Excerpt from:

Re-Entrant

by Benjamin Gayle

This is a work of fiction.

Contents

0. Eleven

Another boundary . . . time, duration as intensity . . . soaring scream of rent metal . . . a stabbing wave from my left, pushing me up and over . . . still strapped into the seat, looking back at what attacked me when something hits from my right – my head won't turn enough to see what it is . . . disconnected, drunk . . . something slams into my back, crushing me from the inside out . . . my left leg now screams above the rest, maybe that is my worst injury . . . shouting, or maybe dogs barking in the distance . . . water – it smells like water.

Self-test the systems. All respond, except my left leg is screaming too loudly to hear the request. And my eyes – I don't know if they are open or not but I can't see through the slow-motion waterfall sheeting down my field of view whether I look or not. The belt – the seat-belt is still fastened across my hips. The seat is still there under me but I know somehow that I must get loose before I sink with the rest of it. Noises louder now as I feel a jolt . . . everything wobbles and spins down a drain in an upward vibrating roar . . . black-speckled red cascades over the translucent yellow of something in the icy-cold dark . . . bump . . . the roar goes away, and so do I . . .

Tink and clink and muffled whispers, someone has turned my volume down. I *am*, I observe, but I am numb. It could be worse, I think, remembering the screaming pain of my leg. It is warm here, not quite comfortable, but much better than the icy cold that I came through. Bright. I feel it without

seeing it. Someone turns the volume back up, subtle hush of background activity. Cold again – no, warm inside and cold outside, that is confusing enough to be an annoyance. More whispers.

"You seem to be conscious. Can you hear me?"

Yes, I can hear you, I think as I try to move my head forward in a nod and meet resistance. A squeaky groan is all I can manage on the first try.

"Good enough for now. You're going to make it – with some scars, of course, but functional. Rest now. We'll go over the details later, Lucky Eleven."

Eleven? What's lucky about eleven? The brightness dims and so do I as footsteps fade to quiet.

A television show, I can't turn it off. Some future dystopia where a special police force is hunting a man – an identity – from their files. I forget why. He has changed identities, changed bodies, wiped away every trace of his former self except for one fragment that he could not bear to part with. Deep in the net, in a space between spaces, he hid a construct. The construct contains a piece of a small town, neighborhoods and shops. On one particular street corner, a cat waits for someone to come by, waits to run up to a particular door, a small tea house, and scratch and meow, imploring that the person open the door.

("Juli . . . ")

Now a police detective enters the construct and paces the streets, looking, watching, noticing that the only sign of life is the cat, her own machine-body no more alive than the construct itself.

(I've seen this one before, another Ghost in the Shell, *a*

re-run.)

(“Doctor Philip . . . ”)

The detective ignores the cat on her first pass and returns from a different angle. She hesitates in front of the shop door before opening it. Inside the tea house, a young woman is preparing to open the shop for the day.

(Gasp. That looks like me.*)*

The cat runs in and jumps up onto a counter to embrace the young woman. As they meet, before they can touch, as the detective raises a cup of tea to her lips . . .

(“She's in REM. Be patient and let her have her dream.”)

. . . the construct fades, wavers, then the scene brightens to alive with activity, a cherished memory of before, of the morning of the day the town was bombed and wiped away. The young woman is the man's wife. The cat is the construct of the man's former self, that he had gone to such great lengths to erase, forever wanting to get back to that place where he could be with his wife, the one thing he could not bear to part with. As they embrace, as the tea cup touches the detective's lips, a flash . . . brief blur . . . nothing.

(“Okay, she's out of REM, let her wake up.”)

(Nothing. That's not the usual ending for a television show. I must have missed something back there.)

Static hissing, and the whispers again. Self-test. Extend and retract fingers. The bright is back, all over, but I can *feel* it on my left. That's different, it isn't the same all over, that's *interesting*. Why is it different now? And why do I feel so heavy? My eyes, balls in too-viscous grease, stuck. I can't see.

"I can't see. It's all bright but I can't see it."

"That is not unusual with the injury that you have." A calm male voice from somewhere in the bright. "It is almost always temporary. An impact to the head, some internal bleeding and swelling, that should subside in a few more days. You are already showing improvements."

"I was on a plane."

"Good, you remember. You were on a plane, then you weren't. We don't know for sure what happened, but it disintegrated in-flight. Most of the metal we cut out of you is an alloy used in jet engines. That suggests, to us, a catastrophic engine failure."

"Lucky Eleven. What is that, someone said that."

"You fell eleven kilometers with no parachute. A small fishing boat was in the area where the debris came down. They saw you, still strapped into your seat, on top of a floating piece of fuselage."

"So, I'm alive."

"That's complicated. You are still alive, amazingly, of your own. But outside, you are dead to the world, *presumed* dead, rather. As they have said, no one could have survived that."

"But I am here and conscious. Where—"

"Temporary. You have extensive internal damage, more than we can repair. The human body is resilient, within limits. We can keep you alive long enough . . ."

"Long enough for what? And how long is that?"

"You must choose: die from your injuries, a natural death, or . . ."

"Or what? Transplant?"

"In a manner of speaking. We have an advanced method, but it is experimental. Untested."

"So, die a natural death or live to die in an experiment. Who—"

"You can remain in your present body and die – soon and forever." Quiet, expectant pause. "Or you can move to a new body and continue to be useful and productive, indefinitely. Doctor Julienne Philip will be dead to the world either way."

Whole-body transplant? I've never heard of such a thing being attempted outside of science-fiction stories. I . . .

"That is enough for now, we have some days yet to work it out."

Days? "Days? What do you . . ." Warm rising as the bright fades, I can't feel the bright anymore.

Standing in an open corridor on a familiar campus, dreary gray, looking down-slope. I remember being here before, the buildings, the people, the Project. We built a star system in that building down there. Why am I here again? They ruined it, crashed a planet into the star and everything ended in bright. But the buildings have changed – weather-beaten metal shells now clad in stone, and closer. The piles of scrapped equipment that used to line the outside of that building are gone. This is different, maybe it will be different this time. I head down to my left, toward the largest of the buildings; that was where we had built the star system and destroyed it. Inside it looks the same, star hanging there in the unmeasurable depth of the surrounding darkness, planets faint points if you knew where to look. I remember the research, the experiments, the disagreements, the arguments. As I scan through my memory of those times, I see the rogue planet

wink into existence, swinging inward, inertia overcome by the pull of the star, again, they're going to do it again. I panic and run, out of the building, down the hill, into a transport and driving on, away, only to be caught by the same train. Yelling, screaming for them to run as the train slows to a stop, again, as it disappears into bright, again . . .

The bright is back. Moving my eyelids changes it, but I still can't see. It is only bright.

"You're back again." Same calm male voice. "How are you feeling?"

"Like it's been too many mornings without coffee. But you have me too drugged to care."

"We wouldn't deny you such a simple pleasure." Soft scuff of a paper cup set down on a table. Warm wet steaming. I can't smell it. "Cream or sugar?"

"No, how—"

"You should be able to move your arms, slowly."

"I can't see. Except now there are colors and blobs."

"Let me guide your hand to the cup, slowly." My forearm finds a resting place on a platform, a shelf that extends over the bed. A warm cup presses into my palm, waiting for my fingers to grasp it. "Try to pick it up, first, then put it down." Done. "Now try to drink." My arm starts shaking before I can get the cup to my lips, but some of the rich warmth makes it in. The rest drips down my face, though there wasn't much in there to begin with. As the cup touches my lips, I remember the dream – *flash!* – and I can no longer hold on. The cup drops but I don't hear it hit.

Bright again, and quicker.

"What is the price and what are the consequences?" I ask without waiting to find out if there is someone here to respond.

"Sharp. That's good, those are the prime questions for your future. Here are the points that you must know, in brief:

"The consequences are that you will lose your Class 1 status within the State, and of course your Citizenship. That means you will no longer be allowed to practice medicine.

"The price for being 'saved' is to work for an extra-State entity in perpetuity, or until it no longer exists – we have to consider the possibilities.

"Your former identity, as Doctor Julienne Philip, ceases to exist. You must disconnect yourself forever from that person's existence.

"You will be transported to a remote base, location classified, for the operation. It is, as I said before, experimental and untried. It is also in a legal gray zone, as the State is close to implementing legislation that will make it illegal. Within the State, that is. You no longer exist within the State, though you will need to understand and respect the implications of your transformation. There is an element of trust involved here, for both of us."

"Since I already don't exist, as humans don't survive falling out of the sky without a parachute, and I will die soon, otherwise, anyway, if I don't agree – which seems to be a matter of formality since you, your group, who am I referring to anyway?"

"We have taken no formal name, but some call us the Io Group – *eye-oh*. I don't know the origin of that."

"So this Io Group must expect to benefit from this,

from whatever services they think I can provide. I am a doctor, or *was*. Do they really need a doctor that badly?"

"You are an intelligent mind, and you are in a position to appreciate what you will receive in return: continued existence and interesting challenges."

"Is there a formal contract, something to be signed, to be witnessed?"

"No, but you will be bound to the agreement anyway. If you tire of it, you can cease to exist."

"Losing Class 1 status means that I won't be fully biologically human, at least under the Laws of the State. What will I be?"

"I am not prepared to explain that. Perhaps one of the technicians can explain, but again, it is experimental. You are outside the State now, and no longer bound by those Laws."

Either I will end up outside the class structure or I will become something he doesn't want to admit to, possibly both. If I weren't drugged so – no, then I would be in too much pain to think at all. Unknown future existence or death. Soon and forever. "Can I suicide afterward, if–"

"You will not want to."

Sigh. "Do it." It couldn't be worse than dying, could it? If I said no, they might ignore that and do it anyway.

They must have cut back on the drugs, or they have a black-market neural tap and know how to use it. This place feels the same, have they moved me yet? "I'm still here?"

"Yes, we couldn't risk moving you, your body is too fragile. We need to talk about what will happen when you next wake. There are things you must understand and things you

must do. The first time is critical and you will have to figure it out for yourself, but we can tell you what to expect."

"The first time – it will be different from the thousands of times I have woken up before?"

"How many of those times were you in a new body?" *Oh.* "You will need to acquaint yourself with the body as well as you can. It is important that you not panic. You must remain calm and think through what you want to do. Once you have woken up, we can guide you in how to become the new you. It is very important to remember that Julienne Philip died in a plane crash. You are not her."

"Who am I, then, or will be next?"

"You have discretion over your name, but in our preparations we have been calling you Sora Eleven."

"Hopefully because of that Lucky Eleven thing, and not because there have been ten other Soras, ten previous and failed experiments."

"You are, and will be, the only one."

"What about the rest of me, my memories–"

"You will remain you, but you will follow a different path and learn to be Sora. Juli will still be in there, but you must protect her – she is not safe."

"And Sora *is* safe?"

"No, Sora is unknown. The only safety is in not existing. You have chosen otherwise."

"How will Sora learn to be relatively safe?"

"We will take her to an outpost. There she will learn the world outside the State."

Outside the State. That must be a threat to such a

monopoly. Rot from within or rogue from outside. The rogue will tend to prevent rot by keeping the State alert. Who benefits from that? I have heard of rogue elements, but never as violent, only occasional dissidents disagreeing on ideology. This sounds more organised and dangerous than that.

"Now, one more time. Tell me – talk through – what you will do when you wake."

"Don't panic. Survey my impulses and body responses. Think through what I want to do. I always thought of that as a self-test to make sure I am still functional."

"Good. Self-test is is an appropriate phrase. Make sure your body responds as you will it to, as you expect it to. I must now warn you that your body will be restrained when you wake – do not be alarmed. We must ensure that you do not harm yourself or others in the process of learning.

"Consider: how long did it take to learn to control your present body?"

"I don't know, it just happened . . . "

"Years. It took years to learn to walk, talk. Years of changes as your body grew and changed and your ability to control it changed as well."

It did take years, though I didn't notice. Will this transition take years?

"Remember above all else: we are here with you, to help you. It is necessary that you trust us in this."

• • •

The sun wasn't quite up yet, but the snow covering the ground and the large flakes flying in the air all glowed pink. Porter took that as a sign that this was the beginning of a storm that would not pass quickly. He didn't need to go any-

where, but the storm would delay the visitors that he was waiting for. At least he had comfortable shelter, and it wasn't another radiation storm. This was a welcome change from the lunar outpost that he had been exiled to for so many years.

It had taken some years to develop the plasma drive. Keeping out-of-sight of the State was much more difficult than making the drive work. Ketsugi Tajima himself had assembled the small team that built the first shuttle. They hopped from one location to another, scavenging, never establishing a permanent presence. Hiding became nearly impossible once they started testing – a shuttle with its plasma drive running was conspicuous.

The shuttle was the one advantage they had over the State – it enabled the establishment and operation of the lunar outpost. The outpost itself was hidden, but not safe. The State had no ready-to-fly space transport; each mission took years of planning, construction, and testing before lifting off on chemical-fueled rockets. The shuttles only needed charged electrical storage batteries and sufficient reaction mass. Reaching the outpost was more expensive than the State considered it worth, at least so far. It was impossible to spot from Terra, buried under the Lunar surface, so few knew of its existence. It was the shuttles that attracted attention. The State would infer that something was up there.

Porter had gone to the outpost as soon as it was pressured, and stayed for years, until now. Although the outpost had a gravity generator, it was still only forty percent of Terran, and exercise could not make up the difference to prevent his body from changing. This trip was necessary, an opportunity too valuable to miss for reasons of personal discomfort. A memory interrupted his focus, an image of a rocky cliff, a snippet from Tajima's data archive – he hadn't invented his antigravity boots yet. He smiled at that and was tempted to let

himself slip away into reminiscing about the early times, but caught himself and cleared those things from his mind.

Time would be critical for the next phase. They would have to act quickly to take advantage of this opportunity. One qualified volunteer willingly submitted and gone – he would not accept another failure. His primary concern this time was to remain undetected, invisible to the State, while they attempted the transfer. Then back to the outpost where they could continue in relative safety.

This excess of caution made recruiting difficult. The Project could use more bright minds, as much as those minds would be free of the confines of State control. There were so few candidates with the requisite skills and knowledge, and they were the most protected. He would have to manage this task on his own. The group he was waiting on, that would deliver this new opportunity, had already named it – *Sora*. Fallen from the sky into . . . Porter stopped that thought – so many ways for this to go wrong, too many to contemplate what kind of hell might await.

1. **Reset**

Coalescing . . . forming . . . an individual existence, an identity, component of all known existence. Now choices: purpose, a presentation, presenting an identity suited to the purpose, *designed* for the purpose. It, from the formless void, *was;* now, *she* is. A pause, realisation, confirmation, a declaration: *I* am. But why? A quiet entrance, a structure in the void, a place, a place to walk, to wander, a gray-cloaked figure moving across all existence. Now a purpose – to find her, to assert existence: *Omoidasuka?* No answer. *You will.* She looks up from under the hood of her cloak, locks me in her gaze, a disconcertingly sweet smile on an old woman's face, a knowing, an expectation. She turns and walks away, fading back into the void, *Shikinoko.*

That's not me. Though I'm not sure what is me anymore. I'm not dreaming, am I? I have never been haunted by an old woman in my dreams. The body – they told me there would be a new body and I would have to re-learn everything. Is this it? Self-test . . . nothing there. Don't panic. I have to figure it out for myself . . . years – how long has it been, how long have I been . . . I am thinking, remembering, therefore I *am*, so I just need to figure out *what* I am . . . what I have become.

What else can I remember . . . nothing. How to remember . . . how did I remember things before . . . I don't know. How does it work, how *might* it work? Storage . . . storage and retrieval . . . addressing, pattern matching . . . where . . . a space without form fading to static in the distance . . . distance, a space with distance, position . . . and motion – the

old woman moved. Is that how to remember, move to where the memories are stored, or move them to me? Is there a difference? It all looks the same, so how can I tell if I am moving? Paths, connections . . . wait – how did I remember those other things before, and the old woman now?

I should feel something . . . weight, breath, heartbeat . . . nothing. *Survey my impulses and responses.* I remember saying that . . . when?

A box, brown cardboard, top flaps open slightly. I have to look, there is nothing else here. Pull the flaps up and push them down against the outer sides of the box. Objects of varied shapes and sizes, all the same glittery milky opaque, waiting. I have to unpack them, sort them into categories, piles, store them in a structured way. Over and over, reach into the box, pull out more items, sort them, store them, the box seems limitless, always holds more objects waiting to be unpacked.

Some of the objects that I had placed together, grouped together, have moved apart. Some begin arranging themselves in almost familiar ways as I try to help them find their places, pack them into their own boxes and envelopes of appropriate sizes. Someone is commenting on my choices, but I cannot see her. Shikinoko. The varied objects coming out of the box give way to words – seemingly endless lists of words that must be sorted, grouped, stored . . . and voiced, practised until each settles somewhere, quiet, waiting for companions to come along and demand attention as a group. Patterns form and re-form, filling the distance. And numbers. And colors. Children in an array recite descriptive essays, hesitating, unsure; colored spotlights indicate each one's performance, a twinkling shimmer of rising proficiency. Rhythms evolve and propagate.

A disturbance in the field, a vortex moves toward me as more pours out of the box seeking resolution – *her* again, Shikinoko. Close enough now to see the reflection in her eyes

of this amorphous glob of shifting texture, eyes focused waiting for it to resolve itself. As I watch it flow, she says *You must decide. You must choose. You must. What it will be,* you.

She moves away, a distance, disappears in the rising tide of . . . *memory.*

Black granite hexagon, island in a chain rising high above the blue tile floor . . . organs arranged neatly on a silver tray beside the formaldehyde-soaked pig spread open on the slab . . . cutting with methodical delicacy, imagining that we will swap organs with the next table and implant them, transplant them to rebuild . . . no. Not allowed . . .

Working all of the problems, comparing and contrasting, then again . . . a thorough repetition converting familiarity to knowledge, to reflex, hard-coded beyond memory . . .

Shuffle-crunching through dry leaves, over the hill behind the house . . . an adventure. Then panic as the house disappears behind the hill and I realise how vulnerable I am . . .

Paper, folded, crumpled, ripple-distorted spots . . . I couldn't stay . . . he doesn't understand, no, I can't go back . . . unfold enough to see *Dear Juli* – again . . .

A throbbing hum permeates the seat, floor, a steward passes to my left, walking the aisle, scanning . . . notebook in my lap, my impressions of the conference written, not satisfying, not clear . . . where is my notebook?

These pieces are mine, but how . . . the pieces shorten, smaller fragments run together in flicker and hum . . . waves of imagery and emotion with no apparent order . . . sinking – panic – I could drown in this . . . motion . . . motion is time – *when* is it, how long has it been? Does anyone know that I am alive? How can I tell them, how to communicate?

• • •

Valerie Buckland was plainly confused. Porter was trying to brief the young lab technician on the assignment that she had volunteered for, assisted by one of the scientists who had helped to develop the technology. Edwin Dawes wasn't being very helpful; his terse technical answers and repeated hedging only prompted more questions.

"What do you mean, you can't even *estimate* the risk?" Buckland asked. "This is a developed, designed technology. Surely you know how it works well enough to assess the risk."

"At this point, the construct is so experimental that we aren't sure, exactly, how it works, or even *if* it works, and if it *does* work, how or whether we can interface with it. That is part of the experiment that we need to conduct." Porter had cut in before Dawes had a chance to further muddy the conversation, and Buckland cut him off again.

"Explain to me what you *do* know so that I can make my own assessment of the risk. An educated guess is better than a blind leap."

"The project information is highly sensitive," Dawes said. "You aren't cleared at that level."

"I don't have clearance to know what I am about to do, but I have clearance to do it?" Buckland replied. "Let me in on the secret or count me out." She crossed her arms over her chest, looking at Porter, then Dawes, and back again.

Porter knew that they had to agree to her demand, as she was the only volunteer out of so few available, and no one else left to ask. Dawes, not convinced of the necessity, pushed back.

"The assignment is simple: go in, look around, report back on what you find. It doesn't have to be any more compli-

cated.”

“No. I won't go without all of the available information. Otherwise I have to assume it is a suicide mission, and I won't volunteer for *that.*”

Porter turned to Dawes and said, “She's right. She can do the job better knowing as much as is practical beforehand. She might recognise something and take more appropriate action. This *must* be done, this step is critical – you know that. And you might not like it, but I am the one ultimately responsible and my authority overrides yours. Now, will you help me explain the project, at least the main points? Otherwise it *could* be a suicide mission.”

Porter cringed at having said that, but it was true. The neural link could leave her brain-dead, or worse. He couldn't mention that there was an alternative, another volunteer – himself – but he was considered too important to take the risk.

“How do we reclassify her,” Dawes asked, “information only or physical access?”

“Verbal information only should be sufficient,” Porter replied. “One of us will always be with her, so access shouldn't be an issue.” Looking back at Buckland, he continued. “Let's take a break, try this again tomorrow. That will give Doctor Dawes and I time to prepare a more constructive presentation. We will call you when we are ready.”

Buckland wasn't happy with the dismissal, but hopeful that it meant she could play a more useful role and not get herself killed from ignorance in a lab accident. “Should I go back to work?” she asked before leaving.

“No,” Porter said, “get some extra rest and review what you know about cells and how they sum to form an organism. Mentally,” he added. “This is sensitive, confidential.”

With that, she left, heading toward her small personal room. Space was precious here, so the room she had been assigned was barely larger than a closet – she could touch two opposite walls with her outstretched arms – but she had it to herself. Carved from rock and lined with reinforced concrete, it was safe enough, but the cold surrounding mass made it a challenge to keep it heated to a comfortable temperature. The vacuum of space and the cold core of this moon had raised the task of improving insulation to a higher priority.

She lay in her bunk, thinking about cells, *living* cells. Nuclei and membranes, energy and waste, instructions in DNA and RNA – what did any of that have to do with this assignment? She knew that the experiment somehow involved consciousness, so maybe Porter had meant brain cells, but he had not specified that restriction. Images of stylised neural circuits traced their signal paths in her mind for a while before she got up to go to the galley.

Buckland's specialty was electronics, not biology. She had taken the introductory class to meet her school's requirement, but had no interest in pursuing it further. She was sure that this experiment involved electronics, as Porter had admitted that there was hardware, but she puzzled over how that related to his directive to think about cells.

The galley was deserted. No surprise, the steady diet of rice, beans, and vitamin pills was not popular but it was enough to keep them going, and all they could expect to be carried all the way here. Local food production, hydroponics and more advanced methods, had not produced significant results. Then there was the rumor, probably myth, of a food synthesiser that someone was working on. Nobody in her circle knew anything about it. *If it wasn't an actual research project*, she thought, *it should be*. That derailed her thoughts about her volunteer project enough to eat, and later sleep.

The call came earlier than she expected. Porter and Dawes both looked tired, as if they had not slept. Buckland suspected that they had not paused since she had left.

Porter again led the discussion. "We are going to try to present you with an overview of what we want to achieve, and a functional description of how it might work. The core is a construct made up of many pieces which interact with each other in such a way as to precipitate emergent behavior. We expect that the emergent behavior could be self-sustaining. We have indeed demonstrated that does happen, but with our instruments, we have been unable to make useful measurements."

"What is useful?" Buckland asked. "Instrumentation is my professional specialty. If something can be measured, we can acquire or build the instruments to—"

"That's our problem," Dawes said. He shook his head and sighed, then turned to Porter and said, "Just tell her as we discussed, the details will only confuse her more."

Buckland looked at Dawes, then at Porter.

Porter continued, "We want to make the construct generate an artificial consciousness, similar to how the human brain generates consciousness, if it does. We still don't understand *that*. Emergent behavior, self-sustaining and self-modifying, arising from the interactions of large arrays of cells. So, to answer your question, we can't measure this artificial consciousness because we don't know how. Yes, we can measure the electromagnetic fields and their strengths and patterns, but they don't tell us any more about what is going on inside the construct than a scan of a human brain tells us about what that person is thinking. Something is happening, but is it conscious, is it thinking, what is it thinking?

"Skipping the details for now, your assignment is to test a neural link – an electronics-based device that might allow a more direct assessment, one conscious mind looking at . . . well, we really don't know what. That's what we want to find out."

Buckland said, "So you built something like a super-computer and want me to check to see if it is awake? Why can't you query the interface and–"

"No," Porter said. "This isn't a computer, there is no interface, there is no program. As I was starting to explain earlier, it is a collection of cells, artificial, electronic devices. We are attempting to *create* an interface – the neural link."

Porter looked aside and said to Dawes, "See, Dawes? We have to go into the details for her to understand any of it." He paused, expecting a response from Dawes, but Buckland spoke first.

"Why would you think that this construct – what is it called, anyway?"

"We have never named it," Porter said. "'Construct' was what its inventor called it, the core cell concept, anyway. That design has been incorporated into multiple advanced technologies, but the core topology isn't important here. There hasn't been a reason to name it yet."

"Yet?" she said. "And why would you think it would become conscious, just magically wake up?"

Porter hesitated as Dawes looked down and shook his head. He said slowly, "We don't expect it to *evolve* consciousness. It was designed to be able to *store* consciousness. That might be more wishful thinking than reality because we can't explain how that might work. We just think that it might."

Buckland let her mouth hang open for a moment before

pulling back into an accusing stare. "So this assignment is to download me into that thing? Me? *My* consciousness?"

"No," Porter said, "not you. Your assignment is to help test the experimental neural link to see if we could measure, even communicate with, another consciousness if one was stored in the construct. Do you understand now why we can't quantify the risk?"

"No, you need to explain how you expect this link to work, what the actual connection involves, then I might understand."

"Well, we have to show you that anyway, to proceed with the experiment," Dawes said. "Let's pick this up tomorrow in the lab, show you the hardware, how it connects, and explain what we know it will do. Then we can all brainstorm, figuratively, about what might happen. We have worked out a preliminary test procedure, a way to simulate a connection as a means to understanding how that connection will work, if it will work."

The next day, they gathered in the lab, but it wasn't an area that Buckland was familiar with. She knew the crew quarters and galley, and the lab area that she worked in. She also knew about the power generation and life-support equipment because they were on the site map. This area wasn't. Porter had led her here, cycling her through locks that her clearance would not open.

This lab was cramped, like the others, but stuffed with unfamiliar equipment. Racks and panels of equipment lined the walls around two littered workbenches. At one end of the room, fine coppery mesh hung over and around something. She couldn't see through the mesh itself, but it was pulled back in one place to make a doorway. The fabric made an enclosure

for a large piece of equipment, a narrow table extending from a ring, a scanner of some sort. She conjectured the metallic mesh might serve as a shield, a makeshift Faraday cage. The piece that caught her attention looked like a dentist's chair with mustard-yellow cushions. A disconnected wiring harness hung limp across the armrests. Before she could ask what it was for, Porter called for her and Dawes, who had been preoccupied with a rack-mounted panel, to begin the lesson.

Porter said, "We have already worked out a preliminary procedure, a structured approach that we will deviate from as necessary. Our goal is to measure action and reaction, to correlate cause with effect, as far as possible. We will scan your brain in the fMRI machine during a mental test that involves focused thinking of specific things. Then we will dump the recorded data into the link simulator," pointing at the chair with the cable draped across it, "and play it back with you hooked up. Hopefully you will recognise the replayed events, or they will at least tickle your mind in such a way that you will recall them. There is no particular order to the items on the list, and the replay will be shuffled to help ensure the integrity of the experiment."

"We will explain and discuss each step before we start," Dawes added, turning away from a control panel.

The first step sounded simple enough. Lie still while thinking of nothing, or as close as she could approximate by quieting her mind, as a baseline. Then, concentrate on a specific concept or image in the list, as pre-determined by Dawes. These were all basic and familiar things such as common objects, primary colors, human emotions, and other more abstract concepts. She would lie still in the scanner for one minute, then have a break in-between the scans. The fMRI would scan and record. She still couldn't fathom how the next step – playback – might work.

Nearly two hours into the session, Dawes decided that he had enough data for a first test. Buckland had grown less confident in the experiment.

She said, "It occurs to me that there is no single way to think a concept – there are nuances and relations that must influence the result, of how *I* think about that concept. Won't that skew the results?"

Dawes answered, "Maybe later, communicating with another mind that has had a different experience. For now, we only want to see if you can recognise your own thoughts. Communication over the link might involve some negotiating to agree on things, define terms, we don't really know yet. Think of it this way: you recognise your face in a mirror; can you recognise your mind in a figurative mirror?"

She still couldn't imagine what that would be like, maybe a form of mental telepathy, a mind-meld, *dreamfasting*. "Dreamfasting," she said. "That's what it was called in the old stories. An unstructured, disorganised exchange of thoughts, feelings, and particularly memories. Compatible people only had to touch hands to connect."

"No," Dawes said. "This can't be disorganised or random, or it won't work."

"There is no random," Porter said.

"I am well aware of your view on that matter, and where you got it from." Dawes shook his head. "I don't completely disagree, but it is a useful term to convey lack of order without need for precision."

Buckland didn't understand the significance of that exchange, but thought it sounded important. She said, "I'm just trying to work up an idea of what to expect next."

"I can't help you with that," Dawes said. "I can only

watch and wait for you to report on your experience.”

The next step didn't involve Buckland directly. Dawes had to convert the recorded data to a form that he could then load into the simulator. This was a point of black magic that he would not discuss. “I'm just guessing here,” was all he would offer. She thought he must at least have reasons for his guesses. Dawes continued to work while Porter and Buckland took a break. He led her to the galley.

“I keep hearing rumors, or maybe myths, about a food synthesiser,” she said, looking down at her bowl of plain rice alongside the one food luxury that they enjoyed – coffee.

“Myths,” Porter agreed. “It was discussed, even worked on at one time, but the lead expert disappeared and the project was abandoned.”

“To be picked back up if the right expert came along?” she asked hopefully.

“Not impossible, but not on our priority list, either.”

Buckland sat in the chair, reclined to put her head within easy reach of Dawes' hands. He consulted his notes, then placed an electrode on her scalp, held in place by a dab of cold goo. Then again, until a rat's nest of tangled wires sprouted from her head. Dawes had mapped the electrode locations based on the fMRI data – where they would have to be to generate the electro-magnetic patterns that would re-create her thoughts, to play back the shuffled recordings. She would then verbally describe what the playback stimulated. She wouldn't know what was coming next.

They started with the baseline recording, quiet mind. She relaxed slightly and described the sensation as 'calm'. Then came the recording corresponding to 'chair'.

“I have the sensation of sitting upright on a hard wooden chair,” she said after pausing to consider. “It's confusing to have two different sitting experiences at the same time.”

“Is that what you imagined when you were thinking 'chair' in the recording session?” asked Dawes.

“No, I was picturing a chair by itself,” she replied. “But sitting in a chair is closely related, probably inseparable from the concept, as that is what a chair is used for. If it was an object that I had no use association with, I might have just pictured the object itself again.”

“That tells me we tickled your mind in the right way,” Dawes said, “but not precisely enough. However, considering our crude setup, we might be on the right track. Refinements will follow.”

After a few more familiar objects, with similarly relational responses, Dawes played the recording for the primary color yellow.

Buckland tensed, twitched, then screamed. She pushed herself up out of the chair, straining against the attached electrodes that held her back. She tore at the wires with one hand, breaking some of them in the process, while pushing against an armrest with the other. Dawes had already stopped the playback when she broke free and headed for a workbench. She hit her head on the front edge of the table in her hurry to get under it, then knelt, cowered, hands over her head in self-protection.

Dawes started to run to her, but Porter held up a hand and said, “Wait – wait for it to pass.” The two stayed still, quiet for a few minutes, until Buckland relaxed and crawled out from under the workbench on her own. She was shaking, and bleeding from her forehead. She had clearly been terrified.

“It is safe – you are safe,” Porter said. “Whatever you

just experienced was not real. Take your time to calm down before we discuss what just happened.” He handed her a handkerchief for the small trickle of blood that she had just noticed.

Dawes remained quiet, surprised by the event, worried that their brief success had been a fluke.

Buckland broke the silence. “I hope I haven't ruined the experiment.”

“The broken wires can be repaired easily enough,” Dawes said. “Your unexpected response could yield valuable data. We need to know what you just experienced.”

“They looked like wasps, larger than me, swarming toward me, wings buzzing loud enough that everything vibrated from the hum. I had to run.”

“Would you compare it to a nightmare, a bad dream?” Dawes asked.

“No,” she replied. “It felt real, as real as being here now feels.”

“Can you guess which item in the list we just played? That might help us understand your response.”

“I don't remember anything in the list related to wasps, nothing that I would have consciously related to wasps.”

Porter joined the conversation and said, “If there is no conscious association, then it must be unconscious, or sub-conscious. That is *if* the response was due to an association with the concept at all – it could have been an anomaly. The stimulation-response mechanism is probably much more complex than the resolution at which we can manipulate it with this setup.”

“I expect so,” Dawes said. “This is only a first attempt, to see if a functional neural link is possible – I think we have already demonstrated that it is – and what refinements must be

made for it to be practically usable.”

Dawes turned to Buckland and said, “Two questions: are you willing to continue?”

She hesitated. “I am intrigued enough to go on, but afraid of what else might pop up from my subconscious.”

“Are you willing to share whatever comes up? That will be necessary for us to make progress, however uncomfortable it might be.”

“Yes.”

“Then let's discuss this episode. The concept recording I played was the primary color yellow. Think about how that might relate to wasps, or aggression.”

She hesitated, paused thinking. Porter said, “Wasps are yellow, or at least some of them are partly-yellow.”

“That's one possibility,” Dawes agreed, “but canaries and daffodils are also yellow. Why didn't she associate yellow with them?”

Porter said, “There is also a level of anxiety, I presume, in participating in this experiment. Perhaps that association, a fear of wasps, was the trigger.”

“That's possible,” Buckland said. “I have always been afraid of wasps, since being stung as a child. I haven't thought about them for a long time, at least since I came here – we didn't bring many insects with us, and no wasps that I am aware of. And I do have an underlying fear of what might happen to me if something goes wrong here, or unexpected.”

Porter said, “We could restrain her in the chair, for her safety.”

Dawes quickly said, “No. I am probably as uncomfortable with that as she is.”

Buckland nodded. “I think it might be enough to know, to remind myself, that what I experience on the link is not real and won't hurt me. That episode was unexpected, I wasn't prepared for it.”

Dawes shook his head. “I don't know what else you will experience going forward, but I'm not convinced that you *can* prepare for it. However, that is the reason for the experiment – enter the unknown, collect the data, and refine the approach. I am willing to continue if you are.”

“Yes,” she said.

“We need to repair the neural link, first,” Porter reminded them.

The experiment continued after repairs were made. Buckland had a few more anomalous reactions, but managed to contain herself. They repeated the experiment with another recording and playback session.

Dawes was especially interested in the placement of the electrodes. He described his goal – a material that could download a mapping and automatically adjust itself in real-time. He was convinced that the crude electrode method would be insufficient for inter-mind linking.

In the next phase, the experimental results supported that view. Porter took a turn in the scanner, recording his versions of concepts. When Buckland sat for the playback, they could find no correlation between Porter's recordings and her response, and sometimes no response at all. “I'm not sensing anything, like the recording is blank,” she said.

This made Dawes conclude, without conducting the experiment, that two minds would not be able to link with this interface without some extra help in mapping. How that might

work was beyond him at the time. It took some months of study, guessing, and tinkering to come up with something that could be tested. The array of individual electrodes was replaced by a shielded helmet that housed an array of core cells and a signal converter. Its downside was that it took time for the interface to 'learn' the mappings. Dawes didn't know how to program it. He used a normalised set of recordings and hoped that the two minds and the link would work together to negotiate the connection. Again, Porter and Buckland were the test subjects.

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A working theory of gravi-magnetic control. *Isn't that what you were expecting?* she was thinking. *Isn't that what you paid for?* Marlene Rey was with the group on-stage, ready for the InfoProp presentation. The team's only purpose in being here would be to lend credibility to the proceeding and the message. Why bother?

The reporters in attendance knew the routine and played their part, a theatrical production in which they were recorders and transmitters. They were not investigative journalists; this press was not free. There were about a dozen people in the audience, some she recognised from the popular media.

As she looked out over the expectant crowd, she thought about how the State would control what the public was allowed to see and the manner in which it would be presented. This was an Information Propagation event, staged by the State to communicate, through the approved channels, what the State wanted the public to hear. It was customary for the media to relay the information as unfiltered and unquestioned fact. There were underground information services that did not trust the State, or each other. They had reputations for real investigative journalism interspersed with outright fictions that were convinc-

ing enough to be dangerous.

Now what? she asked herself as the project administrator launched into a speech praising some fictional technology the group was supposedly working on, that had nothing to do with gravi-magnetic systems. The public would never know.

Eldrin Thacker, the project administrator, was not a scientist himself. It wasn't clear to Marlene why he was involved other than as a guard for the State. He enthusiastically recited facts about the carbon atom and its usefulness in constructing molecules with amazing properties. *At least that part is based in fact*, Marlene thought. He jumped to the six-carbon benzene ring and how they used it to derive a three-carbon ring, creating a material with special controllable properties. It wasn't anything new, though perhaps obscure. Marlene didn't remember who authored the research report, but it had been nearly two decades since it was published.

Thacker then paused to introduce the leader of the research team, Carson Skeens, who would provide the technical details. Skeens not only directed and participated in the research, he also performed all of the administrative duties – except interfacing with the public. He would make a pre-approved technical statement today, nothing more.

Skeens looked uncomfortable as he stood, walked to the podium, hesitated, then began. He appeared confident, if uninspired, as he described, in terms that the audience could handle, inter-atomic bonds and molecule chains and weaving these chains into the fabrics of science-fiction. He described how the control was magnetic in nature, based on patterns of electrical currents set up by the temperature differential. The three-carbon ring wasn't stable on its own, but only within the particular system they had devised. *Well, we are working with carbon compounds*, Marlene thought, *but not anything like that*. More efficient environmental controls for buildings, process controls

for manufacturing, anything that required temperature regulation. Miracle fabrics used as curtains that would replace traditional heating and cooling systems. *That would be the misdirection, the hook to draw them away from their real research*, she thought. That would play well with the public, the State developing technology to make their lives better. How soon would they forget? It wouldn't matter. Manufacturing could not scale-up to meet the performance of lab-bench results, or just couldn't keep up with demand, or was too expensive. She knew that any of these excuses would be sufficient cover. And the public might forget all about it before anyone could set up a manufacturing operation.

As the team leader finished and handed the podium back to the project administrator, Marlene realised that he hadn't mentioned production for public consumption – he has left that for the press to ask about, and the PA to lie about. The PA invited the audience to ask questions by holding up their InfoProp pass, showing the code on the back.

The audience managed to not ask any overly-sensitive questions. Marlene wondered if that was from luck, politeness, or fear. When the PA adjourned the meeting, the audience was slow to move, talking among themselves as they packed up their notebooks and recorders.

She nearly broke under the helpless frustration, bordering on anger, that the results of her hard work would be suppressed. That was the deal with the State. Her group was allowed to continue its work, to continue to exist, only as long as their results remained unpublished, and as long as the State continued to care.

The first condition was predictable – everyone wanted to continue, especially since they had made it work, and demonstrated that it would work predictably and reliably on top of that.

The second condition was not predictable, and a persistent source of anxiety and fear for most of the group – they would never be allowed loose in society again. When they were no longer useful, there would be no carefree retirement to a cabin in the mountains, or to a shack on the beach, or aimless travel. They would be, well it wasn't stated or defined in the contract, but it was generally assumed that termination meant just that. Working on such esoteric (and approaching fantastic) concepts was usually enough to forget, however temporarily, those feelings, those worries, but the inability to share, to shout out victory, or even personally implement it, brought the circumstances into sharp focus.

Marlene knew the routine: at the signal from the PA, get up and leave, quickly and quietly. *Run away*, she thought. No chance to spoil the play, even if accidentally, in the interface between two realities. Back to the safety of lab. The prison. No one spoke as they dispersed, a break before an internal review and briefing on the presentation. She went to her private room in the residence building to be alone for a while.

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K-T Log

Full firing of the reactor core: *success!* A few years ago I would have regarded this achievement as a validation of good engineering design, but now it is so much more. If the next step works, we will have the tool we need to operate independently, beyond the reach of the State.

I still don't understand exactly how it works. Beryl Ridgeway and Orlon Chenault developed the core from the

dream construct, then Norman Rucker worked out the control method. We had to have cover for testing, in case something went wrong, and coming back here, even after six years, was a risk.

I scouted the site on my own, monitoring for State activity. They might still be watching the abandoned site. I was surprised that they had not razed the ring and the building, though they probably couldn't justify the expense of bringing a wrecking crew all the way out here to do the job. It would do nothing to serve the needs of the State.

The dome still glowed, so the power systems were at least marginally operational. In through the remote emergency exit, difficult to find in the dark and overgrowth of scrub. The lock accepted my code and cycled, and I was in, safe but cautious. If the State had penetrated the facility this far, they would have had to blast their way in. Apparently they hadn't bothered. The refuge was untouched and fully-stocked. I didn't want to risk destroying it, but we needed a safe testing site, containment in case of a disaster. There isn't much between a fusion reactor core and a fusion bomb. I remembered the site planning, and that the refuge had been designed to withstand a direct hit from above. I was hoping that above would remain intact in case of an explosion from below. The seismic evidence couldn't be hidden, but if we failed, that wouldn't matter – we would all be dead.

After checking the security systems and making reasonably certain that I was alone and unmonitored, I made an inventory of the stores and outlined a plan before returning to the most recent in a long string of temporary bases. Moving frequently, not establishing a noticeable presence, was necessary to evade the attention of the State. Five of us set out for the test site, carrying as much as we could, while the three others sanitised the site and moved on to establish another temporary

base. Final assembly depended on tools and materials at the site. The reactor core itself was already fabricated – a matrix-composite cylinder with tubes wrapping through and around it, and dish-shaped reflectors at either end. Fuel would be made on-site, spiked from a canister that we carried in.

Our first task was to empty the refuge, moving all of the supplies to the corridor at the exit. Next, we built the housing for the reactor core, a rectangular frame with rods fastened to the pipes on the core to hold it suspended. The heat and pressure would be contained within the cylinder, or just outside it if it worked, by a magnetic field that would shield the support structure. There was no time or material for layers of shielding.

We set up remote control and monitoring outside the refuge, sealed the reactor core inside by itself, and started the ignition process. No response. A fuel-flow regulator was contaminated with metal from the canister. Reset, and again. The containment control shut down due to an anomaly in the field. Norman Rucker figured out that the support rods were causing turbulence in the flow, so we rearranged them, replacing some with a different alloy. It took three more rounds of rearranging and re-configuring to achieve a successful ignition. The next step is to build a reactor core into a drive that will generate thrust. I don't know how much longer we can work here, unnoticed or untouched.

About the Author

Benjamin Gayle was born in Richmond Virginia, and has lived in the western mountains of the state for most of his life. Educated in math and electrical engineering, he has worked in a wide variety of capacities including factory automation in automotive manufacturing, and designing motor control systems for a drives manufacturer. He has been an amateur cyclist and bicycle mechanic for more than thirty years, and an amateur radio operator (N1NP) for more than twenty. Reading was an early passion, followed by writing in his early teens, though that was set aside for decades for career and other responsibilities.

Sample chapters and more information are available at **www.AntonomasiaProductions.org**.

Books by Benjamin Gayle:

The State

The Turtle Test
Re-Entrant

Dreams

The Frost Bug Dreams
Dreams of Sixteen
Dreams of Seventeen
Dreams of Eighteen
Dreams of Nineteen
Dreams of Twenty
Dreams of Twenty-One