

ENHANCEMENT

A COLLECTION OF
SHORT STORIES

NED STEPHENSON

Enhancement

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*Modification of form is admitted to
be a matter of time.*

—Alfred Russel Wallace

DEDICATION

To Lauren, for making it happen.

Sequence 1

New South Wales, 1995

Thomas Ramsay was six years old when a car hit him outside his home. His soccer ball had sailed over the stone wall and little Tom was out the filigreed wrought-iron gate and on the road before the driver had time to react.

It was touch and go as Tom spent a month in an induced coma while the doctors waited for the swelling in his brain to subside. His parents braced themselves for a life of care for the third of their four children, and his mother never left the hospital in all those weeks. The little boy regained consciousness hours before the doctors planned to intervene, and apart from having no memory of the incident, he quickly made a full recovery. It wasn't until five years later that it became obvious the accident had changed him.

Tom grew to be a kid who loved being outdoors. Exploring the bush and collecting creatures, digging in

the soil, catching beetles, watching wasps catch spiders and entomb them alive for their young to eat later, observing nature in all its wonderful and gory details, made Tom happy. His younger brother was different; Marcus enjoyed pulling engines apart and learning how the pieces worked. Tom's older sisters were both social creatures, more drawn to making people do what they wanted than paying any attention to objects around them.

But not Tom: for him it was alone and outdoors in the sunshine, searching for things to catch. The only shared trait with his three siblings was the family intelligence. Tom was brilliant, and he found school a breeze: one of those people who never seemed to have to try to remember things. We have all met people like that.

The delayed consequence of Tom's roadside accident finally revealed itself in his eleventh year. Puberty came a little earlier for Tom than for his schoolmates, but that wasn't alarming. He grew and ate like a horse, as boys do when they have growth spurts; however, Tom's went on much longer than his peers. For two years, his mother struggled to keep the food up to him, and by his thirteenth birthday Tom had the dimensions of a tall and fully grown man. His few friends at school had loved it, and both the rowing and football coaches were in his ear about joining their top squads. But Tom wasn't interested in sport, apart from riding his bike, because he could do that alone. For his thirteenth birthday he asked his parents for a high-powered microscope rather than football boots.

Mrs Ramsay grew anxious about Tom's unusual growth, so she took her son to a series of doctors for specialist tests. Eventually, the brain surgeon who had cared for Tom after his accident asked to meet with Mrs Ramsay alone at his practice.

'Sarah, Tom's pituitary gland is damaged. The trauma to his brain from hitting the road when struck by that car all those years ago has changed how the gland works. It doesn't know when to switch off producing its growth hormone.'

'Meaning what?' his mother asked, because she did not understand about pituitary glands and assumed the stuff that made her son grow came from his balls.

'Well, it may stop on its own accord. I can't predict whether that will happen. But if it doesn't, then he may reach a height of seven feet or more. With all the health risks and living problems that come with such an extreme size. Sarah, your son has the signs of developing gigantism.'

Mrs. Ramsay curled her lip at the description of her boy.

'I recommend we put him on a course of growth inhibitors. They work well with others in a similar condition. It's uncommon, but people can get tumours on their pituitary gland that will have the same effect. Receiving it from trauma, as in Tom's case, is rare ... but not unheard of.'

By introducing a suite of inhibitor chemicals to combat the hormones flooding Tom's body, they slowed his out-of-control growth. His adolescence reverted to the closest thing you or I might call normality—apart

from being a foot taller than anyone else in the family by the time he finished school.

The second, less important—but still interesting—element to Tom Ramsay's life was that he was born into a wealthy family where both sides had built their fortune from manufacturing. His father's family were heavy machinery people and his mother's rich from ceramics—not the culinary type, but electrical insulators and industrial porcelain. Both arms of the family tree shared a tradition that each child would enter a field that contributed to the family businesses.

But Tom had absolutely no desire to be a part of the family companies.

He struggled to even be a part of the family. Holiday gatherings, trips to overseas resorts, and family birthdays all bored him; he felt out of place. His parents tolerated his passion for nature and his desire to be alone, hoping the phase would eventually burn out. And besides, his stellar school marks and a prized university scholarship gave him respite from his parent's disinterest in his passions.

His siblings paid no attention to Tom's departure from tradition; they had enough on their plates dutifully living up to familial expectations by becoming engineers and manufacturers.

Regardless of Tom's physical presence around people, he never had a serious girlfriend at university—not for want of girls trying—and he quietly made his way through an undergraduate science degree, finishing his honours year in microbiology with a perfect grade point average and the University Medal.

Tom's parents brought proud faces to the graduation ceremony but kept their view that his intelligence would be better applied to the manufacturing world and not on an obscure science. Towards the end of his honours year, five research professors were chasing Tom. In the end he chose two: the first a microbiologist, and his supporting professor would be an organic chemist.

And so, at six foot eight inches, two hundred and seventy pounds and the tender age of twenty, Tom Ramsay began his doctoral degree.

* * *

Tom was fascinated by animal–algae symbiosis, especially the type that occurred in coral, so this was why he chose a microbiologist for his supervisor. He found the relationship intriguing between the polyp, the soft fleshy animal part of the coral, and the tiny algae that live *inside* the cells of the polyp. That the strain of algae in the coral had the cool, other-worldly name of *zooxanthellae* was a pleasant bonus for him.

There were a few examples of symbiosis in nature available for Tom to research, but he imagined this coral–algae connection particularly significant; he sensed it held the key to something greater than two different life forms living together for mutual benefit. It was well known these creatures had been locked in this relationship for so many millions of years that they could now no longer live apart. Tom wanted to understand how they did it; one getting its energy from sunlight, the other from eating plankton during the hours of darkness. They enjoyed

the two worlds, like nature's version of Jekyll and Hyde, without the murderous consequences. The question of why nature wasn't filled with countless examples like this he took to his supervisor.

Contrary to the typical image of a university professor, Tom's supervisor was a neat man. The shelves of James Wright's room looked well-ordered, practically empty, and his office furniture was a simple IKEA desk and chair. The only luxury in the room was a linen couch to 'cook up ideas', James told his students. Tom translated this into 'somewhere for the lazy fifty-something professor to sleep in the afternoon'.

* * *

'Have you picked a research topic?' Professor Wright asked Tom. 'The last time we met, you were throwing around a few options. How'd you go?'

Tom was using the couch for its intended purpose and lay its full length with his feet hanging off the end. He was used to not fitting furniture. He felt familiar and relaxed around Professor Wright, a man who encouraged students to be themselves, so it didn't seem to be rude lying down while being addressed.

'I want to look into the symbiosis between algae and marine animals.'

Wright nodded his approval because his specialty research had been marine invertebrates. He was on solid ground here.

'Good! You've got a few options; tridacnids, cephalopods, ulmarids ...'

‘I thought corals.’

‘Cnidaria! Fair enough, that’s probably the one I’d pick. Loads of prior research to build upon and easy because the critters stay still.’ The professor eyed his reclining student with interest. ‘Have you chosen corals so you can spend all your time diving around the Great Barrier Reef getting a tan?’

Tom stared up at the ceiling. ‘No, I’m happy to keep specimens in tanks on campus.’

Early on, James Wright realised this latest super-sharp student didn’t share his sense of humour. He didn’t appear to have much humour in him at all. *The brilliant ones are weird*, Wright thought to himself, *only so much intelligence can squeeze into a person until there’s no room left for the more social traits.*

‘Good for you, Tom. Come back with a research proposal and then it’s time to start the literature review.’

* * *

Tom’s proposal was approved by the academic senate without challenge. Cash wasn’t an issue for Tom, so he bought a multitude of tanks and corals from specialist pet suppliers, and he set about probing into the form and function of the two organisms joined as one. By halfway through his first year, he’d isolated the algae and had kept it alive away from the host organism. No-one had ever done this before. Perhaps they hadn’t tried.

To achieve this, Tom had created a blend of nutrients the algae normally received from the polyp, and the

algae seemed content alone from its friend, with enough sunlight and a suitable rich solution to live in. Wright was impressed with the quick results and encouraged Tom to probe into how the polyp might survive without the algae, because so far Tom had killed every coral that lost its symbiotic partner.

But it was here that Tom drifted from his original course; he'd had a new and far more exciting idea. Now that he had the algae, he wanted to put it in other creatures; find out whether it would coexist in something else, whether it would develop a whole new symbiosis. So far, he had not had any luck finding examples in the literature where this had been successful or even attempted. Of course, that only made him more determined to follow this fresh line of investigation.

Another PhD student in his first year, with the same supervisor, struck up a friendship with Tom during those early months. Luke Pearson had been researching ways to prevent leather being attacked by fungi while in long-term transit, such as when bringing leather products from Europe to Australia. Luke dreamed of working for fashion importers when he'd finished his doctorate. He'd get to go to Italy and chat up Italian girls as he drank espressos in the Piazza dei Mercanti. Luke was adamant that calling himself *dottore* would help the cause, hence his desire for the postgraduate degree. Tom was smarter than him, but Luke thought his mate's research was a complete waste of time that would only lead to a stuffy life cooped up in a university doing inane research until the end of his days.

Not that future for Luke; oh no, he wanted to do something practical with his doctorate, like make money or be famous. He suspected the second possibility unlikely, so set his mind to chasing the money angle. Perhaps it was because they were peculiar people that they got on so well, or that they were the only two microbiology doctoral students that year.

To test the waters on the new direction for his research, Tom shared his idea of making a new symbiosis with Luke.

* * *

‘You need to drop that before it’s a fixation! Wright’s not the type of guy to stick his neck out.’ Luke watched his friend stare out the window.

‘Go on with what you’re already doing and get it finished, hang the fancy degree on the wall, and then chase the crazy crap later when you’re a cardigan-wearing professor.’

Tom had always been poor at reading people. The absence of a girlfriend resulted from him being incapable of recognising signals that interested girls would send his way. To his flatmates, Tom was dislocated from the world around him. It made him a pleasant person to live with. He paid his rent and left them alone.

Tom kept watching the lemon-scented gums sway outside the cafeteria near the science buildings. He hadn’t expected Luke to not like his idea.

‘Too late. I mentioned it at the last progress meeting. I told the panel they should allow me to use human cells in my experiments.’

‘Why the hell did you say that?’

‘Because I think a human immune system will accept the algae if I put an inhibitor in place. Like what they used to control my growth as a kid.’

‘That’s dumb.’

‘I don’t think they understand what I can do with this symbiosis.’

‘They’re not idiots!’ Luke sniffed. ‘Wright may not be the most exciting dude around but, let’s be frank, mate, neither are you. Why do you want to do this with people?’

Tom hadn’t moved his eyes from the trees.

‘Wouldn’t you like to get energy directly from the sun?’

‘No ... why the hell would I?’

Tom turned to face his friend; his eyes were red from lack of sleep.

‘Don’t you get it? If our bodies photosynthesised, we would eat less. We wouldn’t put so much pressure on farming land, there’d be less waste, fewer landfills, less fighting over food, no hunger and starvation in the world.’

Luke had never considered Tom to be a humanitarian. His version of Tom didn’t appear to care much about humanity. Why the sudden interest?

‘What a fantasy! Do you want to save the world by turning us into little green men?’

Tom frowned. ‘If I make this work, we’ll be capable of getting our own energy directly from the sun. It would be like the branching between *Homo sapiens* and Neanderthals!’

Luke rolled his eyes and tried to talk some sense into his friend.

He failed.

* * *

Tom ignored Luke and pushed on with his new direction. Later that week, he squirmed on his supervisor's couch.

‘That’s what I’d like to investigate: a way to create a new symbiosis. I’ve thought about this since school. I’ve always wondered why we can’t do it.’

‘But there aren’t any algae in or on our skin, Tom—not unless you’ve been swimming in a putrid waterhole. The only things we have in our skin that isn’t us are things like fungi, viruses, and bacteria around hair follicles and in sweat glands.’

‘I know that ... I’d still like to test if it’s possible to implant microalgae into human skin cells.’

Wright threw his head back and laughed. ‘What ... so people could photosynthesise like plants?’ The professor shook his head. ‘That’s way too big, Tom; that’s fantasy or postdoc work. You can try something new after you’ve completed your degree. I’ll remind you, my young inspired genius, the purpose of gaining a doctorate is to gain entry to the club. Once you’re in, you can do whatever you please. Until then, don’t be a revolutionary. Don’t look at me like that ... you know that’s how the system works.’

Tom got up off the couch because he sensed a practised speech coming.

‘You need to go through the process and satisfy the markers and then you can do what you want afterwards. We must have a research field that I and Trevor are both knowledgeable in. What you’re talking about is completely new. Doctoral research is about building on

the known—it's not about finding new stuff.' Wright took a drink from his can of Coke and shook his head again. 'Besides, you're introducing too many variables for a simple research subject.'

Then Wright watched yet another frustrated student leave his office, like every other one had at some stage in their research. Holding the postgrad's hand was part of the supervisor's job, but it missed out being written into academic position descriptions.

Wright called out to him. 'Besides, you've stuff-all chance the academic senate would give you permission to use human subjects!'

* * *

In the laboratory, Tom stewed as he pipetted solutions between dishes, an unskilled task that required little thought but had to be done carefully. He was pissed off his idea had been dismissed offhandedly.

From dish to dish his arm moved, then back to the beakers with the solutions. His mind wasn't on the task and he could still see the look on Wright's face. He'd found a fantastic direction to go after, but no-one seemed to agree. It felt like being inside a cave and the light was vanishing as a boulder rolled across the entrance. When he tapped the side of the dish and dropped solution on the bench he swore and put the pipette down. It was then he noticed a red mark across his knuckles, he'd no idea how it had got there, but seeing it made him stop what he was doing. Just a superficial cut, probably from brushing against a sharp edge somewhere in the laboratory.

It looked like a cat scratch. He turned his hand in the light, thinking about the layers that made up the barrier between him and the outside world. Tom tried to imagine his sight magnifying until he separated the dermis and the sweat glands, the follicles and the fatty hypodermis. He thought of the layers; stratum corneum, stratum lucidum, stratum granulosum ...

He pushed his stool away from the bench so hard it fell to the ground and he didn't stop to pick it up as he left the lab, returning shortly with a fine needle and syringe.

He chose a spot on the inside of his forearm because a long sleeve would hide it and it would be easy for him to check. The tiny needle slid beneath the skin as Tom pressed the plunger to administer the 0.5mL solution containing the algae. A sting and a faint patch appeared the size of a small fingernail under the skin. It only looked like an old bruise. Heart now racing, Tom quit lab work for the day and went home.

* * *

It was a restless sleep that evening for Tom, plagued by dreams of him mutating into a giant sponge and being rooted to the ground, unable to move and left to dry in the sun. He woke around two in the morning with with the bedsheets soaked and pins and needles in the arm he'd been sleeping on. When he rolled over to allow the blood to circulate, the numbness was replaced by a searing pain all the way to his neck.

Turning on his bedside light, Tom saw the puncture area on his arm was surrounded by red inflamed skin that

had risen like an ant bite. From the red halo, thin lines traced towards his elbow. The injection spot had become infected and the surface of his arm was hot to the touch. He didn't need to take his temperature; he could tell that it was roaring.

* * *

Arriving at the hospital by taxi, Tom waited an age before someone saw him. Outpatients had the usual Saturday-night collection: drunks injured from fights and drugged people who had hurt themselves or been hurt by others. The underbelly of humanity that medical practitioners clean for us while we sleep. It was the worst imaginable time for him to be at a city hospital that covered a district of fifty thousand people, but his shaking and fever needed attention and couldn't wait until after the weekend.

A doctor who finally appeared was a young condescending asshole whose response to Tom's statement when he said he had an infection was merely, 'What makes you think that?'

After Tom exposed his forearm, the arrogance subdued enough for the quack to agree without needing to inspect the affected area. Already exhausted from a fourteen-hour shift, he gave Tom a shot of penicillin and a script for antibiotics that could be filled at the hospital pharmacy. Tom was relieved the doctor hadn't investigated the puncture and green bruise where the algae was under his skin attacking his body.

* * *

‘Seriously, Tom—what did you expect?’ was the limit of Luke’s sympathy on Monday. ‘Did you suppose your immune system would just say “Hi, foreign plants; welcome to my body. Make yourselves at home”?’ Tom pulled his sleeve down to cover the war zone. It still hurt, but the redness had shrunk since the weekend and his temperature was back to normal. ‘You, of all people, should know about mycotoxins. Damn lucky you didn’t give yourself septicaemia.’ His body’s reaction to the foreign life had got Tom thinking for the rest of the weekend.

‘Tell me more about how you treat the leather.’

Luke eyebrows lifted at this change in direction. His mate hadn’t shown a great deal of interest in his own research before. They spent most of their time together only talking about Tom’s studies or about wine, which was the only other interest they shared.

‘What do you care about fungi and leather?’

‘I have to mask the antigen ... to make my immune system not recognise the algae as a foreign body and set off this kind of auto-response. How do you prevent the leather being attacked?’

‘It’s different. Fungi is nothing like algae, and the skin I work with has been dead for ages.’

‘Tell me anyway.’

Luke explained what his study involved as Tom listened intently. By the time he’d exhausted Luke’s knowledge, Tom agreed that next time he did an experiment, he’d use a clinical environment instead of his body as the testing ground.

* * *

It was harder than Tom had expected. It took another four months before he'd developed inhibitors to the point of being able to test them. During that time his relationship with Wright had deteriorated where they now communicated only by writing. Tom was obsessed with his new direction and couldn't care less about the doctorate anymore; he saw a whole original line of success.

Luke didn't mind. He remained patient with his mate because his own research had been plodding along nicely, and he'd started informal Italian lessons with a cute undergraduate from Rome, a deliciously sexy distraction from Tom's obsession.

On the twentieth of December, Tom was in the laboratory on the second floor of the principal biology building at the university. He'd positioned Petri dishes on warming plates and into each he'd placed some of his own skin cells in a saline solution. That morning he'd painstakingly injected into the skin cells the microalgae he'd been growing especially for the occasion.

Next, he added liquid inhibitors to each dish, complex chemicals he'd been working on for the past week, developed in a way similar to immunosuppressants used to prevent organ rejection in transplant patients. Each dish contained a slightly different inhibitor, or differing concentrations of the same inhibitor. By late afternoon, Tom had an array of a hundred dishes carefully laid out in a grid and labelled accordingly.

There had never been room in his scientific mind for an image-of-man creator and yet, as he lay in bed that night looking up at the floral pressed metal ceiling in his bedroom, he spoke a soft prayer that his experiment might work. When he'd finished, he added a promise to go to church if it would make any difference to the outcome.

* * *

The next day Tom rose at dawn. He was too excited to stay in bed and keen to find out how his tests had gone overnight. He skipped breakfast and, dropping some apples into his pack, took his Italian road bike off its hooks in the hall and carried it down the house steps and out the narrow front gate to the road.

With virtually no traffic in the early morning light, it would be a fast ride to the university. His mind buzzed with the thrill of seeing what had happened. He needed to get in quick to find out, and to make sure no-one messed with the dishes.

Chilly air instantly hit his face as his muscular legs eased into a swift cadence. Living close to the university meant Tom had never bought a car, and he'd ridden every day for the last five years. He even rode most weekends, sometimes over a hundred kilometres at a stretch, and always on his own. His parents approved of the riding, so they had bought him a premium bike that had cost the same as a hatchback car. With legs the size of his, Tom used it to its potential. Between the rental he shared with some younger students and the campus there were few hills, so he easily reached the same speed as the traffic.

He didn't have to think; his legs took control, his body leaned into the corners, his hands rested lightly on the handlebars. That morning he felt like a stone skimming on water.

* * *

The driver felt the collision through his steering wheel and heard the cyclist rumble over his roof. Sliding to a stop on the other side of the intersection, the driver got out and ran back, seeing other vehicles slowing as he went to the middle of the road. On the bitumen in the early light lay a large fit-looking man in dark Lycra, arms and legs grazed and starting to bleed, with a wrist fractured from the impact.

But it was the head and neck that made the driver not touch the injured man when he bent down to check if he was conscious. The helmet was split in half down the centre, a white bone jutted from the man's shoulder, and his neck was unnaturally twisted. The driver shouted across the intersection for an ambulance as other people got out of their cars.

It took ten minutes before paramedics arrived at the accident. Even if they had got there in one, there wasn't anything they could have done to help Tom. The impact as he hit the road had broken his neck, killing him instantly. This time around, Tom hadn't been so lucky with a car.

* * *

Luke Pearson didn't learn about the death of his friend until that evening. He, too, had come in early to see how Tom's clandestine experiment was progressing, and he had waited for an hour, and then gone about his business figuring Tom was waylaid and would seek him out when he got in. By mid-morning, Luke was impatient and thought he'd look for himself.

What he noticed on the dishes in the laboratory were groups of human skin cells floating peacefully in their warm solutions. He took a crowded dish over to a binocular microscope and, after correcting the focus, he saw the cell walls full of living microalgae that hadn't only survived the night but were happily multiplying in the sunshine as it streamed through the window.



Sequence 2

North-east USA, 2005

There was no reason to imagine the road led anywhere interesting—only a pair of wheel tracks with thick grass between them, the lines curving into a healthy forest of sugar maple, beech, and yellow birch that grew so dense you couldn't see further than thirty yards either side of the track. Hawthorn and pin cherry added colour to the taller trees and the deep carpet of leaves rustled as you walked through the forest. In the warm months, the call of cedar waxwings dominated all other sounds. Where the track met the tarred road, there was no signpost with a number or name telling what may be down the lane, or even how far the road went. The road was so insignificant, surveyors hadn't bothered to gazette it on government maps.

Only the people who worked at the end of the road knew what was there, but they seldom left the facility. Instead, supplies were brought in once a week under the cover of darkness, and during winter when the forest

was heavy with snow, the deliveries reduced to once a fortnight. The sylvan world quarantined the facility at the end of the road from the rest of the country.

The local sheriff suspected something wasn't right, but a visit to his house by men holding national security clearances was enough deterrent for him to reconsider investigating, even in an emergency. *This is way above your pay grade, sheriff.*

The road led to a spiral-shaped complex of grey state-of-the-art buildings with walls of polished concrete and heavily tinted windows, looking like it was designed by an overpriced architect and created for someone who had far too much money, like a reclusive billionaire or a drug lord. But this wasn't the coca hills of Colombia, this was Vermont, and there weren't any billionaires living in this part of the Triumph State Forest.

Half-buried between the trees, the buildings varied in size with the largest having many rooms, but only a handful of occupants. Placed in a series of halos around the camp was the most advanced security imaginable, motion and thermal sensors of a sophistication only found in the military. There were no designations anywhere on the outside of the structures, and only when you got inside did you observe the institution's name. The heavenly title *SERAPH* was emblazoned along passageways and plaques in the larger theatres and meeting areas. The Administration, the organisation that owned the facility, had a business vision to create angels.

SERAPH

Symbiotic Generation by Photosynthesis.

In the middle of the largest building, a young woman dressed in light blue pants and a short-sleeved shirt of matching colour padded down a fluorescent-lit corridor. Her sneakers were enclosed in operating theatre covers and her short hair tucked inside a bouffant cap. She passed through a double-sided door after running her security tag across a reader and resting her right eye against a retinal sensor. Less than a year ago, she'd joined the research centre, bringing with her two master's degrees and a doctorate, all in biomedical research. But even with her impressive collection of degrees, she was only a junior staffer at SERAPH.

After passing through another set of doors, the woman arrived at the main laboratory, where a man in his early thirties was hunched over a microscope.

'Hi, Luke.'

The man looked up and smiled. 'Rachel.'

'Seen any change since yesterday?'

Rachel collected a fresh lab coat from a row of hooks on the wall.

'Not in the algal count. You can tell Charles they appear to have stabilised. But come and have a look at this.'

Slipping her coat over the theatre clothes, Rachel followed the senior microbiologist to another desk where computer monitors were set up side by side. One was permanently connected to a microscope so several people could view a specimen simultaneously, while the other

usually displayed graphs or tables of readings. Today, on the second screen a video displayed a small room that looked like a dormitory cell. It was surveillance footage covering the same room from different angles, designed so there would be no blind spots.

‘I didn’t know you had access to the cameras.’

Luke Pearson took control of the monitor and rewound the video until the time-stamp in the top right read *A7 02:15* and then ran the recording. The picture showed a muscular man dressed only in white shorts and covered in small bruises. They watched him lean against a wall and do standing push-ups before he dropped to the ground so he could do a handstand and then vertical push-ups.

Rachel sensed Luke was waiting for her to say something.

‘A7 is getting strong again! He’s recovered from the operation quickly,’ she said.

‘That’s not the point. Don’t you think it strange?’

‘Not really ... one reason they picked him was because of his stamina.’

‘But he’s exercising at two in the morning!’

Rachel couldn’t see what was so interesting. ‘Maybe he’s bored shitless.’

Luke frowned. ‘It doesn’t worry you guys he hasn’t slept for six days?’

* * *

Later that day, the same man—designated A7—lay on a chair outside in the clear summer light.

As he bathed, his skin tingled with an orgasmic rush coursing up into his brain. It was fantastic to be in the sunlight again; when they locked him indoors he became claustrophobic, anxious like a pacing tiger.

Beside his yard there was a man of similar age. Between them rose a thick Perspex screen ten feet high, with a clear roof, so that each yard was, in reality, a transparent cube. Past his neighbour were other enclosures, each containing a solitary man. Occasionally A7 had got the attention of his neighbour, A6, but the men couldn't hear each other well. With sign language and shouting he learned they were all undergoing a similar treatment, and he wanted to know if they were experiencing the same things as him.

He sensed they weren't. Three days ago, a man collapsed in a yard far off near the edge of the forest, never to return. And his neighbour A6 had far fewer injection points around his body than A7. That made sense, he thought. Each of us must be on a different trial.

At least for A7 the headaches and muscle spasms were easing. Not the nausea though—that still reared its head several times a day, like recurring indigestion that would not leave him. There were lots of meds: pills and injections to aid in the recovery and prevent rejection of the algae implanted throughout his skin. His body was an experiment to see whether people could photosynthesise, the injection sites spreading further the more time he spent in the sun.

A7 wondered if maybe that other guy had had a violent immune response. He'd been told that was a risk when he agreed to the tests. Given the choice between

death by lethal injection or the opportunity to continue living, he chose life. He was willing to take the chance that there could be nasty side effects, or even death. But he believed these doctors weren't trying to kill people; instead, they were trying in some weird way to strengthen him. At the time it sounded like a fair risk to take—not that he'd had much choice.

Apart from moments in the sunshine, the only pleasure in this restricted life were visits from the cute doctor with the short blonde hair. If he wasn't stuck inside this weird place, he'd have asked her out, and when they finally released him, he would find out her name. He imagined her entire body shaved under her scrubs, because he liked his girls that way: young and smooth. It was girls that had gotten him into jail.

A7 knows he hasn't slept, but he doesn't want to, and he's only eating a small meal every second day, but he's not hungry. Just the opposite—he's bursting with energy and wants to run everywhere, but there's no space. It's making him irritable and fidgety.

It's been a fortnight since they had administered the genetically changed synthetic algae to his body, and so far, everything pointed towards it having been a success. He just wished he didn't feel so sick in the stomach.

* * *

'A7?'

The sunbathing man opened his eyes to see the cute girl standing in front of him again.

'Yes, doc?'

‘How would you like to use the gym equipment? I’ll show you the way now.’

The man happily followed her from the enclosure, and along a corridor he’d never seen. They passed security doors and cameras; someone was always watching him, just like prison all over again.

The gym was small and not what he expected when compared to how high-tech everything else was at the facility. He saw all the gear he could wish for crammed in a room as though the equipment had been an after-thought. She asked which he would like to use first and A7 chose the rowing machine.

As the man strapped in his feet, Rachel attached soft cloth ECG electrodes to his chest at various points. His nostrils flared at her smell.

He had noticed that either the surgery or the meds heightened this sense; there were parts of her that smelled different and he could distinguish them from each other. It would have been nice to have had this sense before in the outside world. The doctor commented on his elevated pulse before he’d even started.

‘Keen to get moving, doc.’ His skin tingled at her smile.

Then he got stuck into the exercise, letting the days of frustration flood out.

After covering ten kilometres in under half an hour with a minor change in his heart rate, he moved onto the stationary bike. It was time for Rachel to measure his oxygen intake.

* * *

Luke's desk phone rang beside him.

'Pearson.'

'Luke, come down to the gym for a moment. I've got A7 on the bike ... you have to see this. His VO₂ is reading 91, for God's sake! There'd only be a handful of men in the entire country who would be higher.'

'What was he before?'

'Before enhancement? His VO₂ was 75.'

Luke stopped what he was doing and left the lab.

Caught up in their drive to collect information and take as many readings as they could, the researchers let A7 push himself too far. While on the treadmill, he slipped and before he could get clear of the abrasive belt, it had scraped a long length of skin from his thigh. It was startling how little the graze bled.

They wrapped the abrasion in gauze and A7 returned to his cell with a mild sedative to ease his growing agitation. The attention embarrassed him for a wound that looked minor and didn't hurt at all. The doctors had fussed about the possibility of infection, hiding from him the fact that none of them knew what the microalgae throughout A7's skin would do when it underwent trauma.

A7 lay for a while in semi-consciousness, the sedative muddling his brain after so many days without sleep. Eventually he was so uncomfortable he rolled off his back and onto his injured side. The skin beneath the bandage was tingling.

If he were to get an infection anywhere, this was probably the best place to be so, with an effort, he sat up

and unravelled the bandage from his leg. In his sedated condition, it took determination to manage, and once it was off he removed the gauze pads pressed against the abrasion.

It looked as though someone had painted the side of his leg red with a coarse brush. But there was no pain, so he picked absently at the dry blood which, to his surprise, came off easily to reveal young skin, beautifully smooth and tinged a light green colour. His body had already healed in a fraction of the time it would for a normal person; fascinated, he continued to pick away at the scabs, revealing even more new skin, until for the first time in over a week, he fell asleep and dreamed of intense smells and wonderful sunshine.

* * *

Luke had seen the man from the Administration twice: a small unassuming executive with penetrating eyes and a boyish face. Introducing himself as McQuoid, Luke had struggled to find common ground with this representative of his employer. He thought McQuoid superior and calculating and unwilling to share information, which reinforced Luke's already well-formed opinion it had been a mistake to come here.

Approached while still at the university, after taking hold of Tom Ramsay's trial and building it into a full-blown project, Luke's first meeting with the Administration had excited him. They were extremely interested in his work and offered him a ridiculous salary and

operating budget together with laboratories—enough to make any academic's eyes water.

All available right now if he would come join their team.

An amount of five times his annual stipend was enough to get the money-hungry Luke in the door. It wasn't until he signed the contract that he read the appendix schedules and realised he'd need to move to a facility in the north-east of the United States that operated under top security and with limited privileges.

It wasn't the first time an academic had been tricked by someone they thought was stupider than them. Over the next two years, Luke was to lose that arrogance altogether.

* * *

Today there was an unannounced meeting with Director McQuoid. Medicine, Immunology, and Microbiology were called into the principal building's conference room where McQuoid sat beside a man with a holstered firearm. Luke knew the patients were criminals, so it made sense to have a heavy security arm at the complex.

The Administration's representative wanted an update. Starting with Microbiology, the senior researchers reported their progress since McQuoid's last visit. Biological slides with tissues in various stages of microalgal enhancement appeared on the overhead screen, their many colours and shapes described in detail. Biomedical Engineering and Medicine shared their update together, which confirmed Pearson's view that he was being kept

in the dark with some of the work that was being done at the centre.

Irritation got the better of Luke and he questioned a patient's development line on a graph that stopped on a date, while the others had continued.

'That's when C1 died,' said Biomedical Engineering. Luke blanched. 'What do you mean, died?'

'I thought that was clear enough.'

'It's a statement, Don, not an explanation!'

The Head of Biomed cast a sideways look at McQuoid. 'He's not the first one. Jeez ... where's your head at Luke? This isn't chicken pox we're playing with here.'

Luke turned his open mouth towards Medicine.

'What the hell is going on? Did you know about this, Charles?'

Charles shrugged.

'Microcystosis. Happens sometimes—symptoms like a common cold, then ... wham, they're gone. The body was cremated last week after the autopsy. I'm surprised you didn't know about it.'

'No, I didn't know about it! I'm not told a lot about what's going on in other wings. In my opinion, we're getting too siloed and should be more collaborative in our work.'

'Let's take this offline,' interrupted McQuoid. 'That's enough for now; thank you, everyone.'

The senior men of the facility collected their folders and killed the power to the projector screen.

'Pearson ... a word before you go.'

* * *

It started in autumn, and it was forceful. But Rachel liked this strong, mysterious man. Rachel's relationship with A7 had developed over the weeks to where they now found opportunities to be together. It couldn't be in his room, because of surveillance, but they used what other spots they could find, like the observation medical rooms which offered the best chances to not get caught.

But Rachel figured there was a bloody good chance she'd be in a lot of trouble if they found out. The pair kept it secret and danced around everyone; however, it meant chances to make love were spur of the moment and that meant it was always unprotected. She'd been on the pill since her teens to help keep her periods light, and she wasn't overly concerned about the risk of pregnancy—it hadn't happened yet. So, when she fell pregnant, it came as a shock. Rachel's professional life plan didn't have a baby in the picture, and against her better judgment, she chose to not abort. 'Fall pregnant' sounds odd and almost biblical, like a fall from grace, however, *fall* describes what happened to the poor girl.

Rachel had a slight figure, so it wouldn't be long before she would show. What she didn't expect was a tummy bump before she even got the chance to realise she would miss her next cycle. Her loose theatre clothing helped hide it for a month, but after that she had to tell someone before they saw for themselves. She thought Luke would be the least likely of all the men to judge her and told him first.

'Good for you, Rachel. I had no idea you were considering having a family.'

The girl looked sheepish.

‘Do I know the father?’

Rachel had prepared for this. ‘Probably only by face, he’s a guard in E Block. We keep our relationship really quiet ... we’d like it to stay that way, too.’

‘Sure ... not a word from me. You’ll need to figure out your time off with the Administration, and all that ... just say if you think I can help.’

‘I’m good for now. Still getting used to the whole idea of being a mum!’

Luke continued his work without a skip and Rachel relaxed. It was comforting he didn’t seem too concerned. But then he asked whether Charles knew.

Charles didn’t take it at all well. The head of Medical Research was a misogynistic, self-centred bastard if ever there was one. A totally inappropriate character for a man whose life was built on human medicine, but that, in part, explained why he was working in a secret research facility.

He respected Rachel’s intelligence and dedication, but the pregnancy would eventually restrict what work she could do, and Charles wasn’t a tolerant man. For the time being, they expected Rachel to carry on as though nothing was different; he even gave her more work as a way of punishment for putting him out. She was simply happy they hadn’t sacked her. But things took a turn for the worse five weeks later.

Rachel knew something was wrong when her belly grew at an astounding rate and she became anaemic and gestational diabetes took hold. Her boss eventually showed compassion because a sick co-worker was a bigger

pain to his routine. He agreed to run another ultrasound and was shocked when the image showed a twenty-week old baby, at least three months more advanced than it should be.

Rachel was a mess when she saw the images and in her hysteria she let slip to Charles who the father was, a convicted criminal spared a death sentence, and who was now a genetically modified human. Charles immediately reported to McQuoid, and the Administration got involved.

At McQuoid's direction, a small area of the complex became a maternity ward and a new doctor joined the centre to monitor Rachel. It confused Charles when he learned the newcomer would report directly to McQuoid and have nothing to do with the rest of SERAPH. There would even be a different access pass to the new ward, and all contact with Rachel and the new doctor could only be via McQuoid. In twenty-four hours, all changes were made.

* * *

A7's bare muscled chest was virescent under the lights in the medical room.

'Where's the other doc?'

Pearson slid a needle into the vein in the crook of the man's arm. It was startling how the man's skin was becoming greener each time Luke saw him. The injection sites had all but disappeared replaced now by an even colour across the entire skin surface. The algae had spread fast through the epidermis.

'She's taken up another position somewhere else.'

Luke clicked a vacuum vial into the needle holder and saw the pale red flow. Both men watched the vial fill, then Luke swapped it for a second sample.

‘Bullshit she has.’

‘Why do you say that?’

‘Because I know she was pregnant.’

Luke put the glass tubes in a kidney dish, took up a clipboard, and wrote a few lines.

‘What’s your name?’

‘You know it’s A7.’

Luke kept his eyes on the clipboard.

‘I meant ... what was it before you came here?’

The man thought for a moment. ‘My name used to be Ryan.’

For the first time Pearson noticed the whites of the patient’s eyes were turning green.

‘I’ll make sure she knows.’

* * *

In a similarly isolated site, further east across the border in Maine, engineers were starting a new facility for the Administration. It was different to SERAPH: smaller and without the Perspex outdoor areas—less of a research complex and more like a hospital. They secured the construction designs at the Administration’s headquarters and contracting companies were only given the sub-plans for the sections they would build; the Administration made sure no-one saw the complete set.

McQuoid was at his desk, leaning over the second storey layout to the new facility, writing questions in a

neat hand on the margins of the A3 sheets and inserting changes where he thought necessary. The cover of the floor-plan folder was titled:

PHENEX

Photosynthetic Next Generation.

His superiors were fast-tracking its development, expecting McQuoid to have it operational within a year. It would be a stretch, but the Administration had full confidence in him to deliver. He'd succeeded so far, apart from the one glitch when a staff member had given birth to a fully-formed child after only a four-month pregnancy. It was a shame that the child was stillborn.

A challenge for McQuoid would be finding new patients. This time he needed females. Perhaps some hostelrys could help, or he could simply go to the prisons again. Prisons might be easiest; the formula had worked for SERAPH. He could offer women on death row a fresh start, a chance to begin again, to be better and stronger humans. McQuoid was a patient man: first the building and staff, then the subjects. Which meant, for the meantime, he poured his attention into finishing the floor-plan labelled *Birthing Suites*.



Sequence 3

North-east USA, 2011

Alex rested her feet on the motorhome dashboard as she painted her toenails a sky blue. With her feet above her waist, her cotton dress had slid to her lap and her legs glowed in the daylight. Seeing all this skin, her boyfriend took a hand from the steering wheel, but Alex pulled him up short before he got close.

For the last two years, the mid-twenties couple had been travelling around the US in a converted Sprinter van. It had all they needed tucked in a compact area: specialised racks for their mountain bikes, extra compartments hidden away for clothes and rock-climbing gear, even an integrated stereo system that extended to outdoors when they camped in warm regions and wanted to sleep outside. They were showing no signs of wanting to go home.

Alexandra—Alex—and Seb—primary school was the last time he'd been called Sebastian—ran a small business while they travelled. Their online recycled stationery store

was as easily controlled from their van as from a shop. So long as the couple had mobile phone coverage, they could complete transactions and dispatch sales from a warehouse their friend was running part-time for them in San Francisco. Easy days! They wondered why more people didn't live like this.

'Rather than distract me, why don't you put something on then?' Seb returned his hand to the wheel.

'Sure, what would you like to listen to?'

Alex placed the nail polish brush back in its bottle and screwed the lid tight, then from a tray under the dash she retrieved her iPhone to search through her libraries.

'There's a stack of Discovery FM sessions here we haven't listened to. Nice and short—you should be able to keep up.' She didn't wait for confirmation and plugged the cord from the iPhone into the car's auxiliary jack. Seb muttered about feeling horny, but she ignored him, took up the bottle again and proceeded to finish painting her nails.

* * *

Presenter: 'Hello, I'm Craig Callender and you're listening to *Science Tomorrow!* on Discovery FM. With us today we have Professor Mark Rodgers from Barton University, who'll be talking to us this morning about recent discoveries in genetic engineering. Welcome, Mark.'

Guest: 'Thanks for having me back again, Craig.'

Presenter: 'Mark, there're articles coming from medical websites in the US and France showing people with a new type of skin grafting. But you're here to explain there's more to it and that it's a genetic modification instead. Before we get into it, though, can you tell us a bit about your role at Barton University for those of our listeners who don't know what your team does, and who may have missed earlier sessions?'

Guest: 'Sure, Craig ... I'm currently Head of the School of Genetic Engineering at Barton University. My team includes researchers who study mutations and diseases in people. We also research pharmaceuticals, but that's not our core work. What the fuss is all about on the web is linked to what we do, but we aren't involved in work on people, as such. And (*chuckles*) we're not into skin grafting. Our research is at the cellular level. But that said, I'm familiar with what's happening overseas and its repercussions here and for our future.'

Presenter: 'Repercussions for our future sounds dramatic—how do you mean?'

Guest: 'I don't think it's too grand to say, but the work in the US, and more recently in Europe, could easily shadow famous discoveries like penicillin and pharmaceutical forms of birth control.'

Presenter: 'Go on.'

Guest: 'To cut a long story short, researchers have figured out a technique to implant photosynthetic microalgae into human skin to create a symbiotic relationship.'

Presenter: 'Couldn't that be dangerous?'

Guest: 'Not really ... there's been a lot of genetic manipulation along the way. The important point is they use special chemicals to suppress the human immune response to the foreign bodies, similar to how we stop organ transplants from being rejected.'

Presenter: 'Are there any side effects, or any noticeable benefits?'

Guest: 'Craig, this is not backyard science going on here. Some leading minds in the fields of genetics and physiology are working on this and the results are fantastically exciting. It's early days, but the trials show benefits that if they continue, will bring about startling changes to our way of life. But let me begin by stating categorically that it's highly unlikely anyone would have become sick or had violent reactions to these trials. It all would have been clinically controlled under the strictest of environments. But you ask about the results so far: well ... we're finding several flow-on effects.'

‘First, we find hunger is suppressed by having these implants. I mean *really* suppressed. We’re talking about eating less than ten percent of what’s normal. But the patient needs to get plenty of exposure to sunlight each day so the microalgae can do its thing—that is, make energy from sunlight.

‘So, let’s say, someone who would normally have three meals a day, seven days a week, may now only eat breakfast on Monday and lunch on Friday.

‘That’s all. For the entire seven days!

‘And this is happening without a change in condition or stamina. Actually, no ... sorry, that’s wrong. When the person is in sunlight, their core temperature stays at 37°C but the surface of their skin can climb to over 50°C. Then as soon as they’re out of the sun, it returns to normal. That’s because the microalgae is hyperactive in the light.’

Presenter: ‘Sounds bizarre! You’re saying that hunger is suppressed, so the urge to eat goes, or the person doesn’t eat, but still feels hungry?’

Guest: ‘That’s not quite it. They don’t even *feel* hunger because their body can make energy from sunlight rather than needing to consume the energy in the normal way by eating food.’

Presenter: 'This will have huge implications on how much we'd eat.'

Guest: 'You bet. Can you imagine shopping once a month for food? Or eating only a couple of times a week? Jeez, perhaps even only eating once a month if you got enough of your body out in the sunlight. One small side effect is the person drinks more water than normal, but not a vast amount, possibly a few extra glasses a day.

'And I should point out that while they're outside getting hot and not eating, they're doing what plants do and releasing oxygen through the pores in their skin.

'I probably should also mention that when a person's body has accepted the introduction of the microalgae, the skin takes on a new colour, usually a green or reddish hue. Like some fake tans people soak into their skin to try to make themselves more attractive. This is brighter than that, of course. I'd say that over time as more tests are conducted and we learn more, that we'll no doubt find other colours coming through, or people might even choose what colour they'd like to be. Green, yellow, purple, you can assume anything should be possible.'

Presenter: 'I'll pick a yellow just to be different and then change to red when I go out at night.'

Guest: (*laughs*) 'Nice idea, but once you turn one colour, that's what you'll stay I'm afraid. We assume the microalgae take on a unique strain that synchronises with your own DNA, which in turn makes the colour. I don't think you get to choose, but maybe it's something researchers will investigate ... as part of future marketing.'

Presenter: 'You're saying the greatest advantage for the person who has these critters in their skin is that they eat less, so long as they get enough sunlight each day, a form of energy production that has until now been the realm of plants. That's a fantastic benefit to have!

'And you're also saying if I could do that I'd spend less money on groceries, shop less, and my footprint on the globe would diminish, and as you explained, I'd be breathing out oxygen from my skin and carbon dioxide from my lungs, so greenhouse warming might be slowed do you suppose?'

Guest: (*laughs again*) 'Ahh ... no. But reducing our reliance on farming would certainly change greenhouse gas emissions from that sector.

'But this is only the beginning, Craig. Another unforeseen benefit is that we're seeing changes in brain adenosine levels.'

Presenter: 'Adenosine being?'

Guest: 'It's the chemical our brain makes during the day while performing functions, and the same chemical that when we have too much of a build-up, we need to sleep to reabsorb or break it down. That's what makes us drowsy after being awake for too long—it's like our head gets saturated in adenosine and finally it shuts down so we can get rid of it and reset for the next day. But adenosine production appears to be suppressed in the people who have had this treatment. We do not understand why. But if this enhancement continues to suppress adenosine substantially, then that will have consequences on sleep patterns as well, to where people may go for days without needing any sleep.'

Presenter: 'You mean I would eat less food, use less energy, *and* sleep less?'

Guest: 'Yep.'

Presenter: 'This could solve problems facing development around the globe.'

Guest: 'Can you imagine the benefits for modern countries like ours, and the flow-on effects for developing nations. Less consumption, less waste, better use of natural resources, reduced clearing of land for agriculture, fewer inequalities, a better distribution of wealth. The implications are beyond measure.'

Presenter: ‘Wouldn’t there be inequalities between those who have the enhancement and those who don’t? I mean ... this is early days, but surely there will be companies jumping at the IP rights for this technology. It would be worth a fortune too large to count.’

Guest: ‘Fair point. Hey, I’m just a scientist. I’ve no idea how the distribution of this medical breakthrough could be rolled out across the globe. I’d like to think governments would work together over matters like this, so the benefits are for everyone.

‘Maybe like global vaccination programs it could be administered by the WHO. Time will tell, I guess.’

Presenter: ‘You haven’t talked risks. There must be some bad side effects?’

Guest: ‘Well apart from the ones we’ve mentioned, the changes in eating and sleeping, neither of which I’d call *bad* side effects, there aren’t any I’m aware of, unless you call changing the colour of your skin a nasty side effect.’

Presenter: ‘Thanks again, Mark, for coming on the show today. That’s all we have time for. I’d say we’ll get a lot of noise on the text lines and *Science Now!* chat room, so I imagine we’ll be having a follow-up session shortly.’

Guest: 'Thanks again for having me, Craig. I've enjoyed it greatly.'

Presenter: 'Next up, we'll be continuing this topic with our guest Ashwini Singh speaking with Peter Wilkinson on the philosophical implications of these body enhancements. And don't forget you can listen to this interview and many more from our podcasts section on the *Science Tomorrow!* website. Just go to www.DiscoveryFM.com and follow the links. Bye for now.'

* * *

Alex looked sidelong at Seb. 'Had you heard about this?'

'How the hell could I, we live in each other's pockets ... but how good does it sound? Chill out in the sun with our gear off, soak in some sun, then stay up all night. I'm in.'

Seb slowed the van to navigate a tight bend in the road. It was still a truck, regardless of how well-kitted out by the young travellers, and it held the tarmac like an overweight person on a unicycle.

'This algae stuff mightn't work for us—not the way we enjoy our food.' Seb continued. 'I mean ... I like the idea of cutting back on how much people around the world consume and all, but I'd still have to cook.'

Alex shook her head. 'There's no way it could take away eating altogether. What'd happen to our stomachs?'

Seb smiled through his sparse beard.

'Might stop you farting.'

‘Whatever, idiot ... let’s do the next one.’ Alex returned her attention to the iPhone.

* * *

Presenter: ‘Good morning. I’m Peter Wilkinson and you’re listening to the philosophy section of the *Science Tomorrow!* program on Discovery FM. Today we have Visiting Senior Lecturer Ashwini Singh, from the School of Bioethics at Columbia University. Welcome, Ashwini.’

Guest: ‘Hello, Peter. Thank you very much for inviting me onto your program today. I’m delighted to be here and to speak with you.’

Presenter: ‘Ashwini, you’re a scholar of bioethics—what’s your take on whether the enhancements that Professor Rodgers was talking about in the last session are good, or do you believe they’re wrong and we shouldn’t be going down this line?’

Guest: ‘Well, I’m not sure we should begin with *right* or *wrong*, Peter. I think it’s better to approach it from the point of view of whether it is something we should follow out of principle.’

Presenter: ‘What do you mean by that?’

Guest: ‘By principle, I mean I’m very much in favour of enhancing the human mind and body. Indeed, I believe we must do so at every opportunity. It’s ingrained in our subconscious to strive to better ourselves,

and if that improvement leads to a richer and fuller life, then it should be pursued and encouraged.'

Presenter: 'But we're not talking about contemplating good behaviour, like ... say ... Buddhist tendencies to act towards our fellow humans. We're talking about changing our bodies so they become something which may not be fundamentally human anymore.'

Guest: 'We could say that for all human history though. I doubt our bodies are the same now as our ancestors three hundred generations ago. The major stages of history—from hunter-gatherers to farmers, from farmers to city dwellers, then to industrialisation and now the computer age—mean that our bodies and minds have transformed over a quarter of a million years.

'This may be the next step. Keep in mind those stages I mentioned have shortened over time. It took 240,000 years to go from hunter-gatherers to farmers, then 10,000 years to become city dwellers, then only 200 years to become the industrial people we are now. We keep going this way, then our next major change may only take a generation or two at the most. This is what I think we are seeing with these algal enhancements.'

Presenter: 'But there are still people living in hunter-gatherer communities who, for want of a better

expression, we're leaving behind. What we do in our Western standard of living is hugely different to theirs. Won't that become even more pronounced if we change ourselves into the people Professor Rodgers was describing?'

Guest: 'I disagree. Any increase in the quality of a life is morally beneficial and should be encouraged and supported. It's simply a fork in the road and we need to carefully weigh up the benefits, Peter. If what Mark was saying earlier is correct, and we have no reason to doubt him as he's an expert in the field, this technology will eventually become available to everyone. So long as the World Health Organisation ethical standards and procedures for research on human beings are upheld, then I'm not worried. I have no doubt the researchers in Europe and the US will work to those guidelines.'

Presenter: 'What about those who may not get hold of this enhancement or may not be able to afford it?'

Guest: 'I can't think of a case where a breakthrough in medical research has been instantly available to everyone. I imagine it will take time to spread across the globe, probably many years, but that's normal and should not be a reason to hold back. Perhaps we might consider whether these changes will speed up closing

the gap between the first-and third-world nations.'

Presenter: 'Wouldn't we see a greater division between those who have and those who haven't?'

Guest: 'That's guaranteed at the start. Each technological advance we make in the West takes us a step further from our hunter-gatherer and farming past. But as globalisation and urbanisation continue, we find it more and more difficult for native peoples to remain untouched by the modern world. We need to allow people the benefits available from new advances and leave it up to them to decide whether these advances are sympathetic with their way of life or not.

'There's no reason an Inuit hunting in Northern Canada can't be afforded the use of a high-powered rifle to hunt seal instead of a timber and bone harpoon. I see this as no different once it's determined it's safe, the benefits are deemed to be worthwhile, and it becomes available to everyone.'

Presenter: But what if that benefit comes at a cost to others along the way?'

Guest: 'Well ... I'm not strictly an act utilitarian, but I lean to that mode of thinking more often than not. And I believe in this case, if we consider these enhancements do lead to a net increase

in the happiness of people, then that makes it morally right to do so. If it's found that the steps taken to get there may harm people directly by pain of experimentation or forced consequences that the person didn't sign up for, that would be another matter. Unfortunately, Peter, we can't see all ends when we begin down a path of change. That's the tragedy of choice. If we did, there wouldn't be such advances in science—we'd be too scared to try new things. The means doesn't always justify the ends and I think rule utilitarianism doesn't work in this case; actually, it doesn't usually in most cases. But let's consider this argument from various angles.

'Consider our length of life. We are at pains to enjoy the best quality we can afford, and the last quarter of our existence is spent in a steady decline ending in death. If we could compress more into those remaining years, wouldn't that be a marvellous thing? Assuming, that is, that we're already used to having these changed bodies.

'Now let's look at sleeping. About a third of our life is spent asleep, the only benefit from which might be dreams, and they're not always good or even remembered. Can you begin to imagine what you might achieve in your life if you were awake during that

extra third? If you didn't have eighty years to live, but a hundred and twenty instead? Obviously, we're not all going to make it that long and these enhancement people aren't saying that, but without the need to sleep we could be productive for the *equivalent time* as though we lived a hundred and twenty years. Wouldn't you like to read all those books you never get to, or watch those movies, visit those friends? We'd have spare time and a lot of it!

'The flip-side to that is we might work longer hours. Less scrupulous employers may benefit from a workforce that didn't stop to sleep and laws would need to be amended to protect employees. Then again, it might not matter. If people don't get tired, why not let them keep working?'

'And finally, let's look at the natural world and how this may reduce our influence on other creatures. Imagine using fewer resources. Presently there isn't a single thing in Western society that isn't in some way connected to fossil fuels: heating, cooling, transportation, manufacturing, lubrication, clothing, telecommunications—the list is endless. Vast resources are used to produce the food people eat, and in the process many practices destroy land fertility and consume clean water and pollute.

‘Can you imagine a world where six billion people had an ecological footprint similar to six billion trees? That’s utopic to say the least.’

Presenter: ‘What if we find that by changing ourselves, we change our nature at the same time?’

Guest: ‘That’s a great question! And a philosophical one I’m not sure we’ve begun to consider yet. There’s merit in being concerned about what the future holds, and we’d be naïve to think there won’t be possible dire consequences from going down this path. We can’t predict those results, but we can assume in this case that the good will outweigh the bad and to the greatest benefit, in which case I believe it would still be the right way to proceed.’

Presenter: ‘What legal implications do you see if we find that symbiotically enhanced people become a common reality and live among us, or even end up being the standard?’

Guest: ‘Well, if they become the norm, then we won’t have an issue, as our laws in a Western liberal society represent the majority. But while these people are in the minority, that’s a different situation, and one better answered by a scholar of jurisprudence. But for now, I’d say we need to consider the rights to be the same between people with the enhancement in them and those who don’t. As it is, we

don't differentiate between people who have different bodily functions to the norm other than to provide them with the benefits of, for instance, those with a physical or mental handicap.'

Presenter: 'But we could say this is the other way around. These people will no doubt see themselves as physically exceptional and that we, the unenhanced, are the handicapped ones.'

Guest: 'Until they become mainstream they would be nothing more than, let's say ... gifted athletes. Given the same status we give those people. Mind you, the top athletes receive what I consider an unhealthy amount of attention; that's another matter altogether though.'

Presenter: 'I imagine there'll be a rush on enhancement if people think that will be the case!'

Guest: 'That they'll be treated like elite athletes? *(laughs)* Probably, but I won't be one of them.'

Presenter: 'Why wouldn't you consider this enhancement for yourself? You seem in favour of its development.'

Guest: 'Oh ... I'm not discounting it completely, but at my age—I'm sixty-three this year—I'm not sure I could cope with the change to my body. My guess is that changing your sleeping and eating habits will have a profound effect on not just your way of life, but also on your

character and mind. I'm not sure I'm ready for that. I've grown used to this body. I've watched my children grow up, and last year I became a grandmother. I'm used to the weaknesses and tendencies of my body and while it's slowing down now and, in some ways failing me, such as my eyesight, I'm not sure how I'd go with revitalising it all over again. It might be fun, but then again it might not be. And my husband wouldn't cope with me awake all night! I suspect this is something for the next generation to enjoy and to sort out themselves. I'll commentate from the sidelines for now.'

Presenter: 'Ashwini Singh, thank you very much for coming on our show today.'

Guest: 'You're welcome, Peter. I've enjoyed it.'

* * *

Alex retrieved a Tupperware container full of popcorn from behind the seats and the pair crunched in silence for a few minutes.

'Baby, I don't think I like the sound of that, now I think more about it.' Alex said as she watched the scenery.

A pickup roared past them over double lines.

'I thought we'd got away from the dickhead hillbillies! Why's it worry you? It sounds pretty awesome to me,' Seb asked.

'Sure, it does ... but I can see how it might be used to control other people.'

‘How’s that?’

‘I dunno ... maybe people might be made to have this stuff done to them if it will save money on health care or something like that.’

‘Oh ... a conspiracy theory! You haven’t had one of those since we were in Nevada.’

‘Don’t be a pain.’ Seb flicked on the indicator. ‘What are you doing?’

‘This looks like a sweet spot. What do you say we stop here? Get the bikes down and go for a ride?’ He pulled the van off the tar and onto a disused track. They found a clearing a hundred yards from the turnoff and went to park in a small grassed area shaded by maples beginning to change colour.

‘I can’t remember when we were last in Vermont this time of year. Don’t stop yet, Seb—let’s keep going. There might be a lake or camping ground at the end of the road.’



Sequence 4

Unknown location, 2021

The operation took a staggering nine hours and thirty-eight minutes. An entire working day, or so I'm told. I've never worked less than twelve-hour shifts.

Good thing they did it in stages. They called it a series of twilight sedations.

The first couple were painless. The doctors didn't appear to do much—lots of empty time between brief activity. All the while, I was semi-conscious. The second half of the procedure was more severe. Hundreds of micro-needles inserted across every centimetre of my body, like I imagine acupuncture must feel like, but worse. I'd have looked like a giant hedgehog.

Not until the sedation wore off did I realise just how much worse it was than a dozen pins pricked into a cramping shoulder.

* * *

‘There you are. You’re awake.’

Who’s this nurse?

‘Hi, I’m Grace. Take your time, darling. Heavy sedation can feel like a long blink, doesn’t it?’

What is she talking about?

‘You’re in the recovery rooms. You’re all done.’

Why can’t I talk?

‘No, no. Don’t move yet, you need to take it slow. You’ve had quite a bit of work done on you. Blink if you can hear me.’

At least that part of me works.

‘Good boy. You’re in the best care anyone could hope for. I can say that because I work here! Ahh ... the start of a smile. Now, I’ll be right back.’

Her footfalls are soft as she crosses the room, her pants swishing. Drawers open and close.

I can’t move my arms. Is something wrong?

There’s more swishing of pants and the nurse reappears at my side.

‘You’re restrained.’

I stare up at Grace’s face to see if she is joking. She smiles and raises an eyebrow.

My hands twitch. Sure enough, Velcro straps are holding my arms down. I search to find the bar of the bed rail, my fingers find the steel and close.

‘Sometimes people move around during the procedure, and we don’t want arms flaying about the place while we inject the serum. It’s best if you are kept still until tonight in case you have a reaction. The transformation will hurt a lot, but the waves of pain will pass, I promise.’

I'm going to vomit!

'You're going to be sick? Turn your head to the side. That's it. I'll wipe your face.'

God! The doctor didn't warn me enough about the pain.

'It's hurting properly now, is it? Here,'—Grace turns her attention to my IV machine—'I'm putting something in your drip to help with the itching and the nausea. By the weekend, you'll start taking the prescribed meds for this procedure orally. I'm sorry, but you will take them for a long time.'

Grace? If it works, I don't care.

'All depends on the person. I've heard people who get this treatment find they can wean themselves off the pills after a few years. You've probably been told some stay on them for the rest of their life, too. That's rare.'

Why can I move my head, but I still can't talk?

'Has that helped?'

All I can do is nod.

Around me I notice sounds: phones ringing, people talking, machines beeping. There's an old analogue clock with slots for the date, which reads a quarter past five, Thursday the 8th of July. To my left is a white curtain which stirs occasionally as a nurse, I'm guessing, moves around another bed beside mine.

Has that patient also become enhanced?

Grace hasn't stopped chatting while she types on a computer sitting on a wheeled cart.

'The itchiness around your arms and torso is normal. When I take the restraints off tonight, try not to scratch—it will only make it worse. You're getting an antihistamine

in the drip, plus inhibitors to prevent rejection at the implant site. I'm sure the doctor explained all of this in glorious detail.'

Grace looks at me and puts her hands on my bed rail, above where my own hands are secured. Her fingernails are tangerine orange. Her suffocating perfume is like neat gin.

'We could do with more good-looking men like you in here. There seems to be mainly girls wanting the enhancement for summer.' Grace runs her nails along the surface of my hand.

I've only been at this private hospital for twenty-four hours, so why does it feel like a week?

* * *

I was told there would be pain long after the procedure while the microalgae spread through my skin, drawn to the light like sunflowers.

Standing in front of the hospital bathroom mirror, the fluorescents highlight the blotches where the needles punctured my flesh. It's from these spots the red microscopic algae are multiplying, like I'm covered in sunburn spots and bruises. There's no turning back—the spots are getting bigger every day.

The premium red colour cost extra. I didn't want green. I try to check my back and shoulders, hoping the colour will get brighter with time. Crimson is what I wanted, but right now I look like a clown spattered with fire-engine-red paint.

Today is the day they're letting me outdoors.

I flick off the bathroom light and shuffle to my only

window. It's been three days since I went under and the urge to be in the fresh air and sunlight is driving me insane. I've been in and out of hospitals for surgeries before: broken bones, appendicitis. This stay would be my longest by far.

It's a beautiful garden they have here: one perk of a private hospital with cashed-up guests. The warm summer light is making my arms tingle and itch. I wonder if they would give me something stronger for it? Grace would, if I could find her.

Last night was weird. There was a peculiar damp smell in the room, like mould, but I couldn't find any on the walls or the ceiling.

I closed my eyes to try to sleep, but I couldn't nod off, and the smell got stronger when my eyes were closed. It reminded me of walking in a cool forest, one of those places with trees overgrown with vines and little patches of light reaching the ground, the forest floor slippery underfoot, decaying leaves and leeches on my ankles if I stop moving.

The reek was everywhere. Even my armpit smelled mouldy. Not the usual stale, oily, male body odour I'm used to. Maybe it's because I haven't been allowed to wash yet since the procedure. Or perhaps it's a mild reaction?

Tomorrow, I've been told, is shower day.

* * *

'Hello, Joseph. Joe? Joe. Take a seat. Water?' Dr Jardine gestured toward a chair.

As I sat down, Jardine poured me a glass of water from the jug sitting on a low table between us.

I drank deeply, keen for those discharge papers. Jardine himself sat on the corner of his desk, hands on his knees and his eyes studying me.

Get on with it.

'It's been a week since the operation and you're looking good, Joe.' Jardine sniffed and went around to sit behind his desk. 'Let's talk more about how your body will begin working. I'll also walk you through the stages again before we let you go.'

I nodded and gave him a half-smile.

Jardine took up a remote on his desk and pointed it toward a smart screen mounted on the wall.

Wonderful. He's showing me a series of charts like I'm a ten-year-old.

'Stage One. Initial acceptance and start of symbiosis. You're here now. Your appetite will be normal during this stage, but depending on how much sunlight you get, the desire to eat may diminish. So will your sleep. Your sex drive should stay the same. The itching on your chest and arms will hang around for a while, I'm afraid. You will have something to help with this in your packet when you leave.'

Glad to hear it.

'Showering. It's vital you don't wash with any kind of soap, none, only water. Questions so far?'

I shook my head, musing over the 'no soap' clause. Will I be getting that solution I washed in for my inaugural enhanced shower in my packet, too? I go to ask, but Jardine is on a roll.

'Stage Two. Full integration into your cells. This will occur in about a month. The flow of energy between you

and the material in your skin will become completely developed and the urge to eat and sleep will drop further. Sense of smell and touch will change, becoming more sensitive. Especially smell. Touch seems to vary between patients. We don't know why.'

Jardine leans back in his chair, his unenhanced limbs resting on the chair's arms and the remote still clasped in his right hand.

'You may feel the cold more, but this, like touch, varies between people.' He uses the remote's laser pointer to highlight a food chart on the screen.

'Diet. Steer toward high-protein foods. This is because you get energy as sugars and carbohydrates via your skin, but the photosynthesis won't be giving the rest of your body the proteins it needs.'

Got it. Load up the steaks. Why hasn't this guy had the treatment himself?

'Stage Three. Microalgal reproduction. Around week five, as the first generations of algae die and get replaced, the new generations will mutate and synchronise with your genes. Eating will be more suppressed, but again, this depends on how much sunlight you get. If you choose to not eat, you may be more sedentary. If you eat more than your body needs, then you'll become hyperactive. It's a balance you need to figure out yourself, Joe. You may not have realised, but you'll be drinking more water.'

We both look at my empty glass. Jardine smirks and clicks the controller to change the screen.

'Sleep will be a thing of the past and meds will help with that, so you don't develop psychosis. Your sexual

urge may rise, and we have something we can give you to calm that down.'

Why would I want to stop that? This doc hasn't enhanced himself because he's as interesting as cardboard.

'Over time, you'll get used to not sleeping. The trick is to ease from one phase to the next, rather than suddenly be active all night and never giving your body a break. This can be a tricky stage, so we'll make fortnightly appointments to monitor things. Around the six-month mark you'll be settled.'

Half a year of disrupted sleep, confused eating, and mild psychosis. It's my divorce all over again.

'Stage Four.'

There's a fourth stage?

Jardine flicks to what had better be the last slide.

'Further mutation. This doesn't happen to everyone, and we're unsure why it does with some. Here you could find aggression and sex drive increasing regardless of the meds. If this happens, there are a different suite of meds that can reduce the influence of the microalgae.'

This wasn't in the brochure.

'The downside is the urge to eat and sleep may creek back.' The doctor's brows drew together. 'This is an exceedingly rare but dangerous stage, as people have become suicidal from the conflict, while others have become dangerous to themselves and others.'

What the ... ?

'It's highly unlikely this will occur, so you shouldn't worry, but I'm obliged to tell you.'

Now it's my turn to frown.

‘Remember Joseph, this procedure is irreversible. If on the very off chance we find this extra stage happens to you, we can manage it with medication, so don’t be alarmed.’

* * *

It’s been ten months since I have left that hospital. As the doctor explained, my body gradually got used to the changes as the symbiosis took hold. If I concentrate hard enough, I imagine them living under my skin.

For the rest of my life, I will share my body. Not with the usual bacteria and fungi in my gut—but now the fabric of my skin itself is home to a vast colony of new creatures. And those creatures will reproduce and die and live their lives inside my own cells.

They might even mutate and create additional strains, unique to me. That would be fun. I read online about a person with stripes of different colours. That couldn’t possibly be true.

Eating only one or two meals a week means that I don’t have to shop much these days. I might as well get rid of the fridge and that freezer in the cellar with the permafrost inside. Why not chuck out the pots and pans too? On the rare occasion when I feel like food, I just buy it.

I can’t remember the last time I used the toilet to poo. It must have been over a fortnight ago. How good is that? A handy little benefit not mentioned by the doctor, but it’s the best one of all!

Time. Jeez. There is so much more time now.

I have the time to do the things I've always wanted to do. Go to the Himalayas and hike for days. No need to sleep, so long as I drink enough water and get enough sunlight. I'm going to take on the Snowman Trek in summer. The hardest trek in the world from Tibet to Bhutan. For an unenhanced person, it would take twenty-five days. I'll be doing it in seven.

Life will never be the same, I think to myself as I stand in the park, face to the sun, breathing deeply, arms outstretched and palms up with crimson skin tingling in the sunlight.



Sequence 5

Wiltshire, England, 2023

The chatter around the table stopped and all eyes turned to Doug when he said there was a back route onto the property.

‘There’s a way in through the fields off Clements Road.’

‘Where’s Clements Road?’ asked Frances.

Doug rolled his eyes. ‘Um ... around the back.’

Frances raised her eyebrows at her brother. ‘It can’t be that easy!’

Doug spun his laptop around so they could all see. ‘Look ... they’d only be some padlocked farm gates, at the most.’

The screen showed an aerial photo with lush fields bordered by stands of trees and the crisscross lines of a road. In the middle of the farming land, there was a collection of steel-grey roofs, large and nondescript sheds plonked in the country far from urban areas so humane people didn’t have to know what happened inside them.

Around the scratched wooden table in the communal kitchen sat the most active members of the Animal Rights Korps, referred to as ARK on their website. This collection of nine men and five women was the field protesting team of ARK: the ones who got out and made themselves annoying. ARK had run five campaigns in the last year, focusing on cattle feedlots and battery hen sheds. Today they had the Wiltshire Meat Corporation in their sights; this time they would break into a huge pig abattoir.

Believing it would be a success like all the other field trips, after this, they would change direction and hassle some politicians. The best part about that would be hacking into social media accounts and digging up dirt to spread throughout the web. Doug would be in his element then.

Frances and Doug Smithfield had founded ARK eighteen months prior. What had started as a low-key media and social disorder program centred on disrupting growers and processors had quickly grown into guerilla-style attacks on facilities. The siblings believed there was no reason to harvest animals for human consumption anymore, not now that photosynthesising body enhancement was readily available.

Even still, over a billion creatures were harvested each year in the UK—if you counted birds, which made up ninety percent of that total, and ARK always counted their chickens, so to speak, because it made for a more impressive number. The Wiltshire abattoir, next on their radar, processed over 3,000 animals a day and was by far the largest in the country. *Processed*—an objectifying

euphemism ARK hated. On their website, they called abattoirs ‘deanimalisation factories’.

It wasn’t a prerequisite, but everyone around the table was enhanced, having at some stage in their life undergone the treatment so they could now partially photosynthesise on their own. This gave the term *activist greenies* a whole new spin. But don’t be under any illusions here: ARK was a group of people, and people can’t help but be tribal, which meant that if you were a staunch member of ARK and you *weren’t* enhanced, you didn’t really feel you were part of the organisation. Conform or be damned.

Frances looked around the table. ‘It looks like a goer, then. Who’s up for this, guys?’

There was a chorus of agreement. Doug recognised that glow in his sister’s eyes, the one that told him things were about to get remarkably busy. Not that Frances and Doug weren’t already busy enough.

Because here’s the strange thing. Most people’s perception of militant activists—take your pick from political, human rights, animal rights, or civil liberties—is usually a scene of students or retirees, or just a bunch of loud angry people. They aren’t normally thought to be raging capitalists. Not in this case: Frances and Doug weren’t just running ARK, they also had their own commercial food business which was doing very nicely for them.

Theirs had been a balanced, run-of-the-mill childhood run-of-the-mill childhood. Normal parents doing not particularly interesting jobs and living in mainstream suburbia who left their children’s education to the discretion of below-average teachers. It came as no surprise

that neither of the kids showed promise in becoming a business mover or shaker.

Frances ended up at a local florist after school because she liked art and she liked flowers. She was a reasonably talented artist in her own right and could paint landscapes and botanical still life well enough to have won school prizes, but not good enough to have turned it into a career. Flowers suited her: they were nice to work with, let her be arty, and they expected nothing back from her.

She wasn't so keen on the serving people side of the job but found that most of the time customers were in a pleasant mood because they were in the shop for a happy reason. Weddings, birthdays, that sort of thing. There were still times when the flowers were for a funeral, but even then, the beauty of what she made lifted the customers spirits a little. At least, that's what she told herself.

In no time, Frances became a competent florist. She'd an eye for getting the colour mixes just right. She was taught at the shop how to layer if the arrangement was to go against a wall, or how to showcase certain blooms with extras like mosses, twigs, foliage fillers, and all those other things florists sell you that aren't flowers and that you haven't asked for.

It was common for the plants to arrive at the shop with insects in them, and Frances liked these little surprises. She learned the names of the different spiders or beetles that found themselves suddenly no longer at the greenhouse but in an air-conditioned shop and wondering how the hell they got there. There was a courtyard out the

back of the shop where she would release them, and there is no doubt that the insect diversity in that little space might have been the greatest in all the district thanks to her conservation efforts.

Perhaps because she spent her days with plants—or it could have been from her growing interest in vegetarianism—Frances decided when she was twenty-three to undergo the medical photosynthetic treatment that was becoming widely available. The operation would cost her four month's wages, but she had her mind set on making this monumental change to her body and life, so she saved like crazy until, by the end of the year, she had become what the Western world was now calling an *enhancer*.

She loved the change so much she convinced her brother to become enhanced.

Because of her vegetarianism, Frances found she couldn't skip as many meals as her enhanced but still meat-eating friends, which meant small protein-rich meals needed to be on the table every few days. Enhancers needed protein because the algae implanted in their skin only released starches into their bloodstream. It was an anchor the more extreme enhancers hated, but there didn't appear to be a simple way around it. In Frances' case, several tourist-focused cafes on her shop's high street meant she'd no need to prepare food at home; it was all at her doorstep pre-made.

'What do you feel like today?' she asked Doug as they sat in the Fournier café.

'I've been outdoors a lot this weekend, so not much ... a cappuccino will do me.'

Frances pointed to an item on the menu card.

'You must have one of these with me.'

'Hazelnut and cocoa muffin? Sure ... why?'

'Because it's made with cricket flour.'

'What! Like the beetle?'

'Crickets aren't beetles, they're *Orthoptera*, beetles are *Coleoptera*.'

'I don't care which opera they're from, Franny, they're bugs!' Doug screwed up his face. 'If they meant me to eat insects, I'd have wings like a bird.'

Frances waved to get the attention of a waitress.

'And if you were meant to photosynthesise, you'd have leaves. Just try it with me.'

The muffins were delicious. The crickets were roasted then milled into a flour so by the time they got mixed in with all the other ingredients there was no way of telling their origin. There was little more than a nutty hint which added to the combination of what was already in the muffin mix. Not that eating insects was new to people; humans had done so since the beginning of time, they just hadn't featured at the forefront of European cookery.

But all that changed in the twenties when commercial insect farming made inroads into the American and English diets. Being a super high source of protein, the first people to welcome bugs to the table were the fitness fanatics—those obsessed with protein shakes and health supplements. Desperate to make themselves bulkier than the other narcissists at the gym, some clever supplement manufacturers had used powdered mealworms, beetles, and crickets as a healthier way to take high levels of protein

without having the obvious digestive side effects of the usual whey concentrate supplements. Plenty of people still favoured the vegetarian pea protein supplements, but if you wanted a big protein hit, insects couldn't be beaten. Or so the marketing said.

But it would be a while before the insect world would become mainstream, and until then, normal unenhanced people continued to chomp down on the standard farmyard animals, much to the dismay of ethical vegetarians and hardcore vegans, which gave Frances an idea.

Buying plastic containers and layering the bases with vermiculite, Frances then set up heat lamps and water trays in each compartment and rushed off to buy live crickets from a pet shop across town. Frankly, it was cool to begin with. They were easy pets to keep, but something she hadn't considered was the noise at night. In response, she shifted the containers outside on the cusp of winter.

Frances got her first taste of what it's like to grow things for harvesting; it's damn hard work. Creatures have specific needs depending on what they are and how they like to live. Most of her crickets died before she got the hang of it. These were hardly setbacks, though, and she quickly figured out the balance of food, water, humidity, and comfort, until her pets were happy enough to breed.

As soon as her crickets made more of themselves, Frances' interest became a hobby, and then the hobby grew into a passion. Before long, she expanded to a menagerie of mealy worms, beetles, caterpillars, grasshoppers, wasps, and even termites. She threw herself into

learning everything she could about their life cycles, what made them happiest when best to harvest them, but what she wasn't thinking about was how to process them into a form that Europeans might like to eat. The supermarket in her hometown of Amesbury wasn't about to stock dried grasshoppers on the shelf—not yet, anyway.

Now entered her brother, Doug, to the equation.

At first, Doug found his sister's obsession with insects weird, but she turned him around gradually, and the way she did this was by giving him a puzzle to solve.

Doug wasn't creative like his sister. He worked at a Salisbury IT shop as a technician, which was a grand way of saying he repaired kid's dropped tablets and wiped adult's home computers of viruses after they'd visited the wrong websites without adequate protection. Unlike his sister, he hated his job, but that didn't mean he was bad at it. Doug was clever at making his way around a basic home computer's hardware, and he could write enough software code to get by. Amongst his many tasks was maintaining the computer shop's online presence was one of them.

'You know about websites. I need help marketing my flours and dried products.'

'What were you thinking?'

Frances pushed across her layout sketches for the labelling and packaging.

'*The Yummy Bug Shop*? You're kidding, right?'

'You don't like it?'

Doug said he thought it was rubbish, but he really liked the designs and the cool way she'd used insects to

make the words for the packaging. It was enough to get him onboard; he would make her a website and sort out the online sales transactions. When up and running, the Yummy Bug Shop website made the following claims:

- Insects leave a fraction of the environmental footprint compared to conventional animal farming.
- Join the health revolution. Insects are packed full of protein and vitamins.
- Enhancers—the cleanest way to get that protein you can't get from photosynthesis.
- Reduce farming damage. Do your part to stop global warming.

Restaurants in London also caught onto the novelty and added insects as garnishes. The treat of a handful of mealy worms instead of croutons over a Caesar salad was something a surprising number of people wanted to try. With a bit of imagination, ants got embedded in wafers of chocolate stuck into ice cream, and voilà—Frances had nabbed the kids' market. Trendy pubs joined in by laying out bowls of salty BBQ-flavoured crickets and grasshoppers to help sales of beer.

To no-one's surprise, dried caterpillars weren't a tremendous success. Those lads looked just a little too much like they were about to fill your mouth with yellow goo. And flies never made it onto the menu; no-one was going to voluntarily eat a blowfly.

The Yummy Bug Shop did well for a new business and before long, Frances was encouraged to have an actual shop as well. She chose Salisbury for the first shopfront

which they set up with modular steel shelves lined with packaged foods and a collection of tasting bowls for visitors. Tourists passing to visit Stonehenge added it to the 'should see' list, and while good during the silly season, it was the online business that really brought the money in. Many times, they ran out of supplies as orders came in from across the country and overseas. Quickly the demand outstripped the supply, as Frances realised it took close to five hundred crickets to make a single fifty-gram bag of dried cricket flower. Buyers online wanted to make the most of the postal costs, so usually wanted at least a 250 gram bag. They were going to need room for housing hundreds of thousands of insects. After a year in operation, Frances quit her florist job and Doug dropped to part-time as they went about building purpose-built sheds to house their growing swarms of insects.

But then something strange happened on their path to commercial success, triggered by customer feedback on their website. Encouragement for helping people to wean off traditional meats turned into passive aggressive submissions that the Yummy Bug Shop should do more to promote the move away from animal farming. Frances got swept up in the attention and formed the Insects for Animals Group which later became the Animal Rights Korps. Before long, unsolicited donations started coming in. By the time ARK had registered as a not-for-profit organisation, they had started a bi-monthly online journal. It was only a matter of time before the passionate words turned into physical protesting in the field.

* * *

Clements Road should have been called a lane rather than a road. It was narrow and hedgerowed, and then after only half a mile it ended at a stone wall. Near the end, there was a nondescript steel gate to the west with an old-fashioned key padlock and weathered steel chain. Their battery-powered pneumatic bolt-cutter made quick work of the chain, and the two vans of ARK activists drove into a recently grazed, but now empty, field. They could see their target sheds in the distance behind a line of dense trees. It did appear too easy.

They drove across the field quickly for fear of someone seeing them, and got to the palisade security fencing without interception, with the only inconvenience being cow dung sprayed up the sides of the cars as they hit undried pats in the grass.

There wasn't a gate on this side of the abattoir, but again the bolt-cutters chopped through the barrier fence and, within a minute, they had cut a large enough gap to enter. As a mass, they crossed the gravelled area behind the first of many buildings, while away to their right a semi-trailer offloaded a mass of grunting pigs. Someone in the press of people asked where to go first, and Frances directed them to split into two groups, with Doug choosing to stay with his sister.

The fire access Frances and Doug used to get into the largest of the sheds was unlocked and the band entered a room to the powerful smell of warm blood. Seizing their opportunity, a handful of fat blowflies drawn across from

the cattle paddock by the truck with its delivery of pigs lazily followed the activists inside the abattoir.

Frances' group at once realised they were in an evisceration area. Pallid carcasses hung like curtains on track-meat rails, the steel lines crisscrossing the ceiling like subway powerlines. The room was loud and busy, and off to one side through plastic doors, steam hissed from a bank of dehairing machines. Before the group of activists, enormous ashen pigs slung upside down were having their stomachs removed, with entrails slopping onto a channel conveyor that ran along a gap in the meshed floor.

Turning to face the trespassers, several abattoir workers stood in white rubber aprons covering the front of their chain-mail tunics. In their metal gloves, they held curved knives with yellow nylon handles, specially designed to keep grip when they got wet.

A meat boner and slicer walked forward from the assembly line to address the intruders, his thick shoulders shaped from manual labour and his skin coloured by ethnicity, not sunlight. Like his co-workers, he wasn't enhanced—none of these workers could afford the medical operation on their low wages.

'Hey ... you're not allowed in here!' he rumbled in an east European accent.

The swarthy man looked at each one of the ARK members noticing none were wearing the white coats of meat works inspectors. It was then he recognised the greenish tinge to their skin.

'What the hell do you weirdos want?'

Psychologists say that abattoir workers are more

inclined to violence. Not that it would take an academic to unearth that gem of wisdom. Spend your days in a building killing animals with high-voltage electrodes, then use your hands to slice and crack the bodies until they are unrecognisable; it's a life surely to unhinge even the strongest of minds. Therefore, the scholar argues, when a slaughterman's senses become immune to death, what's a few punches to the face or knife to the ribs at the pub? To this, the academic adds: paid minimum wages to do an emotionally taxing job, it's an industry that attracts a workforce who don't have a choice in the matter and will take whatever they can get. Throw in bullying foremen and physically intensive conditions and the result is a high rate of injuries. Still in this day and age, amputations happen; even chainmail gloves can't stop a hog-splitting bandsaw from removing a finger or a hand.

The ARK protesters had imagined that most of the people who worked at the abattoir would be foreigners, and therefore likely to be illiterate, or at the least non-English speaking. And as zealous as the ARK people had become after a few successes, they knew physical violence would be suicidal. They wouldn't stand a chance if it came to a brawl with these guys.

To the watching blowflies, who found themselves in the *Diptera* equivalent of heaven as they landed on the carcasses, one side of the room looked like a rabble of peasants, while on the other side stood a band of armoured knights. Thirteen eighty-one and the peasants' revolt all over again.

Imagining the potential for physical clashes, Doug had given cameras to each of the ARK protestors who had volunteered that day. No bigger than matchboxes, the micro cameras were strapped to every ARK member's forehead with an elastic strap. Every person's point of view was live streaming to the ARK website, to show the horrendous scenes inside the abattoir plus give backup evidence should it come to arguments in court about who did what and to whom. They wanted the world to know what went on in here and they knew the abattoir workers would see the cameras, so they might offer a little protection for the activists. As always, Frances now took the lead.

'What do we want? We're here to show the world what a disgusting place this is. These creatures had souls before you murdered them!'

The slaughterman took a step towards Frances, his gumboots squeaking on the tiles and his knife still in his hand.

'Piss off!' he growled and, cocking his head to one side, shouted to the men behind him. 'Someone call security and the foreman! Let 'em know we've got a pack of greenies in here.'

Frances was little more than an arm's length from the man and momentarily unsure what to do next. She hadn't expected to be stopped this quickly, caught in a stalemate waiting for security to arrive. Previously, they had outnumbered the few gesticulating fat chicken farmers at the battery hen sheds, while at the feedlots they had seen no-one to stop them until they had released dozens

of puzzled cattle into the paddocks and roads around the vast concrete enclosures. There was a traffic jam, and masses of press coverage by the time the animals were back some hours later and the activists in custody.

Frances had hoped there wouldn't be so many people in this abattoir and that the guys would get to stop some machines, or even release some pigs. Chaining themselves to equipment was a tried and tested method, but this machinery looked too dangerous to go attaching yourself onto. She hoped the other team were doing damage in the next room. Maybe all she had to do was just keep these workers busy while the others did the work. Yes, that was it. So, she began shouting abuse at the collection of workers.

Doug joined in and yelled from behind her as the team spread out around the room. The slaughtermen jostled each other and smirked. They hadn't anything to fear from these green idiots. Let 'em do what they want, they said, it wasn't their factory. This was becoming an entertaining change from the usual daily grind for the boners and slicers. It would be even more fun if these hippies got hurt.

But the large man in front of Frances wasn't entertained and stood his ground, glaring at her from beneath his eyebrows. From the corner of his eye, activists were heading towards the door that lead to the lairage and killing areas, but he stayed focused on the ringleader and wasn't about to let her go anywhere.

Suddenly, a scream of breaking machinery came through the plastic doors. The ARK members cheered—

Frances' comrades must have stopped a conveyor or busted something. Distracted by the sound, the heavy slaughterman turned to the plastic doors, and Frances followed his gaze as she waved a fly away from her face. From the corner of his sight, the slaughterman glimpsed the blur of her arm and reflexively raised his hand.

No-one saw it, not even Frances, and she didn't feel it either as the blade passed effortlessly through her throat.



Mutation 1

Senegal, West Africa, 2025

Operation Terorizam entry log—Day 67, 14 May 2025: Colonel Juraj Vuković, Special Operations Centre. Since being air—dropped in the coastal Ziguinchor Region of Senegal, the enhanced soldiers have made incredible progress across the country. Radio silence remains in place and they have lost no personnel. Total number of civilians and military killed by the platoon is unknown but estimated to be between four and five hundred. Platoon crossed into Mali three days ago and has split into two groups, reasons unknown, and are now a hundred kilometres apart. Neither group shows signs of slowing.

* * *

The squad leader smelled like the ocean. Not the pleasant tang of salt spray: this smell came from the wrack zone, like parched seaweed and dead crabs. Although the captive had never seen the ocean, he sensed that this terrifying man didn't smell like an unwashed soldier should. He stank

without sweating and the prisoner could smell him from across the room.

A half-platoon of European soldiers had appeared at sunrise in the centre of the tiny village in Western Mali. No one knew who they were or why they should be there, the village's paltry collection of three dozen huts wasn't anywhere near the areas the normal militia operated.

The villagers were peacefully going about scraping a life from the depleted soil around them, which had been starved of nutrients by generations of overuse. A lone donkey that belonged to the owner of the hut provided the only source of manure for an acre of sterile red gravel. It was as malnourished as the soil, its hips protruding and large wet eyes lost in another world. There wasn't anything here the soldiers could want.

The shepherd watched them from his place on the floor, his wrists bound by a metal cable tie behind his back and his legs crossed on the compacted earth. He'd been raised to be wary of men in uniform, even those from his own country who were fighting the militia but who seemed to only steal and rape when they could get away with it.

A loose heel on the shepherd's sandal was bothering him; he wanted his hands free so he could bind it until he got home and sew it back onto the sole. But home was a day's walk from the Bambouk Mountains and the soldiers didn't look like they were about to let him go.

Yet they seemed to lack purpose.

He'd heard that French soldiers operated in Senegal as part of the United Nations forces who were looking to

push back on the *al-zal lawaa* as they spread from Mali into Senegal. His village might only be small, and his province hardly significant on the map of West Africa, but that didn't mean his people were unaware of what was going on in other parts of the continent. War on terror—there wasn't any terror until they came and stirred up the holy heroes, and there were no bomb-makers here because there weren't any materials available to make the bombs.

The leader of the squad had been watching the man on the floor with an odd expression.

'Do you speak French?'

As the shepherd had suspected, they were not Americans. 'Yes.'

'What do they call you?'

'Oumar.'

'Are you from this village, Oumar?'

The prisoner thought about lying, then decided he could veer from the truth later if he needed. 'My village is Galougo, by the river.'

The questioner smiled as he straddled a stool in front of the prisoner, like a teacher might in a classroom. 'That's a long way from here, Oumar from Galougo.'

The prisoner shifted on his numb bottom and kept his eyes to the floor.

'Do you know who we are?'

The bound man shrugged.

'You are French soldiers. Why have you tied me? No-one in this village are soldiers. It is hard enough farming without fighting, too.'

‘Soldiers, yes ... that’s right, Oumar from Galougo, we are soldiers.’

A female in the group leaned against the table behind the squad leader, her arms folded, with eyes fixed on the shepherd. Like the squad leader, every bit of her skin was painted in camouflage, but it looked lazy to Oumar. Instead of the lizard-style camouflage pattern of their combat clothes, it was only a tone of red or brown. Except for the one asking the questions: he was green.

‘But what *kind* of soldiers are we, Oumar from Galougo? Do you think we are after *al-zal lawaa* rebels, or are we different?’

The woman moved away from the table to be closer to the prisoner. Oumar looked up as she approached and saw her eyes matched her skin, and then he looked at the questioner and saw his did, too. Neither of them had whites to their eyes—around the pupil, the eye colour matched their skin. How they did that, and why they would, confused Oumar. Maybe it helped their weak European eyes from the African sunlight.

To Oumar, the woman was strongly European, with thin lips, a sharp nose, and high cheek bones. Her hair was short but not cropped down to the skin like the man’s.

‘Do you like the look of her, shepherd?’

The prisoner returned his eyes to the floor and hunched his shoulders, trying to make himself smaller. He could feel his legs cramping and it burned to move his hands from the metal biting into his wrists.

The three of them were inside a typical hut of the region. Slightly larger than most in the village, cool and dark, an

eight-foot-high cylinder of compacted mud and cow dung topped with a grey thatched roof, the floor covered with woven mats and brightly coloured rugs. The furniture was humble and made from local timber, and there was a single yellow-and-blue painted mosaic-style chair where his uncle would sit and mediate over local disputes.

A part of Oumar hoped his uncle would arrive with a band of men; part of him hoped they would stay away and not be harmed.

The soldiers wore a green-and-red emblem like the French Foreign Legion on their arm. Of all the troops to pass through Oumar's country, the Foreign Legion was the most skilled, though he didn't think they had women in the ranks, so perhaps they were not from the Legion. Oumar wondered if they might be Russian. This man was speaking French, but it sounded strange.

An enormous soldier entered the hut and spoke to the squad leader in a language Oumar didn't recognise. In reply, the squad leader waved a hand in the air and left the hut with the newcomer. Soon after, Oumar heard shouting in the distance and the sound of timber breaking. He could feel the woman staring at him, so he kept his eyes down. He wondered what was happening outside and whether there were other people being held or even hurt. There had been no gunshots.

The combat woman moved over to Oumar and reached down to lift him up under his arms and off the floor. With a firm push, he fell into a chair. She stood close in beside him, her hand resting on his head, and ran her fingertips across his scalp.

‘Do you have a woman, shepherd? You look old enough to have a wife. Maybe she’s still only a girl, given to you by her family.’

Oumar wouldn’t dare look up; her voice was gentle but held a hint of menace. ‘I have a wife, yes,’ he whispered.

‘Did they circumcise her before they gave her to you?’

The female soldier came around to his front and put both of her hands on the top of his head. Oumar tensed under her touch.

He was uncomfortable with how close she was, her feet apart and her legs only inches from his face. She slid her hands to the back of his head and with increasing pressure pulled him towards her waist. Oumar felt the material brush against his curly hair.

‘Do I smell different to her?’ she asked.

The shepherd tensed, trying not to breathe. The woman’s hands changed to grip his hair and with a strength he wasn’t expecting, pulled him closer until his broad nose pressed against the material of her combat pants.

‘Do I smell different?’ she repeated.

Oumar held his breath. The hands pushed harder, his nose pressed against the material in the fork of her legs.

‘I’ll hold you, shepherd, until you tell me.’

He muffled words into the material.

With a jerk she shoved his head back and smashed a clenched fist hard into the side of his face. Oumar reeled and stars clouded his sight as pain shot across his face. Rocking back in the chair, he tried to catch his balance, but his hands were tied, and his arms got in the way as he leant to right himself. Then, his world flipped as

the woman kicked the chair legs out from under him, smashing the timber and sending a splinter across the room. Oumar's head hit the ground, and he felt a weight bear down upon his sternum.

'Don't you want me, black man?' spat the woman with her hand gripping his throat.

Oumar couldn't make sense of what was happening. He went to cry out but all he could do was wheeze and spit red.

'Get off,' said a calm voice from the doorway.

The female soldier raised herself from the stricken man's chest.

'Bring him outside; he can watch us synth.'

* * *

It took a while for the soldiers to remove their boots, body armour, and combat tunics. Next, they undid their belts and other straps, placing their weapons against the side of the hut, and stepping out of their pants.

Standing there naked, each body looked powerful and lean.

Oumar had watched them undress, wondering why they were doing so, as there wasn't a river or water nearby to bathe; he saw they had painted their entire bodies, not just their faces and arms. And as he watched them stand there in their nakedness, their skin grew brighter. As first he thought it must be the sunlight causing the change, but the longer he watched, the brighter they became, and he realised with horror that the foreign colour was inside their skin.

The enormous soldier had turned crimson as he faced up to the sky with his eyes closed. Sensing he was being observed, he turned to Oumar and looked at him with glowing red orbs. The prisoner gasped and tried to rise but his legs refused. All the soldiers held their arms out and stood motionless in the intense light like painted priests, the colour shimmering beneath their skin in waves like neon lights.

The woman flexed her radiant fingers then came over to the prisoner, hoisting him up again by one arm. Oumar flinched at the intense heat that came from her grip against his arm. He felt like he was being scalded by her hands.

The leader came over to see what she was doing and Oumar for the first time noticed large green welts across the leader's chest, arms and legs. The scars crisscrossed his body, but no person could sustain that amount of injury and live. There were also circles which might have come from spears or even bullets, and his smell was overpowering as he glowed beside Oumar.

It had changed to the stench at the bottom of a well when nothing is left but mud and frogs.

'Watch while we soak in the sun's power, shepherd. We need not waste time eating animals that have to eat plants to get their energy from the sun. We can do it ourselves with our own bodies.'

The squad leader faced the direction of the savannah.

'This is just the country we could thrive in.'

Oumar could feel sweat on his forehead from the intense sunlight. *Everyone should be inside this time of*

day; these fools will get sick if they stand around in the West African sun for too long, he thought to himself.

No-one spoke.

The entire squad seemed focused on breathing.

A haze came off their skin as the body temperature of each rose to over fifty degrees. Oumar didn't know it, but the altered humans were sweating oxygen as their skin photosynthesised. The microalgae knitted into their bodies becoming hyperactive as they rapidly converted sunlight and carbon dioxide into sugars that went straight into the soldier's bloodstream and oxygen released from the pores of their skin.

Oumar dozed in the intense heat, waiting for something to happen.

'I need water.' The squad leader motioned to the others, except the female soldier.

'You four, go fill our bottles.'

Coming out of their synth dazes, the rest of the squad collected their clothes and dressed, finishing by replacing their weapons in holsters and sheaths. Each one carried a twelve inch kukri knife, heavy-looking and glistening evilly in the sun. These they carried in sheaths tied to a thigh, and the ceremonial knives looked more dangerous than their automatic weapons. With enough force, a blade that weight could behead a cow.

The squad leader and the woman fidgeted, the sun seeming to have agitated them. The leader watched the woman dress while he remained naked. When complete, she turned to face him, her skin the same colour as the ground under their feet.

‘Take him back inside. When I’m finished, I want to show him the soldiers we *really* are.’

Oumar again flinched from the heat of her hand and, feeling him move under her touch, she squeezed harder and shoved him through the door. She took him to a chair and made him sit and, without notice, she straddled his lap and sat on him. Her weight surprised Oumar, and he looked away from those red eyes.

‘You need not be nervous with me, shepherd.’

She stroked a hand down the side of his face. The woman unbuttoned her combat shirt and Oumar squirmed.

‘Don’t worry about him, he’ll be a while.’

Oumar kept his eyes to the ground.

‘Look at my body, shepherd. Aren’t I beautiful?’ She raised Oumar’s chin.

Then she saw Oumar look behind her and, as she turned, the squad leader lashed out like a snake and, with his hand around her throat, lifted her off their prisoner’s lap and pulled her back towards the table.

The woman struck out with a boot and caught him on the shin, but the squad leader twisted his leg around hers and pushed her back harder, making them fall together to the floor. As they landed, he caught her hand as she reached around to hit him, his other hand still tight around her throat. They struggled on the ground, the squad leader naked and steaming from being in the sun, his arms moving faster than Oumar had seen people move.

The woman got a hand on the side of the man’s face and tried to grip his ear, but missed and instead dug her

nails into his cheek and across his eye. Growling as he let go of her throat, the man slapped her hard. Oumar thought he would kill his female comrade.

Holding her other arm, he rolled aside and twisted it behind her back. The woman let out a grunt and flailed but couldn't release his grip. Holding her in this cruel way, the man got up on his haunches and, with inhuman strength, lifted the woman entirely off the floor with his other hand gripping her belt. Half-staggering, they fell against the table where he used his weight to keep her there. With a grunt, she lifted her head, but he gripped the woman's short hair and held her face against his.

'What's wrong, Nika? Don't you want me instead of that snivelling lamb?' he whispered into her ear.

Oumar watched her resistance drop, and with the lack of opposition, the man seemed to lose interest and let go of her. Once he was off, she spun around and hit him hard across the face.

The squad leader sucked in a lungful of air. 'How good does the sun make us feel?!' he shouted as he went to the door to retrieve his clothes from outside. The woman turned to Oumar, flushed and panting with a twisted smile on her face.

Returning dressed to the waist only, the squad leader stroked the back of the woman's neck as he stopped beside her. She leaned into his touch like a cat. Pulling up a chair to the table, he placed his arm on the surface and withdrew his kukri knife from its sheath and gestured to the woman to sit near him so they could both face Oumar.

‘I’ve a trick to show you, shepherd.’

He handed the enormous knife to the woman.

It all seemed madness to Oumar. Why didn’t she attack him with the weapon after he’d just assaulted her?

Instead, the woman, as if reading the man’s mind, obediently slid the tip of the blade down the squad leader’s forearm, leaving a slice from which pale blood flowed across the skin and onto the table. Oumar couldn’t turn away. The leader laughed and stood to come over to the prisoner.

Oumar shut his eyes, praying he wouldn’t be tortured. But he wasn’t touched. Instead, he was quietly told to look at the arm, and as he did, he watched the man wipe his hand down the cut to remove the blood from his skin, revealing beneath a cut that had already closed, leaving nothing but a raised green line.

‘Shall we see whether you can do the same?’

Oumar sprang back, pressing himself against the wall. He couldn’t see how he could get past the soldiers, or where he could run to. The pair laughed.

Another soldier entered the hut and, again speaking in the language Oumar didn’t know, pointed to the sky.

This news changed the leader’s manner, and he asked Oumar whether he was a religious man. The squad leader explained how he and his fellow soldiers might live for a hundred years or more because their bodies were different to Oumar’s. They were all superhuman; ‘We soldiers are gods,’ he said. He told Oumar he could father a hundred children before he died, and the rest of his group could do the same—they could make their own army. As the

squad leader spoke, the female soldier got more excited. But just as quickly, the squad leader's expression changed again, and he stopped talking about them and turned his attention once again to their prisoner.

He reminded Oumar that he wasn't a god, only a weak human, but that he could make Oumar a god if he would like. Injections beneath the skin and he, too, would be immortal like them. However, he didn't have the injections here; no-one in Mali, or in all of West Africa, can get hold of this special chemistry. So, the soldier told Oumar, he had another way to turn him into a god.

There was no sawn timber available in the village, so the soldiers pulled down the round poles that held up the village bell. With cord, they tied the poles into a makeshift cross, and one man found a spade to dig a hole. Once the hole was a metre deep, and the cross finished and resting on the ground, they dragged Oumar over and held him to the timber.

He was too weak, and they were too many and much stronger than him.

The soldiers used wire to fix his wrists and ankles to the wood and then, as one, they lifted him on his cross and dropped the end into the hole. Oumar's feet were less than a metre from the ground, but they might as well have been an eternity, as his entire weight was being held by his wrists and ankles. Oumar begged to be lowered, saying he would do anything they want.

The leader told Oumar he was already doing exactly what they wanted.

'Would you like us to tell your people at Galougo all about you, Oumar? Say how brave you were? How you sacrificed yourself so others might be spared? That sounds godlike; maybe the beginning of a myth around these parts!'

The crucifixion was making it hard to breathe: the pain of his wrists and ankles was overpowered by the desperate need to support his chest. His sight was blurring, and drool hung from his parched lips.

'But we have a problem, Oumar: myths need people to spread them. It's word of mouth, tale upon tale, until you can't tell what's true anymore. And the problem is there won't be people left to talk about you. Not if we've been there first. I'm sorry that's the case. You've been stronger than some people we've found. One soldier we had only skinned an arm before he died on us. He looked like a pathetic flayed sheep, nothing as magnificent as us. How far do you think we'll get across this continent in a century, Oumar? I bet there are many villages like this one we can play in.'

The squad leader turned skyward and spread out his arms, mimicking the man bound to the timber, then shouted. 'Doesn't this sun make you feel godlike, Oumar!'

The green man sucked in a lungful of air then addressed the soldiers behind him. 'I'm bored watching this boy die. Let's run to Galougo and see what we can find. It's twenty-five kilometres from here—with rough terrain but light packs we'll get there in under two hours. I feel like running.'

In unison, the soldiers slung their automatic weapons behind their backs and tightened their shoulder straps.

Only the female soldier looked up at Oumar, her red eyes fixed on him, and for a moment Oumar thought she was about to take him down.

‘Let’s go!’ cried the squad leader.

* * *

In a concrete bunker surrounded by woods in the Dinaric Alps, a group of men watched screens that covered the wall of the small control centre. Small monitors showed medical graphs that tracked each squad member’s body temperature, heart rate, blood pressure, and blood sugar levels, while the largest monitor displayed a high-resolution aerial image with each soldier symbolised as a yellow triangle. The triangles were hastening away from the collection of mud huts and eastwards into the grasslands.

Sitting before the screens was a junior soldier in a combat field uniform, one hand on a joystick as he operated the drone’s flight controls, his other hand on a keyboard. Behind him stood a colonel, also in field uniform, and beside the colonel was an elderly man in a Lombardy suit.

The elderly man spoke. ‘Very good, Juraj, they have covered further than we had hoped and much faster than you had expected, yes?’

‘Indeed, sir; it’s very pleasing. They haven’t slept in weeks.’

‘I need not see any more. I authorise you to release *every* company; Crvena, Bijela, Tirkiz, Zuta Boja, and Mornarica, and have them fully manned to one hundred and fifty men each. From what you have showed in the

past two months, Colonel Vuković, we can forget about the supplies, they can survive on their own and make do with what they find. Fly them out tonight to the locations we discussed for Operation Arrows. It's time to release terror into Serbia!

‘And what of the test squads in West Africa?’

The elderly man ran his hand across his beard and smiled. ‘Keep tracking them. Let's see how far they can get.’

The colonel nodded as he watched the triangles move across the savannah.



Sequence 6

Melbourne, 2033

Karen's response to her daughter's miscarriage was simply to say, the first one often doesn't stick. Anne had sat there bleary-eyed, clutching a wad of sodden tissues as her mother shared her worldly experience about babies. Less than a year later, and after more womanly advice on how to get pregnant, the second miscarriage brought a similar reaction and the expectant grandmother recited the same worn phrases.

By the fourth miscarriage, the older woman tempered her words to something more conciliatory. But it was too little too late, and the grandmother—there were already nine grandchildren plaguing the earth from her other sons and daughters—was banned from the house by Anne's husband. It was a fair reaction from the couple who had been trying four years to have a child. Anne's mother's sermons weren't the only thing that bothered her; Anne had five brothers and sisters, so her mother clearly did not understand what the younger woman was going through.

Now, you could call it coincidence, or maybe providence, but after the disrupting visits ceased, Anne held a pregnancy long enough to make it past the first trimester.

The couple's prayers had been answered.

* * *

'It's all looking good.' Their Sri Lankan doctor grinned. 'Your baby is the right size for the stage of development, and everything looks normal.' He continued to beam at the nervous parents, believing, in some part, to be responsible for their success.

Tony eased his grip on his wife's hand, encouraging her to do the same. He flexed his fingers to return the circulation. 'That's great! Isn't that good news, darling?'

'Yes ... it is.' Anne was less confident than the men in the room. In recent memory, her life had been one drawn-out disappointment after another. She'd grown accustomed to pain and blood and found it easier to deal with life if she didn't expect much in return.

The general practitioner was very experienced with first-time parents and these two were not his only patients on a fertility programme. Lots of money was to be had helping people have children—God knows why, he didn't particularly like either of his—but Dr Chaminda Ranaweera had shrewdly seen the business niche and chosen to add 'fertility specialist' to his list of postgraduate diplomas. A niche he had pried open until it became the slot of a piggy bank.

‘Also, the tests are clear for the usual abnormalities, and you’ll be glad to know the screening we did for empathy, intelligence, and artistic aptitude all came back very high, just as we would expect from the engineering we did to Anne’s egg.’

Tony nodded his approval. He damn well expected that to be the case. After countless goes at this, his wife was now walking around with \$100,000 worth of gene therapy in her belly.

‘Photosynthetic enhancement is the last improvement to discuss; have you decided whether you wish to do it in-utero, or later, before puberty?’

The couple shared a weighted look between them.

‘We’re undecided,’ said Tony. ‘We know people who’ve had the treatment as adults, but we don’t know anyone whose kids have—not before they’re born, anyway. Most are thinking of waiting until they’re kids are older.’

The medical man saw a fee slipping. He rested his hands in his lap and rocked back in his chair.

‘Doing it now will make it easier and less stressful on the body later.’ He looked to the mother. ‘I understand you’re worried, Anne, but this won’t increase the chance of losing your son.’ The young couple looked unwilling to budge. ‘Are either of you aware of the legislative changes soon to be rolled out in Victoria?’ Tony shook his head. ‘Soon the government will stop providing free health benefits to unenhanced children. Their reason being that enhanced people are less drain on the medical system. I’d imagine soon the insurance companies will follow suit. Because it’s easiest to do it in-utero, they’ll probably

make this procedure mandatory, or at the least, continue to make it harder for people who don't enhance their children at an early age.'

'That can't be legal!'

'Well, they aren't *forcing* people yet. What they are doing is making it tougher for those who don't. My guess is the government looks at an aging population and increased welfare costs, and they see a practical way out for at least some of their concerns. I'm not advocating either way; I'm only saying you have the option to proceed now, which may make it easier for you and your child in the future.'

'I want the best for my baby,' Anne whispered. 'He's to have the greatest chance of success we can give him.'

Tony softened his tone as he took his wife's hand again. 'Whatever you recommend we do, doctor ... we'll go with that.'

'Very good! I believe your health insurance will cover some of the cost of the procedure. Yet another reason to get in early before they change their policies. I'll look at booking a time near the end of your second trimester. It's very safe, I can assure you, and it will speed up the end of your pregnancy, so you'll give birth at eight months and not the usual nine.'

'That's handy,' said Tony, smiling again at his wife. 'Better hurry with the nursery, hadn't we?'

The doctor printed out several sheets and then explained in only cursory detail the purpose for the indemnities that both parents would need to sign: legal guarantees that should their son wish to prosecute them, or the doctor, in the future because of his enhancements,

both skin and via the gene therapy, they would all be protected. It wasn't anything new; at every turn people covered themselves in an increasingly litigious world.

* * *

If you asked him, Tony would say he could turn his hand at anything, ranging from fixing a leaking tap to servicing their car. All he really did was figure his way through any challenge before him and made up for his lack of knowledge with patience and a willingness to buy tools that he would never use again once the task was complete. His garden shed was full of such once-used items.

Today, he had the simple assignment of gluing a farmyard animal frieze to the walls of the nursery. The room was already painted sky blue and collections of gaudily coloured dinosaurs wired together in a mobile hung from the ceiling above where the child's bed was going. After the frieze was up, he would assemble the old settler-style distressed pine cot—made in China—ready for Anne to insert the low-allergy mattress and soft new organic sheets.

With so many years waiting to bring a child into their life, the couple had read and re-read every '*What to Expect*' baby book you could think of that had been published in English. Avoiding the internet as much as possible, suspicious it would be full of half-baked advice, they stuck to the traditional view—if someone has gone to the effort of publishing it in a book then it must be correct. Stamped on the cover of one in red writing *Over 10 Million copies sold!* only strengthened their belief.

It pleased Anne that her boy was due before the end of the month, because that meant her son would have his birthday in the same month as her: both Taureans. Star signs were important measures of people to Anne, and they explained why she fought with her mother so often, Karen being a dreamy Aquarian. And it made perfect sense to her why she got on so well with Tony, her compatible Capricorn mate. Her husband had conditioned himself not to roll his eyes whenever Anne mentioned astrology.

With the baby nearly here, the atmosphere in the house had improved to where Anne had allowed her mother back into the fold; however, Anne was sensible enough to make sure whenever she invited her mother over, she would also have a girlfriend present as a buffer.

* * *

‘Look how full you are!’ Her mother placed her hands on the enormous tummy.

‘Would you like some tea, Mum?’

‘Let me make it,’ offered Callie, the couple’s neighbour and mother of a three-month-old girl asleep in a baby bean bag chair on the kitchen floor.

‘Not long now. Could be any day soon.’ Karen fussed. ‘How exciting!’

‘It will be good to have him out; I’m over the sore back and poor sleep, I can tell you.’

Karen looked at the baby sleeping peacefully in the folds of her little bean bag away from the kitchen sink and the women’s legs.

'I see you didn't have the enhancement done to your baby girl.'

Callie took three mugs from a cupboard and placed them on the island bench in the middle of the enormous kitchen. 'We thought it best to wait until Beth is older. Besides, we couldn't afford the procedure at the time.'

'Good for you! None of my children had it.'

Anne bridled. 'Well of course, Mum—it wasn't available twenty years ago.'

'None of my grown children have either. You haven't.'

'You know I couldn't while I was trying to get pregnant. It's not safe to do it then.'

Her mother sniffed and drew up a stool by the bench.

Having had three children, Callie was more experienced than Anne in dealing with an interfering grandmother and stopped the conversation short by telling, at some length, how her older boys loved having a little sister to watch over now. She would have a word with Anne when Grandma had gone about how Anne needed to learn to appear interested and agreeable, then ignore the previous generations, often-proffered, but out-of-date, advice.

* * *

As is so often the case, Anne's waters broke in the middle of the night and Tony got her to the hospital as fast as his half-asleep mind could manage. The birth was quick for a first-time mother, and two hours after arriving at the hospital, Harry Edward Arthur Taylor entered the world. They gave him two middle names so the grandfathers,

neither of whom were alive to see this continuation of the family, could live on by name alone. Mum cried at the sight of her large ten-pound baby and kissed his wet head as the smiling father looked on, overflowing with pride and only a little taken aback by the cider colour of his child's new skin. That didn't matter—they were finally a family of three.

Driving home was a strange experience. The new baby seat in the back of the SUV was no longer empty and the new mother turned to watch her sleeping child the entire way home. For his part, Tony flinched at every intersection where a car looked ready to jump out at them. This uncontrollable impulse to protect his offspring hadn't been mentioned in any of the parenting books.

Once home, settling into a life as parents progressed without a hitch. There was a rush of visitors, especially Anne's brothers and sisters and their entourage of children ranging from toddlers to teens. Interest in the new kid from his cousins varied according to age and gender, with the teen girls wanting to carry him around and the little boys wanting to poke his funny-coloured skin. Not a single one of Harry's cousins were enhanced. Some wanted to be, but they were told they had to wait. They made up for it by taking little Harry out into the sun and watching his colour get stronger. It was a great novelty for all of them.

* * *

'I think I've got mastitis!'

'How do you know?' Tony asked through the pages of his novel.

'My breasts are hot, and look how red and swollen they are. They hurt.'

'Oh. So ... what do we do?'

'*You* do nothing. I, on the other hand, need to express and get to a doctor. I knew this would happen; Harry just doesn't feed enough.'

It took a moment for Tony to translate what his wife had said.

'But he's putting on weight, isn't he?'

Anne looked at her husband as though he were simple.

'He's growing from *sunlight*, Tony.'

Tony knew he should stop talking.

'Maybe keep him indoors for a while until he gets hungry. Would that help?'

Anne rolled onto her side and turned off her bedside light—a marital sign for Tony to stop reading and do the same.

'I'm not having this conversation with you now; our boy is perfect the way he is.'

* * *

Harry indeed grew quickly, and his parents could not ask for a better infant. Harry was quiet, behaved well, didn't cry often—except when his teeth appeared. If anything, he was remarkably placid for a baby. Much more so than little Beth who was turning into a street angel/home devil for the long-suffering Callie, her older boys now using

their little sister as a source of entertainment and a way to stir their mother.

Anne would put little Harry in the sun as often as she could, knowing that sunburn and melanomas were not a risk for fully enhanced bodies. The baby's skin would turn a startling cider colour which faded when he returned indoors.

Harry didn't sleep often, and he didn't cry for feeding either, so Anne made the most of his awake time and would read stories and play music hoping her boy would one day be an artist or a famous musician. She even went so far as having foreign television on in the background, in the belief that listening to unfamiliar languages would be enough for him to learn them. He did, after all, have highly artistic genes spliced into his DNA.

Tony also enjoyed coming home from work in the evening to find his son still awake and not screaming to be fed. Their routine and experiences didn't match the stories in those books they had read, and both parents came to the understandable conclusion that they must be superb at this, while the rest of the population didn't know how to raise balanced kids properly. And if you are really good at something, why stop at just one? When Harry was eighteen months old, Tony raised the idea of a second child with his wife and, naturally expecting her to be thinking along the same lines, her vehement objection surprised him.

Why ruin their perfect life with another child? was his wife's response, followed quickly by, why did he want to bring in someone else to take their time away from little Harry?

Tony reasoned that too much attention on one child would create the Little Prince Syndrome the Chinese experienced from the ‘one child’ policy back in the late twentieth century. A balanced life meant you had to learn to get along and share with others, he argued, and that would be good for Harry and for them. They might order a girl this time to balance the genders in the house. Tony liked the idea of having a daughter.

‘Who cares what the Chinese did?’ said Anne. ‘Our boy needs all the attention we can give him if he’s to become successful’. She reminded Tony that she was one of six children and that she didn’t get the support she needed to succeed because her parents were spread too thin.

Tony stopped himself short just as he was about to say it was because her mother was a self-centred cow. Besides, he wasn’t thinking about having another *five* kids, God no, but another one, or maybe two, may be nice.

He tried many times again over the next three years, but Anne wouldn’t budge. Her mind was made up, and there was to be only one child in their life.

* * *

‘So that’s it, is it, mate?’ Adrian watched Tony squirm under his car.

‘Afraid so.’

‘She won’t move?’

‘Nup! Push over the oil tray will you? I don’t want hot oil all over me and the concrete.’

Adrian did as he was told. ‘That’s a real shame.’

‘So, how are your kids going? You and Callie booked in the boys for the op yet?’

‘We’re having second thoughts,’ answered Adrian. ‘We need to put our money on the mortgage, and we think the kids can decide for themselves when they’re grown-ups.’

It was a good thing Adrian could not see Tony shaking his head beneath the car.

* * *

Some mothers ease into parenting like they were born for the job: the mums who show they can effortlessly keep their kids fed and occupied while completing every other domestic chore, and all the time staying calm and never looking dishevelled. Then there are those mothers who are wired; constantly rushing and telling people how well or not well they are going, and how she’s doing everything she can to make it better. Anne fell into the second category: Anne was always searching for confirmation she was a wonderful mother.

Schools naturally draw the second category of mothers together and the Little Scholars Academy was no exception. The pretentious name matched its doctrine as one of only two selective preschools in all of Melbourne. Anne had her son on the waiting list before he was born, and because of his eugenics, he easily passed the aptitude test when the time came. Tony also passed the income test, but that was implied and not formally recorded anywhere.

It was here that Anne’s confirmation of good mothering blossomed. Naturally, the Little Scholars Academy had

a high proportion of eugenic children and most were enhanced in-utero. The place was all about leading the way in education. Those kids who were not enhanced soon would be before they entered primary school.

Here Anne found her kindred spirits like-minded successful women instinctively wanting their offspring to do as well or better than them. There was no point breaking your back for wealth and influence only to have it pissed down the drain when your son became a plumber.

Tony decided to leave the raising of their one and only child to his wife for the time being. He'd get involved when it came to the pointy end of the stick and the lad entered high school. That's when his education would matter most, and when he would need a firm hand to direct his boy into the cutthroat world of advertising, where Tony had made his stash and where he thought his boy could do very well.

* * *

The drive from Tony's office to their home took anything from forty-five minutes to over an hour depending on the traffic. He could take the train, but that would involve a lot of unwanted stops at stations he didn't need, and he never seemed to leave at a time when there would be a seat available. Standing for an hour is a long time to a person who spends his working hours sitting at a desk.

Cutting in and out of the traffic in a Prussian-blue Audi wasn't much fun in peak hour traffic, but sitting on your own plush leather seat in privacy, with a podcast examining German expressionism at the start of the

twentieth century, was a much nicer way to get home than on the train. He could afford the exorbitant price of fuel, and Anne wasn't exactly waiting with bated breath for him to come through the door. When Tony finally arrived around seven-thirty in the evening, she'd have their boy poring over language lessons or some other course to get his young brain absorbing as much as possible.

So Tony sometimes took the long way home, his favourite being the route that took him past his old university campus. Depending on his mood, he might even drive through the uni itself and ogle the girls and reminisce on carefree times and missed opportunities. He was sufficiently old enough now to not risk recognition by students or lecturers. He tended to take the slowest path through the campus when it was the height of summer to increase the chance of catching an eyeful. On one such occasion, as he crawled along University Avenue doing the mandatory twenty kilometres per hour, he noticed a group of enhancer girls sitting on chairs under large eucalyptus trees. It was still warm in the evening, and still plenty of light.

Tony pulled up at a pedestrian crossing to let some people through, then looked sideways at some girls. They were ripe and magnificent, dressed in shorts and T-shirts, none older than twenty and a good fifteen years his junior. It took a moment for Tony's mind to register that they were all fully enhanced, each a tint of orange or green. He'd become so used to seeing enhanced people in the bustle of the CBD that he didn't notice them

anymore. Like with hi-vis clothing, so many people wore it these days that the bright oranges and yellows didn't stand out.

The brunette reminded him of a girl he met when backpacking around Europe. He wondered if enhancers were different to make love to. He'd sure like to find out. The girls were motionless; people passed by, but none paid them any attention.

It then occurred to Tony there was a pattern in front of him; the enhancers were separate from what he still called the 'normals'. There were single people scattered about, but when there was more than two or three, they were grouped the same.

Why hadn't he ever noticed this before?

* * *

Each year, on Harry's birthday, they had a celebration barbeque at the Taylor's house. Adrian and Callie with their three kids were always there, and as Harry got older, friends, first from preschool, and then from primary school, were invited. In both cases, the school mothers attended, and the fathers took the opportunity to get away from their family and do something else. Living only next door, Adrian had no excuse for absence, and prided himself on cooking the oversupply of expensive meat that Tony could afford.

All of Harry's little friends were enhancers, of course—kids normally hang around people who are like them. And because the kids were enhancers, the barbeque itself was largely for the parents, because the kids only

needed a small amount of food to compensate for what they didn't make on their own in the sun.

Today's occasion was Harry's eighth birthday. His parents had given him a Hagan Weise violin, which Anne claimed all the other boys at school were using. Tony baulked at the cost, then agreed when he failed to come up with an alternative present. The neighbours had given Harry some paints—inferior quality in Anne's mind, but gratefully accepted by the young boy. He enjoyed painting much more than music.

From the kitchen window, Tony could see Harry with his friends sitting on the ground in a group, eyes closed, resting in the full sunlight. At the back of the yard, Adrian's older boys were kicking around a soccer ball, running into each other and tussling over possession. The family Jack Russell terrier and golden retriever were in the game, running around barking with no direction other than to be involved in the mayhem. Tony thought the younger of the lads had the upper hand: he was faster and clearly more in control of the ball. The host returned his attention to his boy and the sitting kids. It was hard for him to tell from this distance, but they looked as though they were holding hands.

Definitely not something he would have done when he was eight years old.

All Tony could remember from that age were grazed knees and filthy hands from catching eels along the creek at the back of their farm. He sure as hell wasn't sitting down holding hands with his mates. Tony felt a wrench of

separation from his son, like he was watching somebody else's child; something that wasn't even a child.

'Don't move much, do they,' said Adrian, who had silently appeared at his side.

'They don't ... it's weird.'



Sequence 7

London, 2043

It must be very rare for a person to claim they have improved the life of two hundred and fifty million people. There may be politicians who make this statement—insert your choice of populist president—but, like the men themselves, they would be inflated claims.

To raise the standard of living for that many people, in their own lifetime I might add, is extraordinary to say the least. And I have been fortunate enough to have had the pleasure of knowing not one, but *two* such people who achieved this remarkable feat.

What follows is a story about how these men made the world a better place for a quarter of a billion souls.

* * *

Adesh Naidu's ascension through the Indian bureaucratic system was so rapid that by his forty-fourth birthday he was Deputy Secretary for the National Development Administration. He was a lean and small man, with a

rather big head and intelligent eyes framed by large glasses. Adesh was universally liked wherever he worked. He lived by the creed of treating people firmly, but fairly, and he encouraged dedication in his staff and an observance to caring for your fellow man. Blessed to be born into an affluent family, Adesh disliked the caste system of his parent nation and strived at every turn to erode its influence. For two years, I was Adesh's personal assistant, and while it was unquestionably the hardest years of my professional life, it was also by far the most rewarding.

In 2043, Adesh was given the directive to see how a national programme of body enhancement might be rolled out across India. On paper this may look only like an enormous *administrative* exercise, because I assume you to be considering it through the eyes of the West. But I need to remind you that the Indian subcontinent has the second largest population in the world and one equivalent to Europe and both the Americas combined. The standards of living cover the entire range imaginable, from wretched poverty through to extravagant wealth, and so, too, do infrastructure and communication networks vary just as greatly.

Adesh wasn't looking at implementing a medical practice across a uniform landscape which, apart from coordinating a vast number of people speaking different dialects, would be by far his largest hurdle. The plan needed to contend with wide geography, vast infrastructure, different religions, and multiple languages.

Added to that, Adesh needed to better understand how other nations had been using this incredible technique in

their own countries. The adoption of algal enhancement to humans was quite advanced in some places, while nations like India were only just getting started. Adesh needed to learn from other's successes and failings.

That year was one of great travel for the two of us, for everywhere Adesh went, I followed as his aide. We attended nine conferences, twenty-three meetings overseas, and countless visits to Delhi and other major provinces in India. By the end of the year, I estimated we had travelled nearly 50,000 kilometres. His wife didn't mind Adesh being away so often for, like him, she was a professional devoted to her field of endeavour. Kareena Naidu was a doctor at the National Centre for Disease Control in Delhi who specialised in zoonotic infections. And, like her husband, she was a gentle and hardworking individual who devoted her life to the care of others. So committed to welfare were they, they had never felt the desire to have children.

Matthew Stopford-Weatherbee, the second son of the Earl of Aireborough, was a successful businessman, entrepreneur and, importantly for Adesh, a busy philanthropist. Second in line to inherit his father's fortune and title, Matthew preferred to use his family connections and an astute mind for opportunities to make his own way in life. So successful was he in his chosen career of finance that by his late-thirties he'd made it into the top twenty wealthiest individuals in England, with a personal fortune of over sixteen billion pounds. Quite remarkable for a man who started with five million pounds of seed money from his father only a decade earlier.

Unfortunately, Matthew would have to draw upon a substantial slice of that fortune to address his older brother's erosion of the family estate and near loss of the ancestral home. At least that's what I read in the media and not a part of this tale.

Most of what makes the world work happens through connections. Matthew's ability to raise funds was no different. The man had built a substantial network of rich and powerful men and woman across the globe, from tech billionaires in the US and Asia to steel barons in Brazil and Australia. And the nexus of it all was his network in the UK and Europe, much of which was built on the latest tech.

Adesh also knew how to work connections. His life was one giant administration based on the flow of information and resources across his small realm—only 32,000 employees—of the Indian civil service.

I remember when I met Matthew Stopford-Weatherbee. It was at the Wellesley club in London, where he invited us to luncheon during a visit. Both Adesh and Matthew knew one another from their time at Oxford, where they formed a friendship that had continued into their professional careers.

* * *

'Adesh! It's so good to see you.' Matthew warmly shook his Indian friend by the hand.

'And you, Matthew. I see you're beginning to grey. Too much trading and not enough time spent in contemplation?'

Matthew chuckled, and I found myself instantly attracted to him. We were introduced and the three of us took our places on leather chairs around a walnut coffee table.

‘You know me too well, dear boy. Tell me, how’s Kareena? It’s been an age since I’ve seen her. You simply must bring her next time.’

‘She is working on an outbreak of Nipah virus in Kerala and could not draw herself away.’

‘Never heard of it. The virus, that is.’

Matthew motioned to a waiter and pre-lunch drinks were ordered: whiskey for Matthew and sparkling water for Adesh. I asked for a glass of light ale, with a hint of disapproval from Adesh.

‘It’s spread by bats. Not something you need to be concerned with here in the UK.’

‘Very good. Well, please pass on my best wishes when you next see her.’

Adesh grinned.

‘Now, your message said you were on a new assignment about enhancement?’

‘Yes. I am to develop a strategy for the rollout of a nationally funded enhancement programme. It’s all very exciting, but I see significant hurdles already.’

‘Is this to be across the *entire* Indian population?’

‘Perhaps many years from now. I feel we must concentrate on the neediest to begin with—the poorest regions will gain the greatest benefit.’

Matthew swirled the ice around in his glass.

‘So true, and herein lies your first problem, eh ... how to get it to the people who need it? I presume those who can afford the treatment can already get hold of it, if they desire, whereas those who can’t, well ...’

‘You have got to the point as always, Matthew.’

‘And aside from the colossal logistics involved, what else is there?’

‘Money. Rahul and I estimate that to deliver this programme we will need 1.7 trillion rupees.’

Matthew blinked. ‘That’s twenty billion pounds, give or take.’

The financier glanced my way, and I nodded.

‘That’s right,’ Adesh continued. ‘And I know our government will not make that level of funds available. At best they will be comfortable committing a tenth of that.’

Matthew lent back in his chair. He ran his hand through his hair and looked carefully at Adesh.

‘This is a fundraising venture very much larger than anything we’ve done in the past. I’m not sure we can do it. It’ll be damn hard, old boy.’

‘If anyone can make it happen, Matthew, I know it’s you.’

‘Are you happy for me to bring in the Americans?’

‘Naturally. I don’t mind where the funds come from.’

Matthew drained the last of his drink. ‘Let’s eat and discuss it further.’

We followed Matthew to the dining room which, apart from a lone elderly man hunched over a steaming bowl, was empty of people. I marvelled how such a luxurious club could survive with so few clientele.

Two months after our initial meeting with Matthew, Adesh decided to leave the running of the NDA to his second-in-command and went on a fundraising campaign chasing Indian billionaires.

Ours is such a populous nation there were over a hundred and forty to choose from, yet only a handful seemed interested in supporting humanitarian efforts in their own country.

Nevertheless, Adesh secured a quarter of the funds needed from the Kotak family and the Patel brothers, people who had made fortunes in media, commodities, software, vaccines, and biopharmaceuticals. The Patel brothers were the biggest catch because they had the apparatus to produce and distribute the enhancement serums. This had the combined result of lowering our financial target and increasing their exposure across the nation. It's rare for a business to be purely benevolent when deciding what to do with money.

* * *

Kareena, a distinguished doctor in her own right, was also Adesh's most trusted ally and the person who he turned to whenever he had problems to discuss or resolve. She kept his eyes open to opportunities.

'Adesh, we have to consider the melanin in our skin.' Kareena was speaking to her husband's face on the laptop screen. She saw bags under his eyes and his cheeks drawn as though he hadn't eaten.

Adesh smiled back at his wife from across the continent. He was blessed this wonderful woman consented to spend her life with him. The separation was

getting harder as their positions became more senior, leading to them spending more time apart.

‘Yes, I know that darker skin receives less benefit from the treatment.’ Adesh spoke more with his hands than his voice. He’d always been an animated talker. ‘I don’t believe that needs to be the case, my love. We can design melanocytes to change the levels of eumelanin they make in the epidermis. We have people who are trying to change enhancement algal strains so they are more suitable to our skin.’

‘But the Public Health Research Institute says it will be years before we have better strains.’

‘The PHRI researchers can be—how best to say it ... conservative.’

‘What’s holding them back?’ asked Adesh.

‘Time and funds, like all things medical.’

‘What about the World Health Organisation?’

‘Their focus is Africa and will continue to be for decades. Regardless of China’s development initiatives in that continent for the last fifty years, nations that do not have coastlines or straightforward paths of trade will always struggle with economic growth, and so too, health, sanitation, and standards of living.’

‘Bigger hurdles than skin darkness. Isn’t it ironic this enhancement would do marvellous things in reducing their issues?’

‘We know that, but their leaders don’t have the courage to change.’ Kareena placed her finger tips on the screen. Adesh did the same from his side.

‘Besides, they don’t have an Adesh.’

* * *

Kareena wasn't the only person concerned about the efficacy of the enhancement with darker-skinned races. Potential donors used this as a reason to not be involved and continued directing their efforts and funds into more conventional support such as vaccinations and improving water supplies and sanitation to the poorest regions of the world. This was a source of great frustration for Matthew as he took supporting the Indian efforts to his philanthropic contacts in Europe. He sensed beneath their reluctance a level of racism.

Realising this needed to change, Matthew donated twenty-five million pounds of his own money for the research into improving strains suitable to melanin-rich skin types. This cash injection was enough to fast-track the development and once encouraging results appeared, the donation resistance softened, with people becoming interested in supporting the cause. But we all knew the hardest part was still to come.

The last task was figuring out how to deliver the operation to the people in need. India has only one hospital bed for every thousand people. For the second largest population and the fifth largest economy in the world, it's distressing that the hospital bed ratio is sitting at the same level as many African nations whose economies are one hundredth the size of ours. There had to be a way to conduct the operation in temporary field hospitals. Here, again, it was the efforts of Matthew that came to the rescue. He approached German pharmaceutical businesses involved in the WHO and humanitarian works in Central

and South America and Africa and the Middle East. Although, I would discover much later that wasn't where the rest of the money ended up coming from.

* * *

Time was critical to Matthew in the realm of finance, because vast sums were lost or made in a matter of minutes. Decisions made a day ahead of a collapse could save or ruin you. Financial time is unidirectional, so that once it has happened, it cannot be reversed. Whatever physicists might say about time being elastic, this didn't count for Matthew, and now he knew time was running out. He'd ridden time for many years, trading on the cusps, reading the world markets like a book where he saw all the sentences while other traders saw only a few words on the page. Time was against him now, and he sensed there were only days to go.

The call came in the evening as Matthew was playing billiards with his lover, a primary school teacher from Harrogate whose wife accepted the relationship as a necessary carnal bond between the two men. A biannual present of a top-of-the-line Range Rover helped smooth things over with Anthea and kept Matthew's relationship with Guy private and out of the media. None of this was new; Matthew's ancestors had used less generous variations of this arrangement over the centuries.

Matthew saw the number on the billiard room screen and, excusing himself from the game, descended downstairs to his study on the second floor. Guy knew

better than to ask why a Belarusian number would call at that time of the evening.

‘Yes, Yovani, what is it?’

‘Revenue and Customs are digging into our trades through the Antwerp Exchange. The servers have been opened and they’re sending trackers through them.’

This had come months earlier than Matthew had forecast. The new Scotland Yard Detective Superintendent of Cybercrime was making a name for himself as a brilliant tech specialist and had been released on the British financial world a year ago to claw back lost taxes. Matthew wondered how soon it would be before he got to meet him.

‘How much did you get out?’

‘Only a quarter. I’m sorry, Matviyko, but they have moved faster than any of us expected.’ Matthew heard Yovani move in his chair. ‘I have other clients who have lost more.’

Matthew could guess who Yovani’s other clients would be. So long as they stayed at arm’s length, he didn’t give a stuff about the oligarchs.

‘How long until they find what they’re after?’

‘I’d be surprised if they’re still looking tomorrow. They have sent daughter-trackers to other parts of the world.’

‘You said you could follow them once they’re in?’

‘I can see everything they do. They’re extremely sophisticated at breaking through dark ice, but they’re yet to learn how to cover their own tracks. They probably don’t feel they need to worry about who’s watching them.’

‘Let me know what they do. And make sure what’s out is safe.’

Matthew returned upstairs and sent Guy home so he could spend the rest of the evening making calls to various parts of the world.

* * *

Two days later, Matthew was visited by Detective Superintendent Charlie Wickham. He'd prepared himself for the encounter, yet it surprised him when the policeman approached his house alone. He'd expected the officer to bring witnesses for the meeting ... and handcuffs.

The superintendent didn't bother entering the manor. He stood at the front door, a step lower than Matthew, which Matthew found unnerving.

'We know you tracked us, and we know you're aware of the records we gathered,' Wickham said.

Matthew looked carefully into the face of the man who could ruin him if he were careless. He needed to see where this was leading before giving the policeman any acknowledgement he knew what he was talking about.

The detective looked harmless in his tortoiseshell glasses and ill-fitting, oversized coat.

'I expect you have a plan in place, Mr Stopford-Weatherbee. I'll wager you're washing the lot before we can reclaim it. Normally, I'd see it locked down tight straight away. Which we could have done as soon as we were in.'

The policeman looked over his shoulder at the gravel driveway and dark green lawns. Matthew followed his gaze and spotted two policemen beside the car the superintendent had arrived in.

‘Not this time, though. *This* time the criminals were too clever for us. They cleared out moments before we got there.’ Wickham smiled like he knew something that Matthew didn’t.

Matthew had considered the possibility of the detective superintendent going down this path. But not so quickly and in such a brazen way. Maybe that was why the other officers had stayed at the car: no witnesses to the conversation.

‘My dad worked as a district policeman in Goa on the West coast of India. Did you know that?’

Matthew’s eyes hardened. ‘You’re an easy man to research.’

‘Then you’d also know a group of thugs who were after his wallet nearly killed him. They didn’t know he was a policeman. That probably wouldn’t have stopped them. When people are desperately poor and hungry, they do rash things.’

The second son of the Earl of Aireborough raised his eyebrows. ‘And you’re telling me this, why?’

‘I’m going to take you down.’

‘I can fight this, you know.’

‘Perhaps you could. But you’ll lose, and your family, too. Why is it that whenever there is a public figure advocating reform or leading a fight against corruption, we find only one degree of separation to a culprit of the same crime they are speaking out against?’

‘You’re talking about my father?’

‘But that’s not what will happen, is it? We’ll leave Dad alone, and all the others. What happens instead is my men only find what they need and nothing more.’

'You'll let me do that?'

'Certainly. Because you got to your accounts in time to move the bulk of the money out *before* we could reclaim it.'

The base of Matthew's spine tingled. 'When you say, "bulk of the money", I assume you have in mind that not all of it will come back to me?'

'No. Some has to go elsewhere.'

'So, you're a dirty cop.'

The detective gave Matthew a sleepy smile. 'It's not into *my* account the funds are going.'

'And if that version of events were to happen, where would this extra money go?'

'You missed my earlier reference. Let's try again, shall we? What's keeping you busy these days, Mr Stopford-Weatherbee? I mean, apart from dodging tax?'

Oh shit, thought Matthew.

'Ahh ... I see you got it the second time round.'

'It would go to India.'

Superintendent Wickham grinned.

'What do you want in return? You don't plan to return to the commissioner empty-handed.'

'Only the two billion we went looking for. This country's need is far less, and that amount won't clean you out.'

Matthew's shoulders relaxed; there was a chance to salvage the situation.

'And what do you expect for India?'

'Ten should be enough for the programme you've been working so tirelessly on.'

'Ten!'

‘Like I said, it won’t clean you out.’

‘Ten billion! It bloody nearly will!’

The policeman folded his arms.

‘Oh, I doubt that, Mr Stopford-Weatherbee. There was much more in there only a week ago when we entered your accounts without your intermediary’s knowledge. The second time we made sure he saw us. Don’t look so surprised—Yovani Marchenko has played both sides of the road since he was thirteen. He’s not as clever as he likes to tell his clients.’

It was now clear that Wickham’s reputation was built on deals and veiled blackmail.

‘The choice is yours, Matthew, but that’s the only deal I’m willing to make. You get to keep your UK assets and we collect our two billion in lost taxes. Which, it may surprise you to learn, *exactly* matches the estimate we have made on lost revenue because of your illegal cryptocurrency transactions.’

Matthew watched as the superintendent snapped a loose thread from his coat arm.

‘I can promise you this will remain out of the press. The transaction to Her Majesty’s Revenue and Customs will be known by only three people. You have until six o’clock this evening to get your affairs in order, then we’re going in.’ The detective pushed the bridge of his glasses up his nose. ‘What will you tell everyone you did with the rest?’

Matthew raised his chin. ‘That I dug my family out of debt. Isn’t that always the way with the English aristocracy?’ he said through gritted teeth.

‘It’s a dirty feeling, isn’t it?’

‘What’s that?’

The policeman retreated down the steps that led to the gravel driveway.

‘Having something stolen from you. Enjoy the rest of your morning, Mr Stopford-Weatherbee.’

* * *

Matthew delivered the news as Adesh and I were having morning tea in the hotel lounge. We had been in London for the week developing a scaled-down version of the programme since we were still a long way from reaching the funds we needed.

Adesh’s face changed from inquisitive to jubilant. I put down my magazine as Adesh placed his phone on the glass table between us.

‘Can you repeat what you just said, please, Matthew. I’d like Rahul to hear it.’ Adesh’s voice was trembling.

‘We have secured the last of the funding. We’ve reached fifteen billion pounds, gentlemen. You have yourselves a programme!’

I could not help but cry out and throw my arms in the air. Adesh looked on the verge of tears as guests turned disapproving looks our way.

‘You are a marvel, Matthew, you truly are. Thank you so very much. A great many people will celebrate when they hear this. You should receive a knighthood for your efforts.’

‘It’s been an absolute pleasure to bring this together.’ I thought Matthew’s voice sounded unusually tired. ‘But

you, dear fellows, this is all yours and not mine. I'm merely the financial apparatus.'

'Where are you? Can you come join us at the Savoy?' Adesh asked.

'No such luck; I'm up in the country. But I'll be back in London tomorrow.'

Adesh and I locked eyes. 'We will stay until you're back. We'll not return to India with this wonderful news before seeing you and celebrating together. Rahul can change our flights.'

That evening was the loveliest I had ever experienced. Adesh and I talked so much the meal was almost spoilt. I can't for the life of me remember if we even ate.

* * *

As we waited for Matthew's arrival, Adesh and I took a walk in St James's Park. It was a clear autumn morning, and many Londoners were enjoying the last of the pleasant weather. A great many of the people we passed were enhanced—I would say more than a third of London's citizens appeared to have undergone the change.

The longer we walked, the quieter Adesh became until eventually he asked whether I thought we would ever catch up with the Europeans, would they always be ahead of us?

I knew it was a statement rather than a question, so left it unanswered.



Mutation 2

Seoul, 2054

By the time Seo-Yun had showered, the windows on the western side of the apartment were dimmed, and she now walked comfortably around the rooms naked. The only prying eyes would come from an apartment in an opposite building at a similar level to her sixty-second-floor penthouse. She'd seen a man there with a telescope and she imagined he had a filter to see through her window shading and into the rooms on her side. It didn't bother her he kept the telescope in his bedroom.

'I didn't know you were going out?' A female digital voice spoke from no clear direction in Seo-Yun's living room.

'Do I need to go out to wear pleasant things?'

Min—the name given by Seo-Yun to her apartment AI—searched for an appropriate answer.

'No, but you've only worn that underwear when you plan to sleep with a man.'

The clothes were on Seo-Yun's bed, and Min was so advanced she had full visual recognition of all objects throughout the apartment.

'Maybe I will wear them to feel special.'

Min searched again. 'I don't believe you.'

'Don't you? Why?' Seo-Yun leaned forward in the bathroom mirror to look around her eyes.

'Because you told me you were expecting to see someone this evening,' replied the digital voice.

'Sometimes it worries me you remember everything.'

'Can't help it, my love, that's what—Seo-Yun, you have a call coming in.'

'Who is it?'

'It's deeply encrypted. Signal from northern Europe, before that it was South Africa, and before that—'

'We don't need its path, Min. I'll take it.'

'I will watch and if it appears wrong—'

'Yes, I know. Here on the bathroom mirror is fine, audio only on our side, and find its source for me.'

A patch of the mirror changed to become a video screen. It was an anime penguin.

'Yes?'

'Is that Yellow Flower?' said the scrambled-voiced penguin.

Seo-Yun rolled her eyes. She wondered about some people; she really did.

'Who's this?'

'A new client.'

Seo-Yun already had plans for the night and hoped the booking would be for another time.

‘I want to engage the full service.’

Seo-Yun paused; she hadn’t performed a full service for over a year.

‘Who and where?’

‘I will send you an image. It will fast decay so look at it carefully. It’s in your city, and I would like it tonight.’

A large dot appeared beside the penguin and Seo-Yun tapped it. The dot expanded to show a picture of a young businessman in a tailored suit. Confident and good looking. The man must be important, Seo-Yun thought to herself, or dangerous, or just working for the wrong company.

‘My fee is one million. Half now and rest at completion.’ Seo-Yun tapped another part of the mirror. ‘I have sent you the payment details.’

‘That’s more than I expected!’

‘It can be tonight if it’s so important to you. You’ll find my fee is standard, and there’s a premium because you’ve made me bump another job.’

The General was in town again, and now he’d have to wait another night. She’d message him in a minute—he’d understand. It wasn’t the first time he’d had to make way for a client. On the other end of the line, the new client was still thinking. He obviously hadn’t done this before.

‘I accept. I will let him know and make sure he’s at Periwinkles at 11 p.m. Do you know it?’

Seo-Yun stopped inspecting her eyes.

‘Of course—it’s a gin bar in Yongsan-gu. You have the account details now. I will wait for the first payment.’

Seo-Yun muted the call and took up an eyeliner pencil. It took a full twenty seconds because of the VPN paths and layers of encryption, but finally, two messages appeared in the top right of Seo-Yun's bathroom mirror. The first was from one of her seven bank accounts—this one was orbiting the earth at a distance of one hundred and fifty kilometres. It was extremely expensive and difficult to get, but satellite accounts were incredibly secure. Much more so than the old land-based accounts with optic fibre cables into the building. Her account showed a recent deposit of 500,000 e-credits.

The second message below it was evidence Min had traced the call to an office in the financial part of the city, coming from a mobile, but that didn't stop Min finding the DNA link to the device, and then it was simple to retrieve the registered owner: a Mr Julian Lee.

'His name is Lucas; make sure he has a wonderful time.'

Seo-Yun unmuted her side.

'The payment has come through. You have my services for the evening. But I expect the second payment by midnight, regardless of whether or not I'm still with him then. Extra details for the second payment are now on your screen.'

'I'm only paying the rest when I know you've been successful.'

'My clients are always satisfied.'

'I don't care about your other clients; no settlement until I know he's finished.'

‘By midnight ... Julian Lee.’ Seo-Yun broke the link before the man could reply.

* * *

For the rest of the early evening, Seo-Yun lay on her bed in her underwear and watched television, fidgeting all the while, and getting up to pace around her apartment many times with no purpose in mind. Min heated a pre-made meal of *bulgogi* for her, a wonderfully spicy beef protein hit for a woman who rarely needed to eat. Seo-Yun made it a ritual to always eat before a meeting, and in this case, it would also help absorb the alcohol so her mind stayed alert.

When the time came to leave, Seo-Yun chose an alabaster business suit from her extensive collection of clothes. Executives used Periwinkles, and she needed to look like a businesswoman meeting a colleague or boyfriend. She didn’t want to draw attention to herself by wearing something overly revealing.

Not that that was difficult for her—even with her rare yellow skin, Seo-Yun seemed invisible and, for whatever strange reason, people didn’t seem to remember her. She was pretty without being beautiful, five-foot-three and one hundred and twenty pounds, so very much average for a Korean girl. She kept her hair naturally dark, unlike the city women who dyed theirs light to look Western. Seo-Yun was traditional: she grew bonsai in her apartment, slept on a floor yo with a wheat-filled pillow, and liked to write *sijo* poetry when the weather was warm.

Seo-Yun had been alone in the world since her parents died in the Korean unification of '41 and her only close friend had moved soon after to Japan. She liked not having anyone interrupt her work, and she always had Min, who was never judgmental and was forever reliable. After five years together, her apartment AI knew Seo-Yun's moods and behaviour intimately. It was an ideal relationship; Seo-Yun didn't feel the need to have flawed people or demanding relatives in her life. Also, she could keep things from Min that would be hard to hide from human companions.

As she went down the lift, Seo-Yun ordered a taxi with her Samsung bracelet. The bar was several blocks away across the Hannam Bridge and she didn't want to strut the crowded streets in high heels. Outside her building, she headed toward the financial centre, and the cab found her only a street away, drawn to the signal from her wrist. The autonomous vehicle pulled alongside and opened its door for her to climb in. She didn't need to speak to the vehicle's AI; instead Seo-Yun ran her bracelet under the car's scanner which confirmed her identity and her destination, and when she arrived at the bar, it would also complete her payment.

In near silence, the electric vehicle merged seamlessly into the dense stream of traffic. Seo-Yun watched the buzz of life pass by as she sat in the warmth of the plastic-smelling car.

Seo-Yun had lied about Periwinkles Bar—she'd never been there before. That part of the city repulsed her with its gravity of money-hungry, ruthless people at its

core. She preferred Confucian gardens and contemplation, but her work drew her into the city and that's why she lived in an exclusive Gangnam apartment. Seo-Yun was a twenty-three-year-old modern-day Kisaeng; an escort who serviced only the highest senior executives who lived in or visited her city, those types of men who would rather bed a pretty girl at the end of a busy day than video-link their entitled brats at home. She'd built a clientele of powerful men who usually came to her, not the other way around, which was another reason to have the expensive apartment where it was.

* * *

As she expected, the bar was busy at 11 pm, even though it was midweek. She scanned the room and caught sight of her man sitting in a leather-lined booth, away from the bar area and shrouded in subtle lighting. He'd chosen an excellent spot for her without him even realising, and Seo-Yun decided there and then that she wouldn't need to leave the premises to complete her terms of employment for the evening. Seo-Yun guessed his age at around late twenties; it was much easier to pick a Westerner's age than it was an Asian. Seo-Yun walked up to the booth.

'Lucas?'

'Yes?'

Seo-Yun held out her hand. 'I'm Saahira: pleased to meet you.'

'Well, hi!' said Lucas, with an obvious look of pleasure on his face at seeing his blind date was elegant and petite.

'Here ... take a seat. I haven't seen a yellow one of you before.'

Seo-Yun slid in beside the man. She wasn't being paid to sit away from him.

'I'm unique. My mother was an early enhancer in the '30s and I was naturally born, not in vitro like all the rest are these days.'

'It's attractive. Like the colour of mustard.'

'I'm not sure that sounds appealing, but thank you; it's nice to be different, and it comes with benefits.'

Blushing from his comment, the man pointed to the glasses on the table before them.

'I ordered you a soju martini. Hope you don't mind. You can have something else—anything you'd like.'

Seo-Yun lifted the glass by its thin stem and took a suggestive sip.

'It's perfect ... I see you haven't changed your own body—is there any reason for that?'

The man shook his head. 'Too risky. I have allergies; besides, I do just fine without.'

She smiled at him with 50,000 e-credits of immaculate dental work.

'I imagine you do.'

The man leaned back against the leather booth and ran his hand down his tie like he'd done this many times before.

'I have enhancements you can't see, such as memory and stamina,' he said as he cupped his hand to his crotch.

Seo-Yun kept her own smile in place and put a hand on his thigh.

‘We must see about that. I also have enhancements that are hidden.’

* * *

Lucas was charming and in a mood to chat, which was fine with Seo-Yun; she could talk or listen depending on the client, and changed quickly as she measured her client. After an out-of-place discussion on the looming trade issues between Korea and mainland China, he told her about a deal he had with a work competitor.

‘You see the thing is, we have this competition. We sometimes bid against the same business clients and when we do, we make a deal on the side that whoever wins the contract needs to give the loser a present.’ Seo-Yun had already guessed this was the case. It was hardly an original idea. ‘Since we started this game, I’ve never lost, at least not between him and me. Every time I’ve won, I’ve sent him a girl for the night.’

‘But this time you lost?’ She smiled.

‘Looking at you, I wouldn’t say I lost. He can have the contract, for all I care. He only got it because I had our guys withdraw from the tender. I felt it was about time he gave me something in return.’

Seo-Yun produced a well-rehearsed laugh designed to make a man feel he was special. Lucas finished his glass and tapped on a digital tablet for someone to bring more of the same to them. Seo-Yun took the break in talking to glance around. People weren’t paying the couple any attention. No reason they would. Their booth was secluded and private.

She ran her hand along the inside of his thigh again and asked him to tell her more about the work he did. How he outsmarted his friend each time. She had an urge to kiss this good-looking man, but she'd have to wait; she wasn't ready to give him one of her remarkable kisses yet.

It was a gift she'd discovered by accident not long after she started as an escort. It was the first time she'd come across a man who hadn't been attractive; instead he was a fleshy Japanese car executive whose eyes were too close together and who couldn't possibly have been able to see his own dick when he looked down.

The night had started with an extravagant dinner where the Japanese man had drunk and fed himself while Seo-Yun was made to dance to the enjoyment of his invited colleagues. What she wasn't to know was that later he would bind and beat her when they were alone in his room.

He was careful to leave her face, but he took to thrashing her legs and arse with a switch he'd brought to the hotel for the occasion. She was bruised and in some parts bleeding by the time he reached the peak of arousal he needed to move to the next stage. All the while, he'd kept her blindfolded, and in this horrified state Seo-Yun had muffled her cries into the pillow and clenched her jaw until she'd felt one of her molars crack. Throughout this humiliation, Seo-Yun's mouth had become acidic, like caustic indigestion, but sharper and metallic, which had become so strong that her lips had tingled with pins and needles.

When the mattress groaned from the overweight man climbing onto it, now naked and pale, he'd untied her and rolled her onto her back. He demanded she look at him. It took a hard slap for her to do so, as he pressed his weight upon her slight frame and wrapped his wet mouth over hers. Seo-Yun had gagged when he forced his tongue in her mouth.

Then just as suddenly the man had got off her.

Seo-Yun had laid there shaking with her arms wrapped across her chest, praying for the nightmare to stop, but the man hadn't come back to humiliate her. When she'd enough confidence to move, Seo-Yun found him on the carpet beside the bed on his back, his nose bleeding and his eyes staring like a fish on ice. She'd held her breath and watched, but nothing happened.

Around his mouth there was froth, and she'd then realised he was dead.

Seo-Yun had raced to get away from that room of hell, but not before dressing and rinsing her mouth in the bathroom basin. That night had haunted her for months and she'd expected the police at any moment to come through her door and take her away, but no-one came. She guessed the disgusting man had had a heart attack, a risk for any escort because their clients tended to be men with high blood pressure. She assumed it wasn't her fault the man had died, but also guessed the authorities wouldn't see it that way, especially with all the injuries to her body.

It wasn't until one day when she was pruning a bonsai fir tree that Seo-Yun learnt what had really

happened. Without paying attention, she'd nicked the edge of her thumb with the tip of her *shohin* shears. It was only a slight cut but it stung, so she'd gone to the bathroom to wash it under the tap. Her skin healed quickly like any enhanced person, but she still wanted to clean the wound before applying a small Band-Aid. As she washed her thumb in the basin, she got a similar caustic taste in her mouth like she'd had when the sadist was beating her. She found it got stronger when she held the cut open to wash it and the pain in her thumb increased. When she spat into the basin, her saliva was a faint yellow.

She'd got Min to research for her what it could mean, and after reading far and wide the AI came up with the theory Seo-Yun could create a toxin when under stress. After all, she was an extremely rare strain of enhancer, perhaps unique, and maybe the algae she was born with had mutated. Min could not be sure as there seemed to be no recorded cases like it. Why it had never happened before, she could not explain. Maybe it was something that came with age.

Seo-Yun had practised at home until she found she could start the response by putting her body under the smallest amount of pain—something as simple as pushing a pin into her finger. It had given her a power she could now use to make a lot of money.

* * *

‘What’s the matter?’ Lucas said after he’d kissed Seo-Yun.

‘It’s nothing ... my shoes pinch. Let me get closer to you.’

Seo-Yun slid the pin, the special one she’d sown into the hem of her skirt, deep into her finger again.

‘I can feel you getting hot. Girls like you always get hot when you’re excited. I like that, my hand is tingling on your arm.’

Seo-Yun shuffled closer so she could kiss him properly and to give her body time to react. The change in her mouth had begun. She leaned further forward to place her hands on his face and to kiss him deeply this time, increasing the contact between them so that the flood of deadly microcystins in her saliva could enter his mouth.

She’d become so good at this now that Seo-Yun could kill without the person moving or showing signs of what was happening. To anyone who was watching, they were just two lovers embracing.

After a full ten seconds of running their tongues together, Seo-Yun released Lucas from her hold. He saw her smiling at him, but there were too many teeth. The coloured bottles behind the bar appeared to be moving away as he stared around. She was whispering something in his ear, something about Julian, but the words made little sense to him. Within seconds of that first taste of her saliva his heart soared to four hundred beats a minute then ruptured. Seo-Yun wiped a slight amount of blood from his left nostril.

She left Lucas propped up against the leather under the subtle light of the secluded lounge. At the door, she

waited while a man opened it for her, then stepped out of the Periwinkles Bar without a backward look.

* * *

By the time Seo-Yun had returned to her apartment, it was past midnight.

‘Hello Min,’ she said to her AI friend.

‘You’re back early. I thought you would be gone much longer.’

‘My date got boring. Have there been any further transactions?’

‘None since your caller earlier this evening.’

‘Please check again, will you?’

It took only a moment for Min to scan the accounts.

‘Still nothing. But there’s a message left in the account you asked for the remaining payment to go. I missed it earlier, because I wasn’t expecting it, sorry. Arrived 10:05 pm.’

‘A message? Put it on the lounge monitor.’

I do not tolerate threats. There is no last payment. If I sense a sign of you trying to find me, I will release a remotely stored message that will go to the police. It contains the means to contact you and what you have done.

Seo-Yun sighed and swore quietly. ‘Min!’

‘I will start the search now. It will take time to find if he really has put something somewhere, but I will find it, I promise you.’

‘Please do, Min. I need not tell you to clean your tracks. I’m off to shower and sleep. I haven’t rested for days.’

‘Goodnight, sweetheart. I’m sorry this has happened.’

It took Min what remained of the night to trace every line, passage, reference, and ghost that had come from Julian Lee’s phone, home computer, and work computer. She traced everything linked to the man. Min then went searching along any of his other connections, family, friends, or associates and their electronic devices, from their AI refrigerator to their laptops. From this, she searched even further out, as a spider feels the faintest movement across the tension of an enormous and intricate web.

Min had cost Seo-Yun four times the value of her luxurious Gangnam apartment. Over ten million credits. Not only was Min the absolute best civilians could buy in Korea, she had several extra neural layers that a senior general in the Korean military had given Seo-Yun. The same man who now enjoyed her attention free of charge whenever he visited Seoul.

By the time Seo-Yun woke the following day, Min had found three versions of Julian Lee’s threat. All had now been irrevocably destroyed, and any image of their existence also wiped. At one point, this had caused the destruction of an email cloud data server used by university students in, of all places, Portland, Oregon. Min was military-level good.

* * *

Julian Lee’s flat was uncomfortably close to Seo-Yun’s, only a few blocks away in Yeoksam-dong. At first, this made Seo-Yun very anxious about perpetrating a break-in

so close to her own home but, upon reflection, she thought it didn't really make a difference where it was, and if she was seen entering the building, then at least she would look like someone who lived in the area.

She found the apartment on the fifth floor, number 506, a heart-thumping walk down a long-carpeted corridor.

At the door, she pulled her glove down enough to read the door's access code on her wrist provided by Min, then after slipping covers over her hair and both her shoes, Seo-Yun was inside his apartment. All the while, she had Min track Julian's bracelet location, telling her where he was through a micro-plug in her ear. At the time of entry, Julian was in a meeting room a thirty-minute drive across the city in heavy traffic. Her own bracelet she'd left behind for obvious reasons.

Seo-Yun didn't wait to look around the apartment but went straight to find the kitchen.

Standing before a glass refrigerator, she put her left hand into her coat pocket and pushed her finger once again onto a pin she had brought for the occasion. She felt the pain and familiar rush as her body made its microcystins. Just to be sure, she pricked her thumb also, and harder this time. As Seo-Yun sweated beneath her clothing, she raised a gloved hand to her mouth, and running her tongue around the outside of her gums until she thought she had enough, she dribbled a pool of spittle onto her palm. She then slid the wet glove over the refrigerator's handle, covering it with a thin film of lethal toxins. It would be dry and invisible within minutes, and deadly for days.

That evening, the first thing Julian Lee did after taking his coat and tie off and throwing them over the back of the lounge was to reach into the refrigerator for a cold Hite beer. It wasn't until two days later that his boss reported him absent from work and Julian's sister was called to see whether Julian was at his apartment sick, or whether he'd gone away without telling anyone.

The cherries were in full blossom and had carpeted the gardens with a snow of petals. Seo-Yun was enjoying the early April sunlight and the faint smell of flowers in the air. The Seoul Forest was her favourite place in all the city, and she hoped one day she no longer needed to work and could buy a place far away in the countryside, up in the hills, to have her own trees and raked paths, with a koi pond and trickling fountain. She walked into the middle of the gardens where there was a stone seat she liked to use and sat to read an old Murakami novel.

She'd come to love her apartment's artificial mind like a soulmate. There was no way Seo-Yun could keep Min, though—not now that Min had broken the law by breaking into Julian Lee's apartment access code. Any worthwhile security company could trace it back to Min, regardless of how well the computer had covered her tracks. There would be a record somewhere, just a thread, and that would be enough to bring the police to Seo-Yun. She could not have that happen, so she'd asked the General to erase Min.

For the moment, the assassin needed something to distract her from the sorrow of destroying her only friend and she hoped Murakami would take her far away. If he failed, she would write a poem for Min.

Across the city, a forensic squad were working on fingerprints and signs of hair or skin cells throughout Julian Lee's apartment. They were turning the place inside out and had so far picked up DNA signatures of people related to Julian, and some of his co-workers. Although the businessman had been fastidious, there was genetic material everywhere. Julian must have been sociable when he was alive and often had visitors over. Three old girlfriends came up on the scans, plus some escorts known to the police, all of whom would be obvious people for the authorities to have discussions with.

It was only when one technician ran a UV light across the refrigerator door handle that he thought to test the surface for more than just fingerprints or DNA. It was a long shot: fridge handles were always forensically noisy because of the contamination of bacteria and god knows whatever else. *Who knows*, the technician thought to himself, perhaps there had been a nasty bug in the apartment.

*Looking inside the pool
at dragons swirling.
A pigeon calls
and clears the air.
Tonight, I will imagine you, and
in the hills we will dream alone.*

Seo-Yun Ri 2054



Sequence 8

Cologne, 2061

It appeared Elowen's legs were never sure where her feet would land. She knew men looked at her sideways in the street and it had to be because of her stupid walk. She did not understand they found her innocently attractive, and there was no use telling her that was the case. Elowen struggled with men, and that was the end of it. She didn't like her figure and worked to hide it under shapeless clothes, she didn't like her unusual walk but, most of all, she hated her name. For God's sake, who called their child *Elowen* in the twenty-first century? It was just another thing that made her stand out from the crowd, which was the last thing in the world she wanted. The only part of her she didn't mind was her lopsided smile—she thought it looked inscrutable. Elowen was sometimes happy to share her smile.

This unusual girl worked in a second-hand bookshop in Cologne owned by a man who had not changed his

shop's appearance, or his own, in fifty years. Inside, it was so cluttered with books they had stacked them on the floor. The collections were becoming so many and jumbled that the windows, with their flaking paint and jammed latches, were shrinking as the paper walls closed in around them. It was no surprise the shop wasn't profitable, yet it remained alive due, in some part, to a dedicated clientele and also by the old man not being greedy. The Colonial and Antiquarian Bookshop on Honour Road was known, by those interested, as being the only spot in the city to find German romanticist literature and, if you were so inclined, obscure journals and periodicals from the nineteenth century.

Elowen felt safe here inside the caves of novels with stories of journeys and excitement held within the pages waiting to be released by opening the covers, like freeing birds from captivity. She loved books, but her favourite part of the shop was far away in the back room and on the highest shelves. You needed a library ladder to reach these small crinkled volumes with bindings ready to snap if not nursed. These were the long-cancelled subscriptions to a small and exclusive readership: collected works of Victorian tales of erotica.

When business was slow, which was most days in the colder months, the elderly owner would wander off at lunchtime to call upon the Milanese woman who owned a café on the next block. It was a one-sided love affair that had gone on for half a century.

Elowen used this privacy to visit her special shelves because she would never have asked the old man if she

could borrow or buy any of these scandalous novels. It would ruin how he thought of her.

Once she'd picked a collection, she would randomly open to a page; it didn't matter where, because the fantasies were by women for men and the audience had not paid for subtlety. This meant within a paragraph Elowen knew *exactly* what was happening in explicit detail. The female characters were bold and uninhibited, exposing their desires and taking what they wanted. It brought butterflies to her stomach. She'd skip paragraphs in her hurry to find the parts where the girls were taken against their judgement by sexually magnetic men, and when she found the graphic sex scenes, she would masturbate quickly before someone entered the shop.

Elowen lived in a single bed flat with her ancient cat called Unsinkable Sam. She'd never known her father—Elowen resulted from her mother's one-night stand with an English-speaking man travelling through Europe. Someone too young and carefree to stay around. Through social media, her mother had followed her father's life since Elowen was born, but she'd never contacted him after he disagreed with her choice to keep their child. It was hardly an awful choice on his behalf: her mother was nineteen when Elowen was born and her father not much older. Elowen knew her father's name and the city where he lived on the other side of the world, but she never tried to contact him in her life. She also knew that somewhere out there she had a younger half-brother called Harry who was making his name as an artist, but neither of these men registered in her life.

Besides her mother, Elowen's contact with life outside the bookshop was a small group of friends and her fellow art class students. She took the classes not because they drove her to be artistic—she realised pretty quickly she had no skill in that field—but more by the aspiration she found in art books. Elowen drew inspiration from the Renaissance masters and would stare at the voluptuous nudes and the muscular heroes of antiquity. She longed to take something living and, through her hand, transpose it to canvas. Art was a doorway to another world, like her novels, and eventually she built up the courage to attend a life drawing class once a week in the evenings. She did not understand how much two hours of staring at naked women only increased her frustration.

Elowen had been so focused on taping a fresh sheet of paper to her sketch board that when she looked up, she was surprised to see a man sitting on the stool naked. She had heard no-one enter. The class was entirely women, so Elowen naturally assumed they would only draw females. Plus, her teacher said women's bodies were easier to sketch with their simple sweeping curves, and Elowen had become used to the female structure from the ribcage out around the hips then tapering to the ankles in a long, smooth arch. Her charcoal would powder as she pressed the stick against the paper leaving strokes thick, dramatic, and final. She really felt she was getting the hang of it.

Elowen was confident drawing the general shape of a woman, but now she froze at the sight of a healthy young man before her with lean, angular shoulders. She'd never seen a man naked in the open. The few

intimate occasions in her past had been clumsy and in darkness—encounters vivid in her memory for all the wrong reasons.

She was anxious, but captivated, because the man sitting there with a leg stretched out and the other resting on the footrest was an enhancer the colour of cider. Plenty of enhancers came to the bookshop, but very few of her friends could afford the change. She'd learned to tell the difference between people who had the medical procedure as an adult and those who were born enhanced: the colour from the born ones glowed from within.

The naked man before her radiated with colour and vitality. He must have been born that way.

Elowen turned her attention to her easel, afraid someone had caught her staring. She pressed down the last corner of masking tape once again, then took a fresh piece of willow from the box on the easel's rail. It was an especially thick piece, but it felt frail and ready to snap at any moment. She checked either side of her to see whether anyone else was struggling.

The bitches were drawing like there was nothing new to see.

With a shaking hand, she began tracing the outlines of his figure so that by the time the teacher had got to her, Elowen had the cylinders and frames of his form in place. It was a mess.

'No, this arm is further back, and this one should be further forward,' said the teacher over Elowen's shoulder. 'Hold your stick up and measure his dimensions against it.'

There was a giggle from somewhere in the room.

Doing as she was told, Elowen looked into the eyes of the model whose attention was drawn to the talking. Instantly her neck burned.

‘See here!’ The teacher placed her own stub to the paper, and deftly swept across Elowen’s lines. The mortified young woman said nothing. ‘You’re better than this, try a fresh sheet.’

Elowen’s drawings only got worse as the evening went on.

When the lesson finally ended, Elowen stuffed her equipment into her bag and left without the usual goodbyes. Back in the safety of her flat, she boiled with embarrassment and desire swirling around in her mind. She tried to bring some order back to her life and set to work on a dinner of pasta and cheese; all the while, Unsinkable Sam rubbed against her legs, reminding his wayward mistress that he was meant to be fed first.

The meal was too quick to prepare and hadn’t given Elowen time to clear her mind. She gave the cat the pasta and collapsed on her cotton sofa in a cloud of cushions and the naked man in her mind.

It was like this that she eventually closed her eyes to the sound of the cat purring beside her; it was too early to sleep, and she wasn’t tired.

Elowen lay there with her eyes closed and her mind with the man in the art class.

She’d done this before, but not for a long time at home. It was always about customers in the bookshop, handsome men with powerful hands, hands that she

saw when they gave her books or money and hands that sometimes touched against hers. But this image was different now, because the man was exposed in a powerful and enhanced state, like a living bronze. She moved her hand down her dress and, pulling back the material, slipped her hand under the elastic of her knickers.

The following day Elowen was late for work. The old man asked if she was feeling well, saying Elowen looked pale, and would she like a glass of water? All concerns were brushed aside as Elowen went about her chores with more spirit than normal and the old man thought nothing more of it that morning, other than to say that she seemed distant. That was until a bookshop regular, a middle-aged woman thick with foundation and dripping in jewellery, told him that the girl was in love.

‘Oh!’

Startled by this comment made only feet away from her as though she wasn’t there, Elowen sought tasks elsewhere. She weaved her way to the back room and stood breathless amongst the volumes of art and fashion through the ages and beneath her favourite section of all. It would be a long five days until the next art lesson.

But the break had the effect of strengthening her confidence so that by the time the lesson was upon her, Elowen resolved to do something about it.

* * *

‘Darling, that is much better!’

The teacher called all her students ‘darling’. It fed the persona she’d crafted—an unappreciated artist ignored

by an uncultured public. It was a false image: she wasn't a talented artist, for as the saying goes, 'those who can't, teach'.

Being called *darling* irritated Elowen more than people with dirty fingernails.

'The torso and pelvis look better; your perspective and dimensions are improving. See what you can do when you put your mind to it? Come here, everyone, and look at this.'

To the sound of scraping of chairs, the others gathered around to look at Elowen's sketch.

Elowen was furious. Her drawings weren't for other people to judge. The sketches never felt finished, and she hated the idea that people would think what they saw was final. It never was. There was always more to do, little imperfections that grated on her mind. She didn't understand that the imperfections made the sketches interesting, like Elowen and her smile.

'That's great, Ellie! I love how you've concentrated on his pelvis!'

In the ripple of laughter, it took Elowen all her strength to not run from the room.

* * *

At the end of the lesson, the model retired behind a screen in the room's corner as the women packed up their easels. Elowen took her time putting away her materials and rolling that evening's drawings into a plastic portfolio. Every sketch she ever did was kept.

When she'd delayed as long as she thought she could, and all the students had left, the model finally reappeared

in jeans and a full-length navy overcoat, a thin yellow scarf draped around his neck. As they walked down the creaking timber stairs that lead from the hall to the street, neither spoke, but she felt a tension that they were waiting until they were outside to do so.

The cold evening air puffed from their mouths as they stepped out onto the street. For some inexplicable reason, and to her everlasting embarrassment when she recalled it later, Elowen asked whether he modelled privately. It was a ridiculous question; she didn't know why she'd asked it. The idea had been to just ask him over for dinner.

'Don't you like drawing here?' he asked.

'Well, yes ... but I don't like people seeing what I draw.'

'Why?'

Elowen wanted to turn away, but her legs refused to obey. There was something magnetic about this man, like a character from one of her novels.

'I just don't.'

'Can I tell you something?' The model spoke German well, with an English accent beneath it—from where she wasn't sure, but it wasn't England. She liked its nasal sound. Elowen wanted to say, *Yes, tell me anything you want, just keep talking.*

'I've only started doing this to use up time in the evenings. It's not that fun being naked in front of a group of clothed women, so this is my last night.'

Elowen fought the urge to touch his arm. She took a sheet of paper from her bag and tore off a corner to write her address.

‘Can you come tomorrow evening?’

Now it was his turn to appear nervous.

‘Please. I’ll pay you with dinner.’ The man smiled, and Elowen’s heart skipped.

‘That sounds like a date rather than a drawing lesson. What time? I work my own hours, so I can fit in with you.’

‘I can’t get home before six.’ Elowen expected him to say something more, but he simply looked at her. ‘I should get going; my cat will be hungry.’

‘Okay, tomorrow then.’ He pulled up the collar of his coat. ‘Would you like me to walk you home? I’m not doing anything.’

Elowen was grateful for the streetlamp shadow covering her in semi-darkness. The words in her head were again not those that now came from her mouth.

‘No. I’ll be fine. My bus is close to here.’

She saw his face highlighted from the roadside, the angles of his cheekbones and chin etched by the light coming from windows around the street. He looked both angelic and demonic with his face cast as two sides. Elowen waited for him to ask again and this time she would control her mouth. Instead he smiled and said goodnight.

Elowen dropped her eyes to the cobblestones and walked away.

If she were asked to describe what happened the following day, Elowen would have nothing to tell you. Customers were shadows and conversations were background noise. By the time she left the bookshop, she

did not realise it had been one of the busiest days they had seen in the four years she'd worked there.

Once at home, she quickly set to work organising a drawing area. Elowen had never drawn much at home, besides a bit of still life, so she cleared an area on her little kitchen table and laid out her equipment. A stack of reference books served as a makeshift easel to lean a piece of board against, with her kneadable rubber and sticks of charcoal in front.

The area so prepared, she went about tidying the rest of the room to make it look presentable.

She wasn't a messy person, although, like most people who live alone, there was a measure of clutter that surrounds a solitary life. All the while, she was mindful of not wanting it to look as though she'd prepared the place just for him.

* * *

When he arrived at a quarter past six, it surprised Elowen at how comfortable the conversation flowed, and there was no sign of hesitation in starting the drawing session. Without her asking, he removed only his shirt and left his jeans on.

Elowen was aware of her mind floating as she scratched lines across the page. She dreamed of touching him. As she took in each part of his body, her dream changed; one moment his arms were around her, the next his legs were pressed against hers. Finally, she imagined his hands on her face.

Their intimacy did not appear to have had any effect upon him. He remained detached to her attention and didn't speak. In the beginning, this helped Elowen concentrate, but after a time her dreams turned to worries.

It was no use; Elowen could feel her blood flowing like honey through the skin of her stomach. She could smell him: there was a salty tang in the air that she'd never smelled in her flat before. Her focus wavered, forcing her to remember the drawing rules: foreshorten the limbs towards her, use perspective guidelines for vanishing points, hold the charcoal lightly like it's about to fall from your fingers.

But it was getting hopeless.

Elowen longed him to take her, the craving pushing aside her disguise of drawing, and she felt certain that any moment she could faint if she kept looking at him.

She wiped the soot from her fingers and pushed back her chair.

'Let's have a break. I haven't anything special to drink, I'm afraid: only tea.'

'That's fine.' Elowen stood up. 'I still don't know your name.'

Elowen faltered, unsure whether it would break the spell when she told him.

'It's Elowen.'

He appeared to weigh her name in his mind but said nothing.

Smiling to herself, Elowen crossed over to the kitchen, which was all part of the single living area of her flat. Only the bedroom, bathroom, and a small balcony

were separate. She lifted the kettle from its stand and placed it under the tap with a rising pitch as the vessel filled.

Elowen was conscious of him looking at her. She could feel his eyes travelling down her back, taking in her lines. Her novels told her men like the shape of a woman's bottom because it reminded them of breasts. Or was it the other way around? She prayed that he like the shape of her bottom.

Was he imagining it without clothes? Had he looked at many women before?

Naturally he had: he's handsome and young—there would have had many in his past. Maybe he's even married. She hadn't seen a ring, but many men chose not to wear rings these days.

Absorbed in her thoughts, Elowen didn't hear him approach until he was close behind and had put his hands on her arms. She stiffened at his touch; should she turn around or stay still?

He answered her by gently kissing her on the neck, then again, then a third time, longer and harder, as though he was drawing blood from her skin. She felt his hands tighten on her arms as he moved his mouth down her neck and onto the rounds of her shoulders, repeating his tender kissing slowly down her neck until Elowen's skin floated from her body like baptismal washing.

Elowen turned and hungrily pressed her mouth against his, searching inside him to draw from it the source of his life. His mouth responded with the lips that had been like butterflies on her neck now becoming

vigorous and brutal. She was being devoured by this insatiable creature ravishing her.

He slid his hands from her arms, then down her back to the hem of her dress. There, she felt his fingers lift the material. Like his mouth had, so, too, his hands now changed. What was sensitive now became rough and forceful, gripping exposed flesh roughly, kneading his fingers through the thin fabric of her underwear. She could feel him pressed against her, his heat radiating through her cotton clothing.

Elowen closed her eyes and gasped wordlessly for him to not stop.

Then she was weightless as he lifted her onto the bench, and she felt herself dilate at his pressure. The model leaned back so he could look into her eyes. He started talking to her from one of her novels, saying how much he desired her, describing what he was doing to her.

She told him to do it all.

Her fingers traced the veins along his arms, her thighs wrapped around his waist and gripped him. Elowen was being ravished by a demon of her stories, a demigod that was pulling her body apart to satisfy the ravenous lust ballooning inside her.

When it was over, they embraced on the sofa, dishevelled and silent. It was like this after several minutes that Elowen ran her fingers across his chest, playing with the hairs, kissing tenderly, looking into his eyes again. Kissing him flicked a switch in her mind. Her hand passed down over his stomach, taut and strong where she could feel the muscles beneath the skin, then she reached

the matt of his hair. The room reeked of their bodies as they began again.

* * *

Elowen floated around the bookshop the next day. The old bookseller kept his counsel because he knew his assistant's state of mind, so he left her to her happiness. Elowen wore a short dress that day because she was tender, and she felt it best to let cool air get to her. She was mindful of using the store's ladder in this condition and was shocked when she heard a male voice below her.

'You look comfortable.'

Elowen nearly fell off the ladder. There was the model smiling up at her.

'How did you know I worked here?' she asked, quickly getting down.

'You don't remember telling me last night?'

Elowen felt her face warm.

'Nice shop you have here; bit cluttered, though.' The model looked around. 'I like books—they're old fashioned.'

'So do I.' Elowen smiled. 'Do you think I'm old fashioned?'

'No! I love the clothes you wear. It's sexy to imagine what's beneath all that cloth.'

She watched his profile as he looked again around the room.

'You haven't asked me what I do,' he said.

She didn't care what he did. 'Are you into books?'

'Not quite. I'm a neo-expressionist painter.' Elowen's

throat constricted. Was there anything not perfect about this man? 'And there's something else I haven't told you.'

He trapped her with his eyes. It made her want him again, here in the bookshop, so she could see him in the daylight. 'I haven't told you my name.'

Elowen whispered. 'I feel like I've known you forever.'

The model put his arms around her. 'There's something about you, Elowen—I can't put my finger on it. There's an old connection to you inside me.'

'I feel it, too,' Elowen breathed. She longed for him to kiss her.

'My name's Harry ... Harry Taylor.'

Elowen jerked back. The accent that had confused her suddenly made sense.

'You okay?' he asked.

'What's your accent?'

'Australian. Why?'

'Harry Taylor! Like the artist?'

The model gave her a lopsided smile that looked unnervingly like her own.

'That's me ... one and the same.'



Sequence 9

Audiolog, 2069

You'd think I could remember the date, but I just can't. It's beyond me, which is odd, because my life revolves around times and dates. But I remember the year and I remember the time when my grandpa died at the decent age of eighty-nine. He'd have lived longer if he'd agreed to the surgeons who wanted to remove his cancerous legs.

'What's the point when you're my age?' he'd snarled at everyone.

That's just what I would have said.

He was a powerful man. If you listen to Mum, she'd tell you Grandpa wasn't that good to Grandma. I can't say if that's right or not. I suspect he got confused in his old age.

Michael Dennett was born during the Second World War, when his dad was fighting Japs in New Guinea. Now my great-grandpa was a *very* tough man. He was blinded in his right eye during the Battle of Milne Bay, but kept going for another three days before he got to a medic. In

that time, he saved the lives of two other injured men, so they gave him the Military Medal for his efforts. Would have been a higher decoration if he'd been an officer instead of a corporal. It's a good thing we don't have that class distinction crap in our army anymore.

But back to my grandpa. He also saw action, but his time was in Vietnam. I guess he got cancer because of all that Agent Orange and other shitty chemicals they used to kill the jungle and flush out Charlie. It's good we don't use those medieval ways to find our enemy anymore; it's much easier with heat and motion sensors that don't trash the place. Like his dad, my grandpa also received a bravery medal: the Military Cross, for holding off a platoon of Vietcong as some wounded guys got medevaced out. He was a lieutenant at the time. There's that class rubbish again—officer meant a higher award. It was *his* stories that made me want to join the infantry.

Then there's my dad; he's still around and has done little in his life. He's sold cars and cheated on Mum. He would never be a soldier like the rest of us.

And now there's me. I was born on 11 June 2031—ninety years after my great-granddad was getting malaria in that Papua New Guinea jungle, and in the tradition of my family, they called me Michael. The fourth Michael in a row, you know—although the others got called Micky and Mike, depending on their time. I don't mind what people call me, some say 'Michael', most say 'Dennett': that's what's on my shirt. When I'm at work, it's usually 'sir'.

I wasn't expecting money in the will when Grandpa died. There wasn't much cash at all and what there was all went to Dad and his sister. The miserly army pension the old man received got chewed up in frozen meals and rum 'n' Cokes, or down at the Rose Hill racecourse. I took him there when I could, but it wasn't often enough. Why do we regret not spending more time with some people? When Grandma died, he shut himself up in his bungalow away from the world. I get that. By the time he was an old man, half the people living around him looked the same as the bastards who had killed his friends in the jungle.

My grandpa left me something more special than money in his will: he left me his war diaries. I've read them more times than I can count.

I dictate a lot of reports in my job, but I've never thought to keep a diary. So, here goes: I left school as soon as I turned seventeen and went straight to Duntroon Military College. I guess I'm just lazy, and most of what I've done in my life I don't reckon would interest anyone else. But now there's something weird going on in the world, so I've started one of sorts. Dunno if anyone will ever listen to it.

What we have here are some bits and pieces I've collected from the internet and army memos, mixed in with my own thoughts as we head into what everyone is now saying will be a major conflict. Some even think this will be the last big war. If it is, then I'm glad I'll be doing my part. I'm old enough now that this could be my last chance for field action before I settle into a desk life, probably parked in some soulless building in Canberra.

We'll see about that; somewhere near the coast would be better.

But I should tell you upfront, before I get stuck into the drama that's going down in the world, how much things have changed for soldiers since my ancestors slogged it out in their khakis.

First up, my company isn't as big as what they had. What used to be 150 is now down to eighty. I'm the commander of A Company, 2nd Commando Regiment, based in Holsworthy. Back in my grandpa's day, commandos were trained to drop out of a plane into enemy territory, cause some chaos, and then fight their way out with whatever they had strapped to their bodies, usually not much more than a rifle and a knife. We've started to carry the Fairbairn–Sykes fighting knife again, the type commandos used a century ago. No idea why; it's not like we get to use them—we lean on semi-autonomous equipment instead. And our signals squadron and the operations support company cover that state-of-the-art tech for us. Today, the soldier supports the machine, when back in their day, the machines extended the soldier. It's strange how that's turned around.

When things became autonomous in the 2040s, we had to retrain our guys to use it, fix it, run it, and command it. That takes tech know-how and not just brute muscle and a sound head. Much of the tech runs from field-based command posts that we set up on the run, and our job is to get the machine guns, mortars, rocket launchers, whatever it is, in place then feed them, or leave them to run their stash of ammo, then replenish them or

if it gets too hot for us, we leave them to self-destruct. All the larger gear has self-destruct mechanisms, so if the enemy gets hold of it, we can inflict a lot of damage. The smarter enemies know this and scan any ditched gear, but the more tribal and less tech-savvy they are, the better our chance of nailing a few on the way out.

That's not what we really want to do though. Recovery is the preferred option, as the tech can be expensive—when you have a self-guiding, self-feeding machine gun with 20,000 rounds worth a million bucks, you want to bring that puppy home with you! Our commandos are now drop, setup, run, collect, then relocate. I've seen four tours, and not once have I looked down the barrel at a man on the other side. Hugely different from my soldiering grandfathers surrounded by the smell of men who had shat themselves, and the terror of holding a man down while you stab him to death.

Then there's what we've done to our bodies. Every soldier in my company has to be fully enhanced. It's not an option, and we have amazing enhancements for military personnel these days. With algal enhancement, the younger guys can move for over a fortnight with no sleep and with the special high-protein ration packs, they can drop us from a plane with three months' food carried on our own bodies.

So you get that logistics isn't anything like what it used to be. The logistics support company for the 2nd Commando Regiment is only about tech now: there are no sustenance requirements for the men. So long as we get in the sunlight, we run under our own steam. Also, minor

wounds self-heal. Just make sure you don't get nailed in a major artery, or have a large bone shattered, and you'll stay out of trouble. We have modified our body armour to match our new abilities. The boron nitride combat vest is so advanced now it can absorb ninety-seven and a half percent of the impact from a 7.62 mm calibre round. The worst I've ever got was bruising from mortar shrapnel, and my enhanced body healed that in minutes. Still hurt like hell, though! So, this all means unless the man on the other side is using something massive like a fifty cal., then we're good to punch through whatever light arms they throw at us. I can't remember the last time a guy in my company got an infection—the algal enhancement all but removes the chance of an infection getting a hold.

So we sleep little, we hardly eat, and combat age has increased to over fifty without losing condition. Oh yeah, Grandpa ... it's a different world today.

That's enough of the background. Now I'll share some snippets from articles that should give you an idea of how it's all turned bad. First up, here's something about cranky goat herders.

Sydney Morning Herald - Thursday 22 Sep 2067

Violence has erupted once again in the Pakistani capital, Islamabad. Pro-enhancement demonstrators were set upon by Muslim fundamentalists in D-Chowk Square near President House and the Prime Minister's offices. The pro-enhancers were calling on the government to make enhancement fully government-subsidised, and they were also pushing for the government to make algal enhancement mandatory for

Pakistani citizens. Several people were killed, and over 400 are reported as injured.

Anti-enhancement groups led by religious leaders are calling the enhancement 'anti-human' and were demanding a ban to the medical procedure in Pakistan. Several groups took to conflict just as the pro-enhancement demonstration was beginning, and police were outnumbered and quickly overrun. Violence spread into areas near the square, with businesses owned by enhanced people being damaged and many set alight. The crowds were finally dispersed when soldiers were brought in, but not before a soldier had shot dead several anti-enhancers and further casualties from both sides were sustained.

The Pakistani Prime Minister, Hamad Ansari, has called the attacks abhorrent and stated that his country will not tolerate the actions of what he called terrorist groups. He also reiterated that body enhancement was central to the government's continued improvements in healthcare and that enhancement programmes would be increased rather than outlawed in the country. He didn't commit to the Pakistani government starting to subsidise the procedure, but Mr Ansari suggested that government financial incentives weren't out of the question.

Police have begun a lockdown of areas ...

I don't get why people would be so against it? I've been enhanced for two decades and it's fantastic! Some people don't like change, I guess. Damn religious nuts. World history is full of wars caused by those arseholes.

Next, there's an article my cousin in England sent me. He's a lieutenant-colonel in the Coldstream Guards.

We've never met, but I know he served in the Korean Unification war; I was ten when it was on and already had it in my head that I'd be a soldier one day.

Times opinion piece – Saturday 3 Dec 2067

Here's a fundamental question everyone should consider: should algal skin enhancement be encouraged?

The health benefits have been known for decades, and enhancement has been widely accepted by people in England for more than a generation, and the flow-on benefits in reducing our drain upon the environment have been widely reported in the media and scientific journals. But it seems not everyone thinks it is good to go algal.

Earlier this week on Monday evening, an Oxford reader in English Literature, when delivering a speech to a small collection of students, compared what we are seeing in the division of people who are enhanced and those who are not with the Eloi and Morlocks of HG Wells' The Time Machine. In this Wellsian future, humanity has divided into two: one on the surface of the earth that is apathetic, lazy, and has regressed into an animal state; and a second race below the surface that is industrious, vicious, and remain tied to machinery (in a way). James MacCorkle believes that a version of this division is underway now and that enhanced people will eventually outnumber those 'original humans', as he called them. He argued that with this will come a complete change in humanity that we do not yet comprehend and that may, in fact, be dangerous. He pointed to widespread evidence that enhanced people are less communicative, more indolent, and congregate en masse. They need not eat and sleep in the

way we have for millennia and, in his words, 'Algally-enhanced people behave in a vegetative state rather than as nurturing mammals.'

This raises the question that seems to be on the mind of many but is not being adequately debated in the public arena. Are we witnessing a shift in humanity not too dissimilar to the agrarian revolution, or is it very much larger? Should we be embracing this change so we can continue to make the lives of humanity healthier and more sustainable in a world of reducing resources, or are we forcing change for its own sake? MacCorkle claims that humanity is disappearing and being replaced by a race that is no longer human.

The author would like to ...

I haven't read the book this guy is talking about, but it sounds weird to me. Surely, he must be talking about civilians, probably lazy students, because the men and women in A Company, 2nd Commando Regiment sure as hell don't sit around sleeping!

I reckon people will be people, and if that means a lazy shit can get away with being a pension-hungry yob just because they don't need to move around as much as they used to, that's a reflection on the person and not on whatever enhancements they've had. It pisses me off that I fight to protect these idiots.

Besides, there's a range of enhancements available to people these days. It doesn't stop at skin. I've got men with higher IQs and some have neural implants for running the more complex surface-to-air weapons, and *all* of us have had genetic work done to cope with pain and

increased endurance. For God's sake, our own adjutant can read, write and speak twenty-three languages, which is handy for a multicultural force like ours.

Here's a ripper: Iran has now banned all forms of micro-algal enhancement! Individuals involved in the administration or who receive this treatment can now be punished by death. And this is at the same time the UN is pushing for enhancement to be government-funded across all member nations! There is every chance this will escalate further now China and Russia have joined with the US and EU to see this improvement to humanity available to *all* peoples, irrespective of race or nationality. The enormous reduction in greenhouse emissions tied to the widespread uptake of algal enhancement is seen now by every nation, except a few in the Middle East, as being the only way to reverse the damage caused by the use of fossil fuels during the last two hundred years.

Our prime minister, Nathan Giannopoulos—most people think he's a good bloke—stated today that Australia will support any peacekeeping activities carried out in the Middle East. The US and China look like taking the lead again, just as they did with the second Korean war. And with those two up against you, you'd have to have goat shit in your head to put up a fight.

Yesterday the barracks was going nuts about what the Iranian president said at the UN last night. What is this guy doing? We reckon he will use nukes on us if we invade. They can't get long-range missiles anywhere near our countries because of the satellite interference network that screws up the navigation on the warheads, but they

may try to use small stuff against us on the ground. If it comes to that, he'll be poisoning his own home and people. How can someone that insane be allowed to run a country?

That's a stupid question; it's happened plenty of times before, otherwise I wouldn't have a job. Here's what he had to say:

Address by the Iranian president to the United Nations Special Assembly.

We are at a crossroads in the history of humanity. On one path, we see humanity changing forever, becoming something which God never wanted; down the other, we have peace—we have people being who and what they were meant to be. One path is the true path, the other is abhorrent to God. I tell you this assembly can no longer see the difference. Claims are being made that this change is good, that it makes people happier and healthier. I say to you that these are not people, they are not in the likeness of God, they are hateful creations born from laboratories. They have been made by vain men who desire to change us from what we are. That is wrong, and we should fight it. Ours is an ancient civilisation, created of the earth, and it remains tied to the earth. We have endured change throughout the course of history. And we have survived. We will continue to survive. We will not be forced to change; we will defend ourselves to the limit of our abilities, in the defence of our cities, in the defence of our towns, our communities, our culture, our families, and in the defence of God. We will defend humanity from those who wish for its end. And we will use all means at our disposal to do so.

The Indians are frantic to nip this in the bud. They've benefitted immensely by enhancing most of their population, but there remain pockets of resistance, who sound as though they're spouting the same rubbish as the Iranians. The Indian government is terrified of the religious fervour in the neighbouring countries spilling onto their turf. I would be too.

The worst action I've ever seen was when we got called in during the Sydney riots of '58. I was twenty-seven at the time and had just one overseas tour under my belt. God, what a black time it was in our country's history. We should never use soldiers against civilians. Although, it was fun decking some of those pumped-up gym-junkies who do Brazilian jujitsu and stuff like that. Thinking they're kick-arse tough guys. The smallest girl in our B Company was targeted by three of these pricks. Thought they'd single out a chick in camo and give her a flogging. She broke the first one's nose so badly I thought she'd cut his throat there was that much blood, then the next one she smashed his arm. But the last was the best. A man's knee is not meant to bend backwards. Jeez, we laughed.

One benefit of being an army major is I get to be in the loop about developments before other people. The most radical in the pipeline is the ARES programme—Anti-Radiation Enhancement System. To everyone but the scientist's amazement, the tests integrating cryophilic algae—I think that's what it's called—into the standard strains of microalgae used for body enhancement have been successful. Results show the DNA splicing is stable

and that exposure to short-term amounts of gamma, neutron, and ionising radiation can be substantially reduced. Holy crap!

By 'short-term', they say personnel subjected to this level of advanced enhancement will be capable of exposure for up to three weeks of radiation, like what you would get around small-scale nuclear weapon use, without long-term damage to their health. The eyes will be the only point of weakness in the system. This can be managed by the use of helmet visors, which they are saying will be available within weeks.

Now, that is a whole extra level of tough! We're told the cryophilic algae can survive sub-freezing temperatures, lack of oxygen, and obviously radiation. If we have those beasties stitched into our skin, then we'll be a phenomenal force to reckon with. One doctor told me these strains are far more intense than what we have in our bodies now, and he said that the growth with our own cells of these additional strains would go right down deep into our muscles. Not the top couple of millimetres of skin like the photosynthetic ones, but centimetres in. That will make our resistance unbelievable if you add the body armour.

Last month, a fair number of my guys underwent this new anti-radiation enhancement, including me. Some opted out, and that was fine. We would not make this one compulsory—it's too extreme and a bit risky. You will think this sounds bizarre, but the feeling of having the new algae this deep inside me has somehow made me feel younger and even stronger. It's probably my

imagination, but it's like my body has become denser. My weight hasn't changed, but I can tell you my skin and muscles feel stimulated in a way they never have before, like there's a layer of armour *inside* me. I feel good enough to do another tour after this one. There should be more enhancements like this.

We all hope it works, because the Iranians have made it clear they'll be using nuclear weapons of some description. There's a rumour going around they've already done so on some Pakistani soldiers across the border, but that's all hush-hush.

This message came through just an hour ago.

From: COL Andrew Newbury RAR

To: [undisclosed recipient list]

Buses to Stratham Air Base will depart from 0700. If you intend to make your own way to the Air Base, you must arrive no later than 0800 for the 0900 flight to Shamsi Airbase in Pakistan. If you have yet not made a will, now is the time to do so. Contact WOII Murray for further details.

Hope I get time to keep this diary going while I'm over there. But I'm not sure there's much point in me making a will right now. There isn't another Michael to follow me.



Mutation 3

Eucalyptus forest, North Coast NSW, 2072

I visit the forest to be with life. Its lowest: carpeting mosses. Highest: tree tops fading to the unreachable sky. The ground is still, but the branches sway beyond my reach. Don't need them. Down here is where the life is, meandering track is becoming humid and cool further from the car away from people, a sign where I am in the forest, a map with symbols but the scale is wrong, I could do it easily again without words for them, I hear people behind me speak a wicked language, annoyance rises for I have come so far with so little time, they chose the short path and I take the long; here treading the course to the summit, like Borneo again where I stop to photograph mushrooms, nothing larger with colour did I see, too many biting ants where I knelt, will it be dark as I return from the peak; no snow-capped mountain this time here there is a stream drawing me, longing to be alone, I know the way is a false path treated pine poisonous so the forest won't eat it; grown in another land, plain and soulless,

unable to leave a monotony of needles, longing to be free of the endless rows until the tractors tore them down shredded their skin chipped their roots boiled their trunks in arsenic only to be taken to this old forest; all foreign like the men who built this path, embalmed bones of trees trying to rot craving to return to the earth, my boots tread this same soil, easy walking rubber soles leather sides of an animal fed grass far from here bred protected betrayed butchered until flowing along a drain to the septic; finally shoes off, I'm at the water, sit on a worn rock, place my feet into the stream, cold bath again the heater's playing up, legs quiver; naked swimming in the waterhole as a child, clothes thrown down first to the creek but last to get in, shouts as it hits us and splash together, pleasure rises as the pain subsides with my father shaking his head; leaves float by now, brown and veiny like old men's legs, