Brad and the unsmiling man. Cinderblock hands.

He pushed the thought away.

The coffee table before him held a stack of magazines. He picked one up. *Investor's Business Daily*. He flipped through the pages—and had zero dollars to invest. The magazine might as well have been written from an alternate universe: one in which negatives were positives and the utility bill wasn't months behind. He wished he lived in that universe. Was there a *Fuck-up's Business Daily*?

He laid the magazine back on the table as sacred offering for the next person who came along, whose life might be going better. He wished that person well.

Eventually, the tall, dark-haired woman appeared. "Back for your second session?"

"I got an email."

She led him back down the hall and ushered him through the door. "You know the drill."

The same empty room. Same opaque, shower-stall wall. Same desk.

She closed the door behind him.

He crossed the room, sat, and put on the headphones.

The screen flashed to life. A moment later, a symbol popped up. Not a backward G this time, but a new image. Like a hieroglyphic. A half-moon symbol, like you might imagine on the wall of some ancient stone temple.

"There should be an image on the screen," the voice in the headphones said.

"Yes."

"Don't say what it is. Only you can see this image. The image is a one-time cypher. Please commit it to memory. When you've committed the image to memory, hit enter."

He stared at the image. Memorized it. He wondered how memorized, exactly, it had to be.

Would it need to be exact? Was he supposed to try and memorize the exact curve of the line, or was it just the rough idea of that mattered? Like a face you recognized when you saw it again. The cypher hadn't ended up mattering last time at all; maybe it wouldn't matter this time either.

He hit enter. The screen went black.

"Thank you," the voice said. "Now for part two."

On the screen flashed a three-letter word. *BTC*.

“Can you read what’s on the screen?” the voice asked.

“Yes.”

“Please commit it to memory.”

“Okay.”

“That’s the designation for a cryptocurrency. Are you familiar with cryptocurrencies?”

“Yes,” he said. “I’m familiar.” And for the first time, he wondered if his selection might not have been so random after all.

“Your assignment is as follows,” the voice said. “At the end of business today, check the trade price of BTC to the US dollar. Commit it to memory. In sixty days, you are to check the price again. If BTC has gone up in relation to USD, return here. If it’s gone down, or stayed the same, then the session is ended, and you should wait to hear from us.”

The monitor went black. Porter stood.

“Remember your cypher,” the woman told him as she walked him out past reception. At the glass doors, she handed him an envelope. “Return in sixty days, but only if your trigger is met.”

He thanked her and headed out the doors. As he waited for the elevator, he opened the envelope.

Inside was a check for one thousand dollars.

### 3.

**S**ixty days was a long time to watch numbers on a laptop screen.

He continued dishwashing while he hunted for better work, but there was nothing to find. At least not for a college dropout who’d only half-finished school.

He’d thought about going back next semester, but he was already swimming in debt, which was why he’d dropped out in the first place to write blockchain code for that De-Fi start-up. Then the founders had rug-pulled six months into the gig. Onica and Brad. And him left swinging, with no work and no school, and a burn on his resume.

And worse things, too.

A thing he still saw flashes of at night when he tried to sleep.

The final straw had come after the ER, when his roommate had bailed back to Michigan, wanting no part of the shit coming down, leaving him with an apartment he had no hope of affording. He might have left too, given up completely, but he knew that the lease would dog him, and anyway, he couldn’t face his parents again. Not after all that they’d sacrificed. They’d paid his first two semesters straight out of pocket. And other money, too. The rest on him, debt to the ceiling.

No, he had to make a go of it out here. Somehow.

“There are computer jobs I can get,” he’d told his father over the phone. “I’ll work while I finish school. And I’ll pay you back.”

And that had been the plan.

Since he had no money, and lots of time, he went to the library in the evenings to fill the hours, like when he was a child.

He’d find a way to take more courses next semester. Take out another loan if he had to, though the thought of it dug a pit in his stomach. You couldn’t declare bankruptcy on school debt. It might follow him forever—interest growing over time, a life-destroying avalanche. But what was the alternative? Go back home with the debt he’d already incurred? And no degree. Worse off than when he’d left.

Words rose up at night, as he stared at the ceiling: *What use am I?*  
 Staying was limbo. Leaving, perdition.  
 He stared at the ceiling and tried to sleep.

Over the following weeks, he watched the price of bitcoin, BTC, tracked against USD. He also watched the extra thousand USD in his bank account dwindle as he paid his bills.

Out of curiosity, he tried to look up the company that ran the study, but there was little to find. It wasn't any kind of academic research outfit though, that was for sure. The name on the check belonged to some kind of trading company. They owned real estate. Chicago, Austin, Tempe.

According to the internet, the current CEO was a woman named Sofia Michelle Self. There wasn't much to find on her, either. Most of the online pictures were from decades earlier—a woman of medium build, with short, brown hair. She'd be twenty years older now than all her pictures. Her wiki said she'd studied business in college and then dropped out to co-found the investment company with a business partner.

On a hunch, Porter Googled the partner, Jacob L. Wagner, and here, finally, was something to find. Two scientific papers. The first on something called two-node photon subtractive entanglement. The second on non-linear quantum delay. There were no more pictures of him either, beyond a certain date, until a final picture, in an obituary from eleven years ago. Malignant histiocytoma listed as cause of.

Since then, the company had been headed solely by the reclusive Ms. Self. A private LLC. There was nothing else to learn. No employees listed. No news articles. Nothing that hinted at what the company actually *did*, other than own stuff.

It was like looking for a ghost. But the checks had cleared. Which was all that mattered.

Near the end of the sixty days, the price of BTC inched upward until it became apparent that, barring any sudden reversals of fortune, it would be in the black on day of deadline.

After a final bit of sideways action, it finished the sixty days up almost 10 percent.

For a stock, it would have been an epic swing. For bitcoin, a Tuesday. But a good one.

Porter smiled as he sat alone in his apartment and watched the clock pass midnight. His trigger had been met.

This time, he would need to go back.

"Watch this," Onica had said, the day the token went live.

Brad had hit the button as everyone gathered around the monitor. Over the following minutes, the price had zoomed north. Doubling. Tripling.

"How's this money?" someone at the back of the room had asked, awe in his voice.

"Money's just trust," Onica had said, like that was an answer.

Then later that night, blasted out of her skull on equine-sized dosages of dextro and bennies, fingers tapping the refresh, she'd said, "Watch this. Watch this." White-blond hair hanging in her eyes. Trust going higher and higher.

Porter rode the elevator up. The receptionist made eye contact as he approached.

"I was told to return if my trigger was met," he said.

"Excellent," she said. "We've been waiting for you."

A moment later, the dark-haired woman appeared. "Welcome back, Mr. Volk," she said. "If you'll come with me."

He followed her back. “Your debriefing will only take a few minutes,” she offered casually.

*Debriefing.* It seemed a strange choice of words. What did they need to debrief?

At the end of the hall, she opened the door and ushered him in. Again, the same room. Again, the desk and video screen.

She closed the door behind him.

Again, he was alone.

He sat. Video screen blank.

He put the headphones on. After a moment, there came a tone in his ears, and the screen flashed two symbols this time instead of one.

One symbol he recognized; one he didn't.

The now-familiar voice in his headphones spoke: “Do you recognize the symbol you saw the last time you were here?”

He stared at the screen. “Yes.”

He recognized the half-moon symbol, like a hieroglyphic. The other symbol displayed on the screen was an upside-down U with a dot underneath it and wasn't something he'd seen before.

“Your symbol was a one-time cypher,” the voice said. “You will now get the decryption.”

At first nothing happened, and then the screen went black.

A moment later, the glass wall beside him de-opaqued—the whole thing, floor to ceiling. Wall became window. Some kind of smart glass.

He found himself looking in on another room, like a police interrogation room on TV, gruff detectives staring through glass. Only this was no interrogation room.

It took a moment to make sense of it. He stood and moved closer.

The room beyond the glass was a kind of workspace. He saw techs in white coats and dark goggles, bent over tables at different corners of the room. On the tables were angled a series of little round mirrors, with metal plates held in place by thin silver clamps.

One table held something that looked like a strange, futuristic weapon.

A gun.

*No, not a gun,* he realized as a worker made an adjustment to the apparatus. *A laser.*

That's what the goggles were for, he realized. To protect their eyes.

He could see a glowing red dot at the end of the device—laser light crossing from one table to another, ricocheting through a series of mirrors to a third table on the far side of the room.

What the hell was he even looking at? It was like some kind of optics lab. Or that scene in spy movies where somebody spooled down from the ceiling, trying not to trigger the vault's defenses.

One worker glanced at him briefly, making eye contact through the glass before turning back to his work.

Nothing in the man's body language suggested that he was surprised to see someone staring at him through what had, until a moment ago, been a solid white wall.

It was like he expected it.

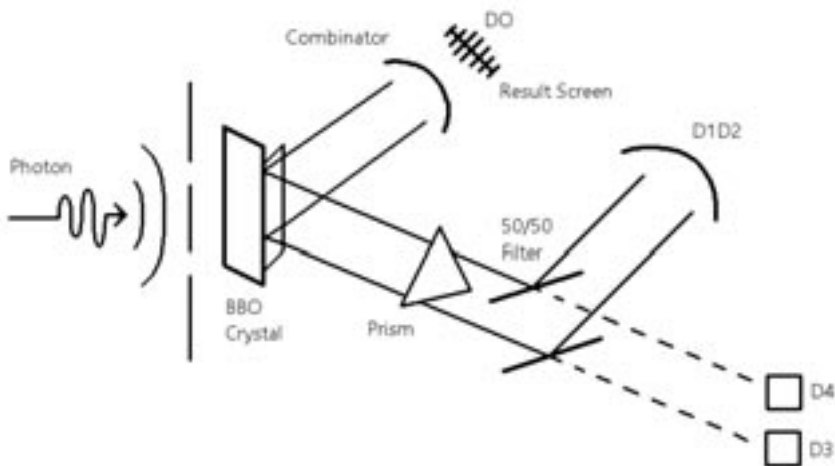
“What the hell?” Porter whispered.

As if in response, the wall snapped back. Like a magic trick. Smart glass suddenly white and opaque again, and the room just *gone*—replaced by frosted white wall.

There came a beep from the monitor, and when he glanced over, a diagram flashed up on the screen.

“Please sit and look at the screen,” the voice said.

Porter sat. He looked.



“You should see on the screen a schematic of the setup that you saw on the other side of the wall,” the voice continued.

Porter stared at the diagram. “Okay,” he said.

It could have been something like that, he supposed.

“It’s a modified delayed-choice quantum eraser experiment,” the voice continued, “designed to delineate the paths of two entangled spin-particles.”

“If you say so.”

“In this test, a crystalline lattice splits a photon into two daughter particles which then have a fifty-fifty chance to either pass through or reflect off a pair of filters. One of these entangled particles is designated as the idler; the other is the signal.”

“Okay.”

“This procedure was performed in real time during your last attendance here, and the results at the detectors were encrypted at that time. These encrypted results were then displayed to you and only you and then erased.”

Porter’s brow furrowed. “I wasn’t shown any results.”

“You were shown the *encryption* of results,” the voice said. “In the form of your one-time cypher. The which-path information of the idler was encrypted as a nonsense cypher before it was erased, so you alone have potential knowledge of the path information. Do you understand?”

“Not at all.”

There was a pause.

“This information will now be decrypted to you,” the voice said.

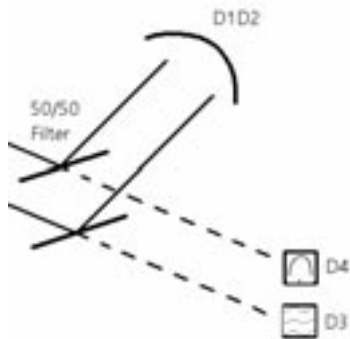
The diagram changed.

The image zoomed in, and there were suddenly two new additions to the diagram—two symbols.

He recognized the moon symbol, like a hieroglyphic, in the box at the bottom right of the diagram.

He leaned close.

\* \* \*



The other box held the upside-down U with a dot underneath.

The voice continued, “Your one-time cypher now identifies which path the idler particle took. Do you recognize the symbol you were shown last time you were here?”

“I don’t understand what—”

“Do you see the symbol?” The voice cut him off.

He stared at the diagram. The little box at the bottom. “Yes. I see it.”

The half-moon.

“Do you see a path associated with that symbol?”

“Are the dotted lines supposed to be paths?”

“Yes. The paths lead to different detectors.”

“Then yeah, I guess.”

“I need to hear you say which path.”

“I don’t understand what this—”

“It’s not required that you understand,” the voice interrupted again. “It is required only that you learn which path the idler took in the earlier test. Please say which path.”

He looked at the diagram again. “The bottom path,” he said. “The box marked D-three.”

“Detector three. Thank you, Mr. Volk.”

The screen went black.

Silence.

“Hello?” he called.

The door behind him swung wide then, and the woman stood in the opening. She smiled. “You can go now, Mr. Volk,” she said.

“That’s it?” He stood.

“Yes.”

“I thought I was going to be debriefed.”

“The which-path information was your debriefing.”

“What’s all this for, exactly?”

“You can collect your check at front reception.”

She walked him out. At the front he picked up his check. He ripped it open and looked. It was a check for four thousand dollars.

“I think there’s been a mistake,” he said.

“No mistake,” the receptionist said. “You did well, Mr. Volk. We’ll be in contact.”

4.

<b>Stock</b>	<b>Test Subject</b>	<b>Outlay</b>	<b>Period</b>	<b>Trigger</b>
TVYN	735	full tranche	27 days	Positive
ZYZ	629	half tranche	90 days	Negative
ERJ	78	half tranche	9 days	Positive
AZMY	721	full tranche	12 days	Positive
HGHY	703	full tranche	86 days	Negative
MMC	655	half tranche	121 days	Positive

**Notes:** all test subject pairs are in full concordance.

That night he bought groceries and paid two months' rent on his apartment. It only scratched the surface of what he needed, but it was a beginning.

"I'm doing well," he told his father on the phone. Then, "I think so." Then, "The money's good." Pause. "One of the big skyscrapers downtown."

After hanging up, he cooked a steak and ate it. An unimaginable indulgence. It was the first meal not out of a can that he'd had in months.

The next day he went to work at the cafeteria and washed dishes until his hands were red and raw.

Kitchen staff brought in full plastic tubs and set them on the counter. His stomach didn't growl when he scraped the plates. As he ran the dishes through the machine, he thought about the diagram he'd seen at the offices, the people in white coats and goggles. He thought about his NDA. And BTC. And the four thousand dollars. All of crypto, he knew, just a kind of ledger—a distributed record of account.

He played the events of the previous day over and over in his mind as he moved the dishes to the drying rack. Somewhere in his chest, he knew, lay his own ledger of account, deep in the red.

Lost in thought, his hand slipped, and a dish fell and broke on the floor.

"Be careful," a pretty waitress said, gliding past. She smiled at him as she stepped over the pieces. "You'll cut yourself daydreaming."

When he got back to his apartment, he started Googling.

Quantum eraser experiment, the voice in his headphones had called it, so that's what he searched. He pulled up endless pages, endless diagrams, but none quite matched what he'd seen.

He went down the rabbit hole, reading about entangled pairs and quantum time delays. Things he didn't understand. Lasers, and filter-mirrors, and anonymized outputs. Something called the measurement problem. If you measured the state of one entangled spin-particle, you could guess the state of the other without having to look—the two things connected in some way that nobody quite understood. Einstein had hated it, apparently, and had registered a complaint with the Universe. The Universe had remained unmoved.

None of it shed any light on what kind of study he was in. And he had no idea what the cyphers had to do with stock prices, or cryptocurrency.

The next day, he received an email from the company.

*"This is an autogenerated email. Please do not reply. If interested in further study participation, please arrive in person on Dec 16 for another session."*

He marked the date on his calendar.

Again, he returned to the offices.

Again, he was met by the woman.

"Welcome back, Porter."

Again, he was given a cypher on the screen—which this time looked vaguely like a dagger.

"Please commit this image to memory," said the familiar voice in his headphones.

It was a procedure that would be repeated over and over in the following months, with only slight variation. Always he was sent away, told to look for a specific trigger event—a certain stock price, or cryptocurrency value, or a specific gold valuation—which either would or would not be reached by a given day.

"Return if your trigger is met."

Sometimes the intervals were short—just a few weeks. Sometimes longer. If

the trigger wasn't met, he was to consider the session expired and wait for an email.

If the trigger *was* met, he would return to the offices to be shown a diagram and have his cypher decoded. The diagram would reveal the all-important which-path information.

Sometimes his cypher pointed to the top path. Sometimes the bottom. Then on to the next session, and the next message in his inbox: "*This is an autogenerated email.*"

The money was good.

So good, in fact, that he enrolled in school the following semester, two classes this time, economics and computer science, and for the rest of the semester worked this way, part time in the kitchen, part time for the study, keeping himself fed and housed as he inched closer to a degree.

At night, he opened his laptop and scrolled through his old alt-chain projects—icebergs of a past life—Bitcoin like some platonic ideal in the crypto space. The most trustless of trust-networks. But there were other things, he knew, that blockchains could do.

In the back room sometimes, they'd talked in the light of glowing screens.

"Society is an evolving ecosystem of competing trust networks," Onica said. "First tribes, then languages, religions, money."

There were different Onicas.

Onica the brilliant.

Onica the zealot.

Onica the liar.

All versions of her existed at the same time, and you never knew which one you were going to get. Each aware of the others, but existing in superposition, like a state of grace, blind and innocent. He hadn't understood that then.

"People break their word," she told him. "So it's those networks with true-signaling that build the most trust over time. And the networks that build the most trust over the largest number of people will win. Be it within hierarchies, or across economic systems—all of it working to increase cooperation and eliminate inefficiencies."

"How?"

"Though more precise alignment."

"Alignment to what?"

"Truth," she said. "And to the lossless, frictionless transaction of truth." Her smile went sharp at the edges. "Perfect price discovery in all things."

Maybe you could want something and still fall short.

"I'm going back to school," he told his parents when they flew out to visit. "No, I don't need any help."

It felt good to say. And to mean. His parents stayed three days in his crappy little apartment, and he showed them around the city.

"Which building do you work in?" his father asked from the Space Needle during their last night in town.

They stood side by side in the cold, buffeting wind. Father and son. Of a height, though his dad was stockier. Shoulders heavy from a lifetime working the mills.

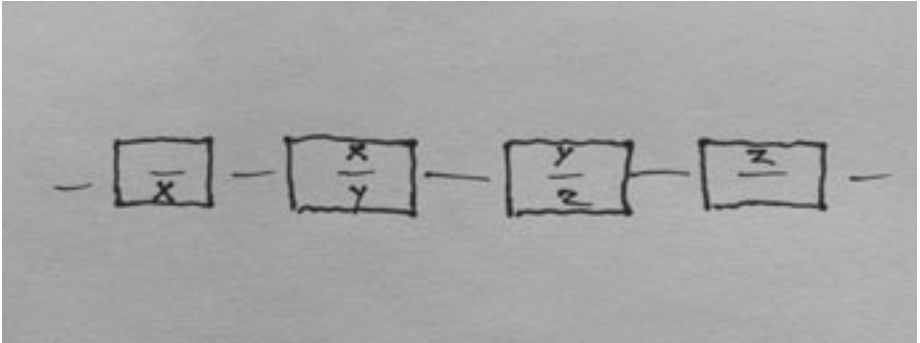
Here's the thing about having parents who love you: by hurting yourself, you hurt them.

Porter studied the city spread below. "That one," he said, pointing.

It was the building in whose lower floors were housed the convention center kitchen and dishwashing station, but he didn't tell them that.

Later that night, in his apartment, his father said, "I don't understand this financial stuff you do. So you're still writing code then for that same company?"

He couldn't lie to his parents, so as a way not to answer, he sat at the table and drew a picture on paper. "You mine blocks through proof of work," he said, "adding to the chain over time."



"The previous block's transactions connect to the next block's hash, and on and on, see?"

His father shook his head. "No, I don't see, but I'm glad you do. So the money's in the blocks?"

"Deed is in the blocks, and the market assigns a value. So kinda, I guess, but not really."

"And it's safe?"

"The whole thing's distributed across about a million computers, so if one gets hacked, the others decide what's true. Consensus decides blocks."

His father shook his head again. "It's over my head, but I'm proud of you." At the airport the next day, his father hugged him. "I love you."

"Love you, too, dad."

On impulse the following week, Porter asked out the pretty waitress at end of shift, and the two of them spent an evening walking Pier 57 off Puget Sound. He tried to make her laugh.

"You've got quite the way with words," she said at one point.

"I'm known for it," he said. "Ninety percent of my vocabulary comes from words."

Four nights later, they got pizza at her apartment, which she shared with roommates who were always at work.

He woke on her couch the next morning to find her sitting beside him on the floor. "I like you, but this can't be a thing," she said. "I'm quitting next month and going home."

"Where's home?"

"Nebraska."

"Why?"

"It's too much here."

*Too much*, he thought. *And not enough.*

She said nothing more about it, but he knew what she meant. This place. He felt a pang in his chest—her first words to him become a kind of prophecy: *You'll cut yourself daydreaming.*

"How do you afford to live here?" she asked. "Because it's sure not washing dishes."

So he told her about the study.

“What kind of study?”

“The double-blind kind,” he said.

“But what’s it for?”

He thought of his NDA, and the woman’s words rose up: *The less you know, the better.*

“I’m really not sure,” he said. And there was truth to that.

“Can anybody apply?” she said.

“You can’t apply. You have to be selected.”

She leaned her head against his shoulder. “You don’t have to lie. So you’re some kind of dealer.”

“No.”

“But something illegal.”

He hoped not but didn’t have an answer. For some reason, he thought of Onica and Brad again. Things rose up inside him to say: that money was trust and nothing beside. That society was just a network of trusts that could all be broken. That there was something *wrong* with the system they lived in. That they were trapped.

Instead, he stayed silent. And a few weeks later, she was gone.

He watched her pack for the airport, everything she owned in one suitcase. The rest she was leaving behind. Including him.

Probably the smartest thing.

5.

**B**y the time summer rolled around, he’d saved enough money to take a full course load. He registered for classes in the fall, but in late August, it all came crashing down.

Because he saw the man.

His back turned, standing there. But you don’t forget a back that size. Like a billboard in a shirt. A complex swirl of emotions shot through him. First, disbelief—the sheer coincidence of it, that wide shape looming near the food truck a block from his apartment, like he was waiting on something.

Then the billboard turned. Hot dog in one hand, twenty oz. soda in the other. He saw Porter and smiled. Porter knew then what he was waiting on.

*Him.*

Billboard dropped his food and charged.

Porter ran.

Onica had been the first to go to ground. She’d stopped answering texts on a Tuesday afternoon, just after lunch. Brad had gone silent the day after that—even after all the reassurances. Even after saying that he knew where she was, and that there was no problem. “It’s fine. It’s fine.”

By the end of the week, Porter had known. It was all coming down. All of it.

The token price was tanking, rumors aswirl on the net.

But still he’d come to work that Monday. Still, he’d sat in that chair, because there was nothing else he could do, or even imagine doing—his whole life wrapped up in this project he’d quit school for. Most of his pay in token. The problem too big to even see, entirely, like a blue whale you were standing three feet away from.

The calls started in earnest midweek. Calls about money. Each one more threatening than the last.

“You said the coin was safe, you fucking prick,” one caller accused.

He gave an array of responses:

"I thought it was. I got burned, too."

"It wasn't my fault."

"I bet my college fund on this. My parents' money on this."

"I'd watch my back if I was you," one caller replied and hung up.

He was listed on the website as a coder. *Not my company*, he'd wanted to shout. Not my coin. He'd never have designed a piece of shit like that, even if he'd thought he could make money off it.

He'd had other dreams—other alt-coins in mind when he'd left school. Protocols of his own design, which he'd let go of, all to work at this company and chase a few thousand dollars down a bottomless hole.

Maybe he was guilty. That was the hardest thing to face, late at night, lying in bed.

Maybe he *deserved* it.

By the middle of the following week, the corporate creditors had come knocking. And then the creditors of the creditors, who were not creditors at all but serious men with New York accents and a carefully calibrated misunderstanding of the concepts of fiduciary duty and risk-on assets. They understood only what they wanted to, which was this: We gave you money, and now you give it back. The *you* in that particular formulation being somewhat flexible and transitive to anyone with a name on the corporate site. Luckily for Porter, his name hadn't ranked high. But unluckily, all those higher-up people had fled, leaving mostly just stragglers.

And it had been *him*, technically, who'd built the token. If not designed it.

Which was maybe enough.

"You're the blockchain guy, yeah?"

"I just work here," he'd tried to explain.

"Just work here," the big man had mocked with a smile and then flung him over a desk.

There'd been two of them come knocking that day. Both unsmiling. One of normal human dimensions, in an expensive suit, and the other the size of a professional rugby player, but with a UFC fighter's ears, and a hippo's lower jaw.

Over the course of about two minutes, or a thousand years—depending—the bigger man had beat him to a pulp while the smaller man watched with bored detachment. Desks overturned. Computers smashed. The big guy got creative with it.

"I have nothing," Porter had tried to say near the end, bleeding on the carpet. "They took everything. Onica and Brad."

"But you know where they are," the big man said, fist raised.

"No, I don't."

The fist came down.

"You know."

"I don't."

The fist came down.

"You know."

Porter sprinted down the sidewalk as fast as he could.

A backward glance, and Billboard was still behind him, coming on strong. Not the fastest runner, but the way he moved, maybe he was pacing himself.

Porter crossed the street mid-block, blasting through traffic, drawing horns and shouts: "Watch it, fuck!"

Down the sidewalk on the other side, and around the corner.

Three blocks over, he cut left, past a row of houses, across a park, never looking back.

Over the fence, heart slamming, then right again, back toward the shops and businesses. Finally, blocks later, he risked a backward glance and saw nothing. Nobody chasing.

He ducked into a café and grabbed a booth in the back. Eyes to the front.

He waited, legs shaking, but nobody came. No billboard-sized man.

“What can I get for you?” the waitress asked. Then: “Can I get you something?”  
Then: “Are you okay?”

He slept on a park bench that night.

Dreams of running.

And it was like he could feel the threads of civilization. The unraveling edge of some ancient contract. What was civilization if not the ultimate trust network? I trust you not to kill me.

Once the sun was up, he walked home and did a lap around his house, at a distance of a block, trying to scope the territory. He didn't see Billboard, but that didn't mean shit.

Finally, he decided to risk it. What choice did he have?

He sprinted for the entry and bounded up the stairs to his level. Hands shaking, he put his key in the lock—and then he was through, slamming the door behind him.

He'd been in fights before.

Back in high school, there'd been a bad one.

A group of kids in the hallway who'd timed it perfectly—no teachers, no friends. Just the four of them, and he'd been knocked flat before he even knew it had started—on his back, with a guy on top, and he'd tried to block, to scramble, but nothing worked, as the kid swung on him again and again, so he'd reached into his pocket for the pencil—and later he had the chance to think a lot about that, the way things escalate—expulsion, meetings with psychologists, all asking the same question—why did you use a *weapon*—one minute just walking to class, such a bright kid, with a bright future, and the next minute changing your life, destroying any chance at a full-ride, fingers wrapped around a number two pencil as you bury it in the thigh of a boy whose last name you didn't even know. And it would later be the *reason* for no scholarships, even with those test scores—the reason for the money problems, and the debt, the risks he took, the *failings*, each thing linked to an earlier thing like blocks on a chain.

Porter left his apartment just after dawn, nobody on the street yet. He walked his way to work. Washed dishes until his mind was blank.

Over the following weeks, Billboard never returned, and maybe that was worse. The not knowing. Until one evening, standing in the back of the kitchen, doing the dishes, a new waitress came up to him, twenty-dollar bill in hand.

“Guy said this was a tip for the dishwasher.”

“Huh?” Porter towed his hands dry.

“A customer,” she said. “He tipped me, but said this was for the dishwasher.”

“Why?”

“He said he'd been a dishwasher once, and waiters got all the tips. Said he didn't want you thinking you were forgotten.”

Porter took the twenty. “Show me.”

She led him out through the busy kitchen, past the flaming burners, to the swinging doors at the front. She pushed the door open for a view of the dining area. “That guy,” she said and pointed.

It was the man in a suit. No Billboard this time.

“I've got to go,” Porter said, flinching away like he'd been burned.

At the manager's office he said, “I'm not feeling good.”

“What?” the manager said.

"Sick," he said, already moving. "I'm sick. I have to go."

Then he tossed his apron and fled out the back and into the night. Down the dark alleyway between two buildings, and there, of course, in the shadows, beside a dumpster, just as planned, Billboard was waiting.

The first blow knocked the wind out of him and dropped him to his knees.

"You owe us money," Billboard said.

"I told you, I—"

The next punch knocked him flat. Face to the wet, filthy asphalt. Tasting grit and blood.

"You owe."

"I don't *have* any money."

"You built the token, no? A Ponzi all along. You think we wouldn't know?"

"It was Oni—"

"If your partners ran out on you, that's your problem."

"They weren't my partners."

"Bullshit."

"I don't have money."

Billboard smiled. Teeth too small for the wide head. "We looked into you," he said.

"Your parents got money."

"No, they don't."

He swung again, fast. Crunching impact. Porter looked up from the ground.

"People their age *always* got money," Billboard said. "Even if they don't realize. If they want you around, they're gonna pay."

He bent and gathered Porter by the collar, raising his fist again.

Porter closed his eyes.

"*Hey!*" Came a shout.

Porter looked. It was the old shift manager. He stood in the open doorway, broom clutched across his portly body like a battle-axe. "That's *enough!*" he barked.

Billboard smiled. He looked down at Porter—shirt still clenched in one cinderblock fist. "For now," he said. Then released him.

Porter collapsed to the wet pavement.

Billboard walked off.

As the manager approached, he had a sad expression on his face. He stopped and looked down. "Didn't I tell you, no falling like that here?"

"Sorry."

"I'm sorry, too, kid."

Back inside, the manager sat him down in the office and got him cleaned up. Band-Aids and peroxide. "I can't have this here," the old man said. "It's a place of business. You understand?"

"I understand."

"I'm gonna have to fire you if it happens again."

"You're not firing me now?"

"Is it gonna happen again?"

"It might."

"Jesus, kid, at least lie to me. What am I supposed to say to that?"

"I don't know."

"You got any big friends?"

"No."

"Well, get one. I might not be there next time."

\* \* \*

Later that night, he walked home. He had time to wonder what the Billboard had meant. *Even if they don't realize.*

He found the answer in an envelope taped to his door. Inside was a picture of his parents' house, printed off the internet on a sheet of paper. Below the picture, two sentences:

*The equity. All of it.*

He stared at the words for a long time, trying to believe in them. Trying to accept that life could be this way.

## 6.

There's a thing that happens, working with blockchains. Maybe certain geneticists feel it—the engineers—because the work you do, if it's good, might be passed down and continue on. Far outlive you. Those countless tokens released to the wild, part of a vast and Godless food web—some built upon others, or living inside others, like the flora of a gut biome. Layer twos, layer threes. Others competing directly, red in tooth and claw, trying to carve out a niche and do something better than other cryptos have done it before—money only part of it—this whole wide ecosystem in play—smart contracts, and gaming, and NFT's, land titling, and irreversible escrow transactions. Value that can't be inflated away. Decentralization and digital uniqueness. Bank killers, maybe. Ordinals and Web 3.0. Coins that actually *do* things, and have *uses*, and make the world a better place. But his coin, the coin they'd made, did none of those things. It was a shit-coin. There's punctuated equilibrium. Extinction events. He should have done better.

When next he showed up at the downtown skyscraper, the dark-haired woman met him at the receptionist's desk and ushered him back. It had been weeks since he'd been there, the latest trigger unmet, so there'd be no debriefing this time. Just the cypher. No comment on the new bruises, but only this news which stopped him cold:

"This will be your last test for us."

She was walking him down the long hall, words spoken casually.

"Last test?" he said. His stomach dropped. "Did I do something wrong?"

His NDA flashed to mind.

"On the contrary," the woman said. "You have been an exemplary test subject, which is why you are being trusted with this final, long-term test."

"Long term?"

"The screen will explain."

In the room, he sat with the headphones on. The screen flashed up.

"Do you see a symbol?" the familiar voice asked.

"Yes."

"Commit it to memory. When committed, hit return."

He hit return. A moment later, the screen flashed words:

*The current financial system remains intact.*

"Do you see words on the screen?"

"Yes."

"I want you to commit those words to memory," the voice said. "When they are committed to memory, hit return."

He hit return.

"Your task this time will be different from before. In six years, you are to make an evaluation. If the condition described by the words on the screen has been met, you are to return here."

"If the condition has been met."

"Yes, in six years, if the condition is met, return here and you will be given a forty-thousand-dollar bonus."

His jaw dropped. *Forty thousand.*

"And if the condition *hasn't* been met?"

"If it hasn't been met, then do not return."

"What if the condition isn't clear? Or it's . . . open to interpretation?"

"Then do not return. Only return here to decrypt your cypher if the condition is met. If the condition *isn't* met, or if it's not clear, then your time working for this study will have concluded. No need to return. Do you understand?"

"Yes."

He waited for more, but there was nothing.

"Is that it?"

Silence. The screen was blank. Usually, at this point, somebody came and opened the door, but that didn't happen.

"*Six years,*" he whispered, feeling a mix of emotions. It was a lot of money offered, but he needed to survive now, not in six years. And besides, he'd miss this place. The mystery of it, like a little escape from his life. If the trigger wasn't met, he'd never return. Never learn what this was all about, or how it worked. The mystery would be never be solved. And worse . . .

He tried to imagine it. Financial collapse. What did that mean, exactly? Hyper-inflation? Bank collapses? What could cause such a thing?

He sat another minute, waiting.

"Hello?" he called.

There was no answer. He stood and walked to the door and pushed it open. This time there was no one waiting beyond.

He walked down the hall, and there were people. They stood in open doorways, as if they'd come to see him. A man. A woman. Faces that might have belonged to the workers he'd seen on the other side of the glass. A door opened beside him, and a man stepped out to watch him pass.

"Come," the receptionist said at the end of the hall. There was something strange in her expression, too, as she led him to the front. As if she knew something she didn't want to say.

She handed him the check for the previous session. "We'll be seeing you," she said.

*Would they? In six years?*

He put it in his pocket. Behind her, a half dozen people stood watching. He turned and pushed his way through the glass doors.

## 7.

**T**hat night he lay in bed and stared at the ceiling.

Six years. He tried to picture it, but there was just an empty space before him where a future might go. Did he even have a future?

He might be anywhere by then. Or nowhere. He might be dead.

It was a lot of money on the table, though. Enough to ensure that wherever he was, and whatever he was doing, if he was still alive, he'd return. It occurred to him maybe that was the point. But why? To look at a diagram and decrypt a pathway? It made no sense. How on Earth could that be worth thousands of dollars? How could any of it be worth what he was paid?

He was drifting off to sleep when his phone rang.

He fumbled for the button. “Hello.”

“Is this Mr. Volk?”

The voice was unfamiliar. A woman’s voice, older.

“Yes.”

“This is Sofia Self.”

Porter sat up in bed.

He knew that name. It was one he’d Googled. The CEO of the company.

“I was wondering, Mr. Volk, if I could trouble you for a bit of your time?”

“My time?”

“Yes. I’d like us to meet.”

“Sure. When?”

“Now, Mr. Volk, if that’s all right with you.”

Porter looked over at the clock. 11:43.

“Is there some kind of problem?”

“No, Mr. Volk. No problem at all. Quite the opposite, in fact. I’d just like a chance to talk to you about the assignment you were given today. Will you come?”

“I’ll come.”

“Very good.”

“Where?”

“Copy this address down. It shouldn’t be far. My people will be there to meet you.”

She was right about it not being far.

After throwing some clothes on, Porter used his phone to find the address. About an eight-minute walk. But the address, it turned out, wasn’t a real address at all, but an empty lot, across the street from an empty park. For a moment, Porter studied his phone, trying to figure out where he’d gone wrong. There was nothing there.

Then a noise grew louder. A helicopter.

It descended from the sky and landed in the middle of the adjacent lot. The side door came open and disgorged a familiar, smartly dressed woman, awash in the wind. It was the dark-haired woman from the office.

“Mr. Volk!” she called out, voice barely discernable through the blast of noise. She waved him over.

He crossed the dewy grass to the helicopter.

“Good to see you, Mr. Volk,” the woman shouted as he got close. She gestured to the open helicopter door. “If you please.”

He hesitated only a moment before climbing inside. She shut the door behind.

“A helicopter?” he shouted. “Really?”

“It’s faster,” she said, handing him a headset. “My name is Dimitra, by the way.”

In all the times they’d spoken, she’d never given her name.

“What’s this about?” he asked.

“Ms. Self will tell you what you need to know.” She motioned for him to put the headset on. “It’s quite an honor to meet her.”

“Is it?”

The roar of the blades grew louder as the prop picked up speed for liftoff.

“You’re the first tester to get an invite.” She slid her own headset over her ears. “In fact, no one at the office has ever met her. Even me.”

The helicopter rose into the air. Once they were above the treetops, the nose-angle dipped, and they surged forward, swinging wide over the empty park. With his headset on, the sound of the helicopter was dampened—now a dull roar.

There was a click in his ears, and then the woman’s voice:

“It’s a long flight, Mr. Volk, so you should feel free to get some rest.”

"Where are we going?"

"Through the mountains."

That meant eastern Washington. Past the Cascades.

He watched the lights of Bellevue come and go beneath them. Then Issiquah, until there were only the lights of cars on the highway, headlights and taillights. He thought of a poem he'd read once—the Traffic Serpent, red on one side, white on the other. Then came no car lights at all, only darkness, as they passed through the mountains. He leaned back in his seat and closed his eyes, the thrum of the machine oddly relaxing. He tried not to think. Tried to quiet himself. Whatever this was about, it was out of his hands now. There was comfort in that.

Although he didn't expect to, he slept.

## Part II

*"The root problem with conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve. We have to trust them with our privacy."*

—Satoshi Nakamoto

### 8.

**S**ometimes at night, as he drifted off to sleep, he saw the perfect, trustless ledger. The layer two that he might have built in place of the thing he'd let himself get talked into.

Trustless: one of those double-edged words. Either a thing you couldn't trust, or a thing you could because you don't need to. The best cryptocurrencies were trustless; mined through proof of work, they were systems for which no third-party authority was required—a truth distributed. You didn't need faith, because the blockchain was a *hyper-object*, distributed across countless public holders. You could just check.

He woke when the helicopter banked and he could feel them descending. He rubbed his eyes and looked out the window, but there was nothing to see. Night utterly black.

The woman sat in the darkness beside him, still stiff and awake. *Dimitra*.

As they descended, the helicopter's floodlights came on, illuminating the field below. They were down off the highlands now and onto the plains, this side of Washington like its own state, with its own weather; snowy and cold in the winter; dry and hot in the summer. More like Montana than Seattle. Open country. Ranch country. He'd driven it on his way to Spokane once, when distant wildfires had turned the noonday sun into a cigarette burn in the sky.

"She lives out here?" he said.

"As much as she lives anywhere," the woman said. "She has land all over."

The helicopter touched down with a thump.

"This is your stop," she said, and flung open the door. Wind tore through the cabin.

"Where are we?" he shouted.

"Nowhere," she shouted back.

And it was true. No lights. No trees. No roads. Only grass and darkness all around.

“She’s out there,” the woman shouted, arm extended.

He looked where she was pointing and saw a hill in the darkness some half mile distant across the sea of grass. “You’re not coming?”

“This is as far as we go,” she said. “She doesn’t like helicopters flying over the ranch. Spooks the cattle.”

He climbed out. The grass was wet. He thought of the painting that hung in reception.

“One last thing,” Dimitra shouted as the blades picked up speed again. “If you see a bull, don’t run.”

“Don’t run?”

“It only attracts them. It’d be a shame to lose you now, considering all the trouble we’ve had with testers lately.”

With that she slammed the door, and the helicopter lifted off in a blast of wind. The craft banked toward the mountains and disappeared into the dark.

He was alone.

It was cooler here than in the city. The night absolute—a thousand stars blanket the sky. Slowly his eyes began to adjust.

He walked.

A hundred yards ahead, he jumped a trickling stream, keeping his feet to the rocks. Then across rolling landscape. Upward. The sound of crickets. The smell of wet grass.

He saw no bulls, nor any cattle at all, though he might have heard them once, in the distance. A low snort. He was halfway up the hill when he realized that he could see a shape at the top. An upright silhouette, bent slightly, unmoving against the starry backdrop of the sky.

Only when he got closer was he certain.

It was a person with a telescope.

Porter crested the hill, soaked to the knees. The woman was turned sideways to him, hair pulled back, concentrating on whatever she was looking at through her scope. The apparatus was balanced neatly on a tripod. Just to the woman’s side, ten feet away, sat a four-wheeler. Leaning against the four-wheeler was something which in the dim light might have been a rifle.

Porter took it all in. He didn’t want to startle her, so he called out, “*Hello*,” while still sixty feet away.

The woman’s eye never left the eyepiece of her instrument, but she held up a hand as if to signal she’d heard.

Not until Porter stepped beside her did she finally speak, without bothering to look up. “Tell me, Porter,” she said. “Have you ever seen Jupiter?”

The unexpected familiarity of her manner took him by surprise. “No,” he said.

The woman finally straightened, looked him in the eye, and it was indeed the same woman whose picture he’d seen on the internet, now aged well into her sixties.

The mysterious Ms. Self herself. As it were.

She was taller than Porter had expected. Only an inch or so shorter than him, maybe five ten, and stooped slightly at the shoulders with age. A face long and thin. Hair white, with loose, flyaway strands escaping her ponytail. She had no extra mass on her anywhere. In her faded work jacket, she looked like a rancher, not an investment guru who summoned helicopters across the mountains in the middle of the night.

She gestured to the telescope. “Here, take a look.”

Porter bent and put his eye to the eyepiece. It took a moment to center, then a glowing white blob came into view, amorphous and fuzzy.

“It’s four hundred million miles away,” she said. “The light reflected from its surface takes half an hour to reach us, give or take. Let me show you something else.”

Porter stepped away from the scope, and Ms. Self took over again. Her hand worked the knob, and the telescope swung. She bent to the eyepiece until she found what she was looking for. "There." She straightened. "Now, look."

Porter looked.

It was a star.

"V-seven-six-two Cassiopeiae," she said. "That light traveled sixteen thousand years to die on your retina. The hill where we're standing was under a glacier half a mile thick when that light began. Did it sail all that darkness as a wave, you think? Or are you a particle guy?"

"I don't know." Porter kept his eye on the eyepiece, watching the star twinkle.

"That's the riddle, isn't it?" she continued. "You seeing that light makes it collapse into particles, but nothing suddenly transfigures itself and *becomes* a thing just because we're seeing it. Light is always and forever whatever it is now, from its beginning—particle or wave—a thing you saw, or a thing you didn't. Like it always knows if an observation will be made, even from the first; which means that somehow, back when glaciers were here, that little figment of light *knew* there'd be an eye to die upon atop this hill."

Porter straightened from the telescope and stepped back.

The old woman bent to the instrument again, eye to the eyepiece. "Of course, to the photon, time doesn't even figure in," she continued. "At the speed of light, time's ice, not water—the dilation absolute."

"I don't know anything about this stuff."

"That's okay." The woman adjusted the knob. "Deep down, it's all phenomenological anyway—two possible outcomes—A or B. Particle or wave. Measured, or unmeasured. The rest is just a story we tell, though if we're clever . . ." her eyes lifted to Porter again. "We might find ways to game things a bit."

Porter thought of his assignments. The triggers, met or unmet.

"Is that what your company does?" he asked. "Game things?"

The old woman straightened. "The whole Universe is a game. When it comes to finance, though I'll give you a piece of advice, Mr. Volk." She gestured around her. "Buy land. Like the old saying goes, it's the one thing God's not minting more of."

"I'm a little short on land-buying funds at the moment."

"Now, perhaps, but later, who knows? Which brings me to the reason you're here."

"My final assignment."

"Yes," she said. "An odd one, I realize. Have you guessed yet how any of this works?"

"They told me it's a research study."

"But you don't believe that."

"No."

"Then how do you think it works?"

Porter decided to be honest. "Some kind of cheat for the markets. That's what I think."

She smiled. "You're a student, I'm told. Double major. Economics and computer science. Solid grades, and then dropped out. Why is that?"

"I got sidetracked," he said.

"Yes. By a failed cryptocurrency."

He stayed silent.

"Well, you're exactly right," she went on. "A cheat for the markets. We've been monitoring your financial transactions since we invited you into the study, and you've never tried to profit off it."

"How would I?" he said. "Half the time, the trigger isn't met. Seems like a good way to lose half your money."

“That hasn’t stopped other participants from trying. We don’t mind when they do.”

“If you don’t mind, it’s because it doesn’t work.”

“For them, no,” she said. She picked up the telescope and began unscrewing it from the tripod. “Would you like to know how it *does* work?”

Porter glanced at the rifle leaning against the four-wheeler. He thought about the NDA, and the company that was a ghost on the internet. “It seems like you’ve gone to a lot of effort to keep people from knowing how it works. Maybe I don’t want to.”

“You’re scared.”

“Should I be?”

“Normally, I’d say there’s reason, but with you . . . no.”

“In the helicopter, Dimitra said you’ve had trouble with testers. What did she mean?”

“Do you know what entangled particles are?”

“Two particles, same spin,” Porter said. “Or something like that.”

“Yes, something like that.” The old woman finished disassembling her telescope and folded the tripod legs with a click. “If you googled it, you’d get a nice, neat definition.” She slid the telescope into a black case that she slung across her shoulder like a quiver. “But it’s mostly just guessing.” She walked to the four-wheeler, grabbed the rifle, and clipped it to a bracket on the handlebars. “My favorite guess is that there’s only one electron in the whole Universe, and it’s being shared by all the atoms, in a single, timeless probability field. But that’s probably not right either.” She threw a leg over the seat, and the machine rumbled to life. “Now climb on. I’ve got something to show you.”

## 9.

**F**or the next six minutes, he did his best not to die.

The four-wheeler’s headlights played over the sea of grass as the vehicle bounced down the hill in the darkness. He saw cattle in the distance, dark shapes in moonlight.

“Three hundred and fifty acres,” Ms. Self shouted over the growl of the engine. “God’s golf course, I call it, this side of the Cascades.” They dropped into a dry steam bed and roared along stones for a quarter mile. “No light pollution out here. Better for the telescope.”

Two minutes later, they pulled onto the grass again, and then over the top of another low hill, where Porter got his first real view of the ranch.

Once, when he was twelve, he’d gone to a summer camp. There’d been old buildings, and bunkhouses, and barns, and a structure called *the mess* where the campers ate. All of it dilapidated and right on the verge of falling to ruin. This place reminded him of that. He could see only one structure that might be called a house, though it was little more than a cabin, really, sitting away from the other structures at the top of a rise. A little A-frame. The kind of cabin where you might expect a simple rancher to live, well beyond the confines of anything that might be construed as a grid. Woodshake siding. A steep roof to ward off snow. The other buildings were barns and outbuildings, all wooden, painted rust red. The four-wheeler slowed as they approached the compound.

“This isn’t what I pictured,” Porter said. “You living out here.”

“I’ve found the more you work with uncertainties, the better it is to keep things simple.”

“You run an investment company,” Porter said. “I would have thought you’d be used to uncertainties.”

The four-wheeler rolled to a stop at the cabin's front steps. The engine cut off.

"I haven't run the company in years," she said. "And besides, investments are never uncertainties. Not if you're doing it right."

## 10.

**P**orter followed the old woman up the steps and through the front door.

The house was warm. Beyond the entryway was a sitting room with a high ceiling and a large, stone fireplace. A fire was already burning, reduced mostly to coals. The woman crossed the room to a stack of logs, picked one up, and tossed it into the glowing hearth.

"Almost went out on me," she said.

In the center of the room, on the coffee table between two overstuffed chairs, was a decanter of amber liquid and four short glasses. Ms. Self poured two glasses full, then handed one to Porter. "Please," she said, gesturing to one of the overstuffed chairs. "Indulge an old woman to tell you a story."

Porter sat.

The woman stood in silence, gathering herself, and when she spoke it was with a solemnness, as if she'd waited a long time to be unburdened of the words that came spilling out. "I was younger than you are now when Jacob discovered the trick," she began. "He was the genius, but I was the one who thought how to game it. He wanted to tell people, but I knew to keep it a secret." She swirled her glass, looking down at the amber liquid as if the next words could be found there. "He found the anomaly, but I came up with the Russian ruler experiment."

"Russian ruler?"

She crossed the room to a little cabinet against the wall. She opened it and pulled something out.

"Not the kind that rules," she said. "The kind that measures."

She tossed something into Porter's lap. Porter picked it up, heavy in hand, cut from a single sheet of thick-gauge steel. The numbers were unreadable, black ticks along the side as closely spaced as stitches.

"My grandfather was a schoolteacher," she continued. "He had that among his effects when he died, an heirloom from the old country, so it ended up in our house when I was a child. It uses an old system of measurement, from before they switched to metric. It's what gave me the idea for everything else"

"A ruler?"

She nodded. "Well, that and Jacob's work. His paper on deferred outcomes in quantum systems. The idea that you can cheat the system—induce signal collapse by noting the path of the idler."

"They used that term in the diagrams," Porter said. "Idler."

"It's an old term," she said. "In the nineties, there was a paper published, entangled particles and quantum delay. Pass light through a prism of beta barium borate, and it'll calve into twin-pairs of entangled photons. Call one the idler. The other's the signal. Measure one side of the split, and you've measured both, since their states always sync. The trick, of course, is that measurement itself changes the state, so in this way, by watching one, you can tell if a measurement of the other has been made."

"Tell how?"

"It depends on the test," she said. "And the type of measurement. In a which-path eraser test, just identifying the pathway counts as measurement." She smiled. "But there are lots of versions. Some get fancy—coincidence counters and the like. There's

even a version that plays with pathway lengths. Extend a target out far enough, and you can note change of state at the end of the shorter path before the long-path is even measured. Cause happens *post* effect.”

“How’s that work?”

“It’s all about rules with quantum mechanics. Knowing which ones you can break, and which you can’t. They logged an 8-nanosecond discrepancy in one experiment, playing with pathway lengths. It seemed like a small thing, that sliver of time, but it gave the whole game away. That’s what got me thinking about my grandfather’s old ruler.”

She extended her hand.

Porter handed the ruler back.

She took a seat across from him. “Take this coffee table, for instance. The whorls and knots in the wood grain; how wide do you think that knot in the middle is?”

Porter looked at the table—the central knot black in color, polished smooth under a layer of varnish. He could have counted the tree rings if he wanted. Two centuries of growth to set your coffee cup on. “I don’t know,” he said. “Three inches maybe.”

“But you’re not sure.”

“No.”

“What if I took a ruler—not this one, but a regular one you could actually read—and I laid it next to that knot. Do you think you could measure it?”

“Sure.”

“Now, what if I did the same thing—laid the ruler next to the knot—only you didn’t *observe* the ruler? Would that count as a measurement having been made?”

“No.”

“What if you observed the ruler, but the ruler was blank? No marks at all. Would that be the same as not observing it?”

“I don’t know.”

“Neither did Jacob. He had all kinds of reasons why it wouldn’t work that way in a quantum system—entangularity impacting the outcome—but I always circled back to that damn Russian ruler.” The old woman finished her glass, then leveled her eyes at him. “Imagine a ruler with marks that can’t be read, or with no marks at all. Is that even a ruler still? Or does it become just an object? Does placing two things next to each other count as measurement?”

“I don’t think so.”

“Maybe it could if you were comparing them, but what would make that a measurement? The fact that somebody *knew* it, right? That a comparison was being made. Or else everything, everywhere, would be in a constant state of being measured, even with nobody around, and we know that isn’t the case.”

“This is getting too theoretical for me.”

“But it isn’t theoretical,” she said. “That knot in the table is right there in front of you. Solid as this fucking Russian ruler.” She slapped the ruler down on the table so it made a *thwack* sound.

“I don’t get your point.”

“I have no point. Just mysteries.” She leaned forward and slowly slid the ruler across the table, so that it lined up next to the knot. “Look at the ruler,” she said. “How big is the knot? Have you made a measurement if you don’t read Russian, or if the scale is mysterious to you? Does a measurement still count if you’ve gained no actual information?”

“I don’t know.”

“It’s a semantic question, so give me a semantic answer.”

“Then no,” Porter said, looking down at the ruler. “If I can’t read the ruler, then it doesn’t seem like a measurement.”

"Bingo." She rose and walked to the fire. She grabbed an iron poker that leaned against the stones. "That's what I thought, too," she said. "And it led me to a different question—and a thought experiment that a whole company came to be built around." She poked the fire with the rod. "If we laid that Russian ruler next to that knot, we learn nothing. That's no measurement. Just nonsense marks, written in a language you don't understand. But what if you laid that Russian ruler next to the knot, and then later—much later—you learned to read Russian?"

Porter blinked.

The old woman shoved the poker into the fire again, adjusting the logs. The flames bloomed higher.

"What if you learned to read Russian, years from now, and then one night thought back and *remembered* the symbols on that ruler and suddenly knew what they meant? Would you have learned something useful then? Would that mean that you'd made a measurement after all?"

Porter was quiet for a long while. "Yeah, I think it would. That'd have to be a measurement."

"And *when* would this measurement have been made?"

Porter realized where she was going.

"Would it have been made the moment you first looked at the ruler?" she continued. "Or when you learned Russian, and thought back on the ruler, and remembered?"

"The moment I first looked at the ruler," Porter said. "It would have to be."

"That's right. Now think of entangled particles, and the way a particle always knows if a measurement will be made, even if it hasn't happened yet." The woman's face grew serious. "Like starlight hitting your retina."

Porter stared. "So you're saying that a particle could know if you'll learn Russian someday."

"Yeah," she said with a nod. "Even before you knew it yourself. In this case, the measurement would have been made in a language you didn't yet understand. Another way to think of it, though, it would have been encrypted."

## 11.

<i>Stock</i>	<i>Test Subject</i>	<i>Outlay</i>	<i>Realized Gain/ Loss</i>
TVYN	735	full tranche	0
ZYZ	629	half tranche	7.7%
ERJ	678	half tranche	0
AZMY	721	full tranche	2.6%
HGHY	703	full tranche	19.1%

*Note:* A loss was realized on AZMY to keep total profits under the 13.3 percent target for the quarter. Projections for economic depression still hold.

Porter sat for a long while in silence. He sipped his drink. When he finished it, he set the glass back on the table.

"So that's what you're doing with these experiments," he said finally. "Encrypting a measurement. Then teaching the person to read the decryption later. Teaching them Russian, in other words."

"Yes. In a which-path experiment, the path-information *is* the measurement. Knowledge of the idler's path is what counts as observation—someone knowing it—which then causes collapse at the signal, which we can see and take note of. We at

the company take great pains not to learn the idler's path information ourselves. We only know whether *you* will someday."

"Why can't you learn the path information?"

"It would count as a measurement and ruin the experiment."

"How does any of this allow you to predict stocks?"

"That's the trick. We link knowledge of the pathway to a trigger in the real world."

"I don't understand."

"The data's effectively erased the moment you're given your cypher. To the extent that pathway information exists, it afterward is instantiated only in your skull and nowhere else. That's the eraser part. We don't know which of the cyphers you were shown, so the only thing that keeps the erasure from being complete is your knowledge of it. But that knowledge is devoid of information when you first get it."

"A nonsense symbol, you mean."

She nodded. "Totally devoid of information. The cypher alone doesn't count as measurement, because it tells you nothing. It's just noise without association to any path. You need the decryption for that, and you only return for the decryptions if some real-world condition is met. By watching for change of state at the signal on the day you first come in, we can see immediately if a measurement was recorded at the idler. We don't know which path that photon took, but we know whether *you'll* know it someday. And we've set it up so that you'll only know it if your trigger is met."

Porter suddenly understood it all. "You make sure I'll only learn Russian if a certain thing happens. And you get to pick what that thing is."

"Yeah," she said. "And it can be anything. Any trigger. The signal collapse gives it away. And it's not just an 8-nanosecond discrepancy, playing with pathway lengths. The gap can be years."

"That's possible?" Porter said, awe seeping into his voice.

"Think of it as an exploit," the old woman said. "A quantum temporal exploit. Jacob had his own word for it, though. He called us thieves."

"Thieves?"

"We pick the questions, then steal answers from the future."

## 12.

**W**hen Porter was eleven years old, he'd stood upon a bluff over a small flood-swollen creek. It was pouring rain as he followed the creek in the woods, when the outside six feet of soil had peeled off, and he found himself suddenly inches from a new edge, looking down at the rushing water below.

This was like that. A landscape transformed beneath his feet. The dripping hand of God.

If the house felt warm before, it now seemed hot, and Ms. Self crossed the room and opened the back door to the cool night.

"Come," she said. "It looks like you could use some fresh air."

Outside, the night was crisp.

Porter followed her across the deck to the handrail and looked out over the expanse. Because of the slope of the land, Porter could see for miles—mountains spread in the distance. Cloud now blotting out the stars in that part of the sky.

Closer, though, at the crest of a nearby hill, Porter could see a wooden stand of some sort—like a hunter's stand—and atop it a shape. The shape moved.

"You're not alone out here," Porter said.

"Don't mind them," the old woman said. "Sometimes even a recluse needs snipers." Porter considered his place in the strange, new landscape.

"So you came up with your exploit," he said finally. "What happened next?"

"We did the logical thing," she replied. "We decided to get rich." She leaned on the handrail. "The first test was a Cubs game, if you can believe that. Jacob came up with a passive detection technique—randomized cyphers masking the which-path information. Our own Russian ruler. The idea was for Jacob to run the procedure the day before the game, and I'd get the cypher. Later I'd get the which-path decryption—but only if the Cubs won."

"And if they lost?"

"Then I'd never get the decryption."

"Never learn Russian."

"Yeah."

"So what happened?"

"We ran the procedure, and I got the cypher. On Jacob's side of the config, the signal showed wave function collapse. That meant a measurement had been made at the idler, so Jacob went out and placed the bet—a thousand dollars on the Cubs. A riskless wager. Later, when the Cubs won, he gave me the decryption that caused the measurement to have been made in the first place."

"Jesus," Porter whispered. In that moment, he saw it for what it was. Not a riskless wager, as she'd called it, but something else. The whole thing spiraling out with endless implications.

"We had two thousand dollars after that, so we did it again," she continued. "And again. And then we were off and running. We used the money to start an LLC."

"Why bother?"

"Because we knew that if we wanted to keep winning, we'd have to find a way to seem legit. If we just used it to make bets over and over, we'd eventually end up in trouble."

"For what?"

"Cheating, maybe. But that was the least of our worries. If people found out, imagine what would happen. What does that world look like?"

"What about just making a couple big bets, then stopping? Ride off into the sunset?"

"We talked about that, too. But then what? We wanted to take things as far as we could. In college we'd talked about chasing the big ideas, and ideas don't come bigger than this. We had our seed money, so after that came investments. Then offshores. For a while we focused on stocks, asking the right question—will this stock go up in the next three months? Will that stock rise next quarter? We learned the safe picks. Dabbled in property. The questions always binary—never how much a thing might go up, but only whether it would. When the answer was yes, we bought and held. Paid our taxes. Tried to be good citizens. Eventually, we moved to commodities. It was a great way to accumulate capital. Then Jacob got sick."

"Cancer," Porter said. To her raised eyebrow, he added, "You're not the only one who can Google."

"His condition worsened, and that's when I realized the difference between a time machine and the thing we'd built. Stealing information from the future is one thing, but there's no turning back the clock. Two days before he died, he said his last words to me. *Keep it small.*"

"Why?"

"It's like the old saying. Pigs get fat; hogs get slaughtered. And it's best not to draw the eye of the butcher. After he died, I kept the employee count low, rented nondescript office space nineteen floors up, then set up the study. For the long investments—five years, ten years—we came up with redundancies."

“Redundancies?”

“The problem is, a person not showing up for their decryption registers as a ‘no’ to whatever question gets asked, but there are lots of things that might prevent a person from showing up. Given a long enough time interval, shit happens. People die. Or they go to jail, or end up in the hospital, or just flake. So false negatives are a risk. Hence, for long-term investments, we always asked two people the same question. We call them entangled pairs.”

“What happened if they disagreed? A tie-breaker?”

“Something like that,” she said. “We were cautious, and the system worked. By age thirty-five I was worth eight figures. By forty, I was landed as a lord and nobody on the outside knew quite how. Still, it risked attention, this success, though I did my best to disappear. Always, the art was in knowing what questions to ask. Finally, at fifty, I thought to ask the question I should have wondered about from the beginning.”

“And what was that?”

“How it would all end.”

“For the company?”

She shook her head. “For everything. The whole Keynesian, debt-based house of cards.”

Distant lightning lit up the sky over her shoulder. An approaching storm.

“The first hints came from the long-term investments,” she said. “Some answers stopped making sense, so I got specific. Sent people out with this question: Is the system still solvent in fifteen years? In ten? In five? If yes, the decryption would be waiting for them when they returned. If no, they’ll never need return. Of course, for the testers, it takes years before they learn the answer, but I always knew their answer that same day. Before they even left the office, I knew if they’d return.”

“The signal gave it away,” Porter said.

She nodded.

Porter thought of the looks he got as he left the office that last time.

The people staring.

“We used an iterative process,” she said. “By asking the same questions over and over for different dates—is the financial system still solvent?—we were able to identify the exact point when the answers stopped coming back yes.”

“And when was that?”

“Six years from now,” she said. “Testers told to return if the system’s still solvent in six years stop returning. The signal no longer shows a measurement.”

“That’s a hell of a thing to learn.”

“I wanted to be sure, so I hired more testers. Doubled the money. Then doubled it again. We asked the question a dozen ways, and got the same answer. Sometime in September, six years from now, everybody told to come back if the banks are still viable stops coming back.”

“So that’s it. That’s when it collapses.”

“That’s what I thought, too.”

“What do you mean?”

She paused. “There was an exception,” she said. “Just a single one. Can you not guess?”

He met her eyes. *Of course.*

To his change of expression, she said, “Of all the people tested—all those asked if the system’s still functioning—you were the only one, past a certain date, that ever showed a measurement.”

It was Porter’s turn to go quiet. “So what makes me special?”

“I was hoping you could tell me,” she said.

There came a gust of wind, and with it the first fat drops of precipitation, tapping on dry wood.

"But I don't know anything."

"Not now," she said, turning her face up to the rain. "But someday."

### 13.

<i>Test Subject</i>	<i>Test Subject</i>	<i>Status</i>	<i>Tests Run</i>
<i>Porter V.</i>	735	<i>Active/</i>	16
<i>Joy A.</i>	659	<i>Active/ Quiescent</i>	23
<i>Kai K.</i>	678	<i>Inactive/ Quiescent</i>	22
<i>Thomas R.</i>	721	<i>Inactive/ Deceased</i>	19
<i>May T.</i>	703	<i>Inactive/ Deceased</i>	24

*Note: three test subjects confirmed dead. Test subjects 659 and 678 are currently active but their tests go quiet within 12 months.*

Back inside the house, the woman crossed the room, shaking moisture from her denim sleeves. "I have something else to show you," she said, then disappeared upstairs to the loft.

Porter warmed his hands by the fire as rain pelted the glass

A minute later, the woman was back, carrying a folder.

"What's that?"

"I told you there were mysteries," she said. "Chief among them this." She slapped the folder down on the coffee table.

Porter picked up the folder. Inside were photographs—people captured in the act of walking through the office doors downtown. Men and women, young and old.

"These are test subjects we've lost," the woman said.

"Lost?"

"The ones who've died, or who we can no longer locate," she said. "We keep track of all our testers, even after we're done with them, but we may not be the only ones. It took us time to realize it was happening—the car accidents, heart attacks. One woman had a stroke. Another was murdered by a neighbor. Three died of cancer."

"You're saying these people are dead?" Porter flipped through the pictures. A middle-aged man. A college-age girl with red hair and freckles.

"Most due to natural causes, but not all. A statistical anomaly."

Porter kept flipping. An older woman with gray hair. "How much of an anomaly?"

"Enough. And it seems to happen for some questions, but not for others."

"The questions they're asked matter?"

She nodded. "A lot of those who died had been phased out of the program after being asked the same long-term question as you," she said. "Which raises an interesting possibility."

He flipped again. A bald man with a cane. A middle-aged woman with gray hair.

"All those negative test results," she continued. "Maybe they don't come back because the financial system's dead, or . . ."

"They don't come back because *they're* dead."

She nodded. "Either way, no decryption."

"So, no measurement."

"Yeah," she said. "False negatives."

He closed the file. "So, if you other testers are dying, what about me?"

She opened her mouth to speak but at that moment there came a familiar sound in the distance. A helicopter.

The woman turned to look at the clock on the wall. "Right on time," she said.

Porter followed her to the front door.

“Where are we going?”

“Out there,” she said and pulled a green slicker down off a hook. “We’ve got a meeting.”

They put the slickers on and went outside, descending the steps down to the four-wheeler—rain tapping on their hoods like static.

“Climb on.”

Porter mounted the back of the four-wheeler again. The engine started with a roar, headlights illuminating the rain.

#### 14.

**T**hey drove across the sea of grass and took a turn at the stony riverbed. Away from the hills, out toward the flatlands.

They rode for miles. Eventually they came to an endless wooden fence and a man-gate too small for the machine to fit through. The old woman killed the four-wheeler’s engine. The headlights went out and they hopped off. “We walk from here.”

Some half mile up ahead, the lights of the helicopter lifted off and rose into the night sky. They watched it go. The rain weakened to drizzle as they crossed the vast, dark field, ground muddy and sucking at their shoes.

“One thing I wondered,” Porter said. “At the office, why show me that room on the other side of the glass? If the diagram’s what mattered, why show me that?”

“It was Jacob’s idea. He thought test subjects had to actually *see* the set-up.”

“Why?”

“To make it real to them.”

“Does that matter?”

“Hard to say. But when it comes to this stuff, there are things you can know and things you can’t. Telling which is which is the challenge. Like your nondisclosure agreement, for example.”

“What’s that mean?”

“We know if you’ll break it.”

“How?”

“How do you think?”

They came to another fence.

“You had other testers check on me in the future? You asked questions about me?”

“We have all the NDAs checked.”

She stepped to the gate—this one big enough to drive a truck through. Beyond it was a kind of paddock. They were close now to where the helicopter had landed. A third fence stood just beyond, and a low wooden building.

“Leave the gate open,” she said as she stepped though. “Swing it wide. We don’t want them bunching up.”

“Them?”

“The cattle. You gotta watch yourself. There’s no better guard dog than a good bull.”

The old woman took a flashlight from a pocket and shone it into the paddock. “Come on,” she said, motioning with the light. That’s when Porter saw them.

Two men, sitting in chairs, tied back-to-back.

“Sometimes the helicopter giveth,” the old woman said. “Sometimes it taketh away.”

The men’s heads turned toward the light, eyes shining in the glare. Mouths gagged. Faces bloodied.

“Had some trouble wrangling ’em, by the look of it,” she said. “A little worse for wear.”

"What's going on here?"

"Don't you recognize them?"

Porter looked close.

Through the mud and blood, it was hard to tell, and then it struck him—he knew them.

The big one. Billboard. The small one in a suit, now torn and filthy.

"We tracked them down after we saw your bruises. We know all about your troubles."

She walked past the men to the opposite fence. Porter followed. The fencing was wood-plank and sturdy. Beyond it, hemmed into to a muddy enclosure, were the cattle. Maybe thirty head. Or forty. The whole setup backed up to the small wooden barn. Porter glanced around, taking in the situation. A little to the side, he noticed a gate, with a sturdy wooden wall a dozen feet in front of it. Against the wall leaned a long-handled shovel.

"These cattle haven't been fed all day," the woman said. "Time to let them at some fresh grass, I think."

There came mooing and snorting.

"This paddock's always reminded me of the two-slit," the woman continued. "You have a gate on one side and a gate on the other, with a little wall between. The cattle have to split, you see, go left or right, before coming together again at the gate on the opposite side. If we close our eyes, will they cross as particles, I wonder, or as waves?"

Hooves made squishing sounds in the mud. Porter could feel the creatures' hot breath jetting through the fence. This close, they looked huge, monstrous. Two-thousand-pound wrecking balls.

There came a shout then from one of the men. "I have money!"

The man in the suit. Eyes wide.

"You hear that?" the old woman said to Porter. "Someone spit out his gag. This is the negotiating phase." She turned to the gate. "But we're past that now, I think."

"I can pay!" the man shouted. "Whatever you want. Just name the price." There was desperation in his voice.

The cattle pressed their big bodies against the fence, making the wood groan.

"Oh, there's a price," the old woman said.

"What are you doing?" Porter asked.

"Believe it or not," she said, "giving them a chance. You want to step aside now. Hop up on that fence if you need to."

With that, the old woman climbed the fence, straddling the wood, then leaned over, hit the catch, and the gate swung wide.

Like releasing Niagara. The cattle came pouring through.

"You could try closing your eyes!" she shouted at the men as the cattle surged around the short wall. "But I don't think it'll help." Turning to Porter, she said, "Still, you might not want to watch."

There came screaming as the cattle charged across the enclosure—a tidal wave of meat and thundering hooves—and then the chairs went down, screams cut off, only to begin again—cattle still pouring by—screams changing in pitch, until it was just an animal squeal, barely human—abruptly silenced.

Then there was only the sound of hooves again, moving away, as the cattle left through the far gate and charged off into the night.

## 15.

**F**or a long while, Porter was silent.

"Now we close 'em up," the old woman said, and hopped down. She grabbed the

shovel and trotted to the far side of the paddock to swing the gate closed. The enclosure was empty now save for two-legged beasts.

The old woman walked to the place where the men lay. She stuck the shovel in the ground so it stood upright, then looked down for a moment before waving Porter over.

He walked to the men. The chairs were destroyed. Splintered. Obliterated.

The smaller man was dead. That much was clear. Eyes open. Face crushed by hooves.

The other man had fared better. His size a defense. Billboard. He was cattle-sized himself, almost. Bloodied but whole. Blinking up at them.

Porter felt those loose threads of civilization again.

“The old ways are best,” the old woman said. “The dead one here knew that. Bring a weapon to a fight, and you break the law. But bring a man who *is* a weapon, and that’s different. You don’t blame the weapon, though. You blame the man who *wielded* it. Tell me,” she said, bending to remove the bloody gag from Billboard’s mouth. “Are you a weapon or a man?”

“Man,” the man said around broken teeth.

“Well, that’s the wrong answer. Didn’t you hear the little speech I just gave?”

Billboard coughed and spat blood.

“A man you can *blame*,” she said. “God damn, you’re a mess, though. The bulls got ahold of you good.” She shook her head. “You need a doctor, I think. Or are you beyond that now?”

The man tried to speak but only coughed again. Ribs broken, most likely.

“Can I trust you not to tell anyone what happened here today if I let you go?”

The man nodded, sudden hope in his eyes.

“You sure now? You won’t talk?”

The man nodded again. Blood drooled from his mouth. Probably a broken jaw, too, Porter realized.

“What do you think, Porter? Do we kill him or let him go?”

For some reason, Porter thought of a number two pencil. The way it felt in his hand.

“Let him go,” he said.

“Tell you what I’ll do.” She pulled something from her pocket and tossed it down to the mud next to the man’s head. It was a roll of hundreds as big as a fist. “Here’s what you think my guy owes,” she said to the man. “So now he’s even, you understand?”

The man nodded again without glancing at the money. “*Ew-en*,” he said, mouth not quite coming together.

“And now one of two things happens,” she said. “We get you a doctor, and then you take that money back to New York and you chalk it up as a lesson learned by all parties, except for your friend here, who is beyond lessons now, and we go our separate ways, the wiser for it. Never to see each other again.” She stood. “Or,” she put her hand on the shovel. “Maybe you return to New York and talk about what happened, and people get aggrieved and take it personal. You can’t get at me, safe as I am behind money and bulls, and so you go after Porter here. But you can’t find him either, maybe, so you go after his parents for more than just money. Do you think that’ll happen?”

“No.” The man shook his head.

“So you aren’t feeling aggrieved by all this?”

He shook his head again.

“I’d like to believe you,” the old woman said. “But I just don’t.”

She yanked the shovel from the dirt, raised it high—and in one fluid movement brought it down on the man’s skull.

There came a sickening *thwack*.

A sound like a watermelon dropped on cement. Or a ruler thwacked on the coffee table.

There was no second strike. Nor need of one.

Porter stared for a long time before he spoke. "You were never gonna let him go."

"No."

"You murdered him."

"He murdered himself. Drew the eye of the butcher, this hog did. Besides, he was never going to stop. By killing him, I saved you. Saved your parents, too, maybe."

Porter knew it was true. "Why toss the money?"

"That was for you."

"Me?"

The old woman looked at him. "So you'd know it wasn't about money. It's yours, if you want it. Use it to pay your parents back."

## 16.

*"I heard a third living creature say, 'Come!' So I looked, and behold, a black horse, and he who sat on it had a pair of scales in hand. And I heard a voice in their midst saying, 'A quart of wheat for a day's wages, and three quarts of barley for a day's wages.'"*

*Revelations 6:5-6*

**P**orter followed her back to the four-wheeler, back to the house. The warm room.

The fire had nearly burned itself out again, but this time the old woman didn't add any logs; instead, she crossed straight to the table. Poured two glasses.

"In this business," she said, handing him the drink, "It's the questions you *don't* ask that haunt you, and there's one thing you still haven't asked."

"Why the testers are dying."

"Yeah. The why."

He'd had time to think about it on the ride back to the cabin. The way this would go. He gathered himself, watching the fire. He thought of civilization again and Onica, and what was at stake—society just an evolving ecosystem of trust networks. When he spoke, his voice was measured. Like a knot of wood might be measured. "I have a guess," he said.

"Let's hear it."

"You've invented a way to predict stock prices in the future. You've become rich by hiding this fact from the world."

"Yes."

"So you're probably not the only one."

She nodded. "Go on."

"This trick you've discovered . . . it's out there waiting for anybody to find. There's no reason to think you're the first. There may be multiple entities out there doing the same thing. Maybe the trick's been discovered over and over, and we've just never heard."

"Meaning?"

"Meaning there's a *reason* we've never heard. If others have stumbled across it, they probably did what you did—made themselves rich, built themselves into corporations. But why stop there? Maybe they have larger ambitions, and if so, what would be their biggest fear?"

"You tell me."

"It would be *you*. At some point, any company who's discovered this secret will go

looking for other companies like them. They'll know what to look for, and they'll try and stop you."

"Why?"

"Because you'll be in competition—and worse, neither company can risk the other exposing the whole game." Porter paused, thinking it through. "Most dangerous, once you've each identified the existence of the other, you'll be able to predict the other's moves. Which would make you an existential threat."

"What does that have to do with our testers?"

"The dead testers just mean the other company found you," he said. "They're making a move—trying to control which questions you're allowed to answer. It's sabotage."

"How?"

He thought of the receptionist that first day. *You can't apply; you have to be selected.*

"By hacking your systems," he said. "Corrupting the randomness of your tester selections. Maybe they do what you do—look ahead. Maybe they check obituaries in the future. They don't have to *kill* your testers. That'd be obvious. They just have to make sure you pick testers who are gonna die anyway."

The old woman swirled her glass. "You're quick," she said. "The scenario you describe is the one we're operating under. The details are unknowable, of course, but you're right about the trick—which is why we've stayed hidden. But something still found us. And you're right about the hack. Our entire selection process was compromised early on; we know that now. By some entity bigger than us. Older than us. A sovereign wealth fund maybe. Or a multinational bank. Or maybe there's not even a name for what they are, but they know about us, and they know the same tricks."

"So what's your plan?"

"War," she said. "Not much choice. We end them before they end us."

"And your offices?"

"Do we close everything and go dark? We could, but we know that we don't. Not yet. There are testers who we know come back."

"What about me?" Porter asked.

"You're just as compromised as the rest, if that's what you're asking. Part of the same hack."

"If they picked me, same as the others, does that mean I die?"

The old woman smiled. And then she said the thing that would keep Porter up at night in the months ahead. Because he knew in that moment, that no matter how smart the old woman was, she'd missed something vital—a thing she couldn't possibly have guessed. That this test of hers—this trick—was a thing he'd been searching for his whole life and never knew.

"It means they made a *mistake*," she said.

He only stared. "I need air," he said and crossed the room. Then out the back door and into the night.

He got no further than the back deck. There was nowhere to go, so he only stood for a while in the rain.

Eventually she spoke from the doorway behind him. "It means they asked the wrong question about you," she said. "Or they asked it sloppy."

He closed his eyes and let the rain come down.

"Or maybe we'll hide the truth from them," she said. "Fool them somehow—a fake obituary, I don't know. But I know they're wrong about you. They picked you because they think you die, and we know that you don't. It makes you valuable, I think, that they made this mistake."

He turned toward her. "Valuable how?"

"They won't see you coming."

He nodded. Of course.

"And you're sure that's why they chose me?" he asked. "Because they think I die and would give a false negative?"

She cocked her head. "What else could it be?"

Porter considered the odds that he was the one standing there and not somebody else. He could have been anyone, but instead he was *him*, a blockchain engineer with an idea so big it could eat the world—this trick of theirs like magic dropped from the gods, and he knew what to *do* with it. Even if they didn't.

*War*, she'd said.

*A sovereign wealth fund. Or a multinational bank.*

Study economics long enough and it turns to physics in your hands—entropy balanced against enthalpy—liabilities baking off the yield curve as money inflates away. As an econ major, he saw how fucked they were. But as a programmer, he thought in systems. Perfect money could change the world.

But why would a sovereign wealth fund want such a thing?

He thought of her words in the paddock. *Sometimes a man is a weapon*. Is that what he was? But for which side?

"Will you help us?" she asked.

Porter shuffled through his reasons—keeping the biggest one close to his chest.

He could have told her then. Could have revealed what he knew. That there was something wrong with the system they lived in. That this test of hers—this trick—was a mechanism by which to build something new—a thing that the world had never seen. *Riskless*, she'd called it, that first wager that had founded the company. But that wasn't the term of art.

*Trustless* was the word he would have used.

He imagined it tokenized, layer two, layer three, the reason he was born, maybe, to write the white paper. The perfect smart contract, that holy grail: a contract that knows ahead of time whether you'll break it.

He could see it in his head: a coin that could be assigned a value, and the money's there, able to spend—but only if you'll someday keep your side of the bargain.

Because a smart coin could *know*.

Mined not from proof of work, nor proof of stake, but from some trustless machination of the test itself, ledgered on the other side of an observational cascade, minted as a block on some forever chain.

*Only if your trigger is met.*

He could picture how such a thing might be made. Not the details—not yet. But he could see the shape. A token that would change everything. A thing beyond money.

A coin of *Surety*.

Not financial collapse, but transformation.

Would a sovereign wealth fund take such a risk? Why not kill him instead? Or maybe there was more going on. Maybe the old woman knew more than she was saying. He was being used by someone to invent this thing, and whoever it was . . . maybe even they didn't know.

"This test," he said. "What have you asked it about me?"

"Only one thing that matters."

"What's that?"

"Whether we can trust you or not."

*Trustless: a thing you can trust because you don't need to.*

He stepped back inside, out of the rain. "You tell me." ○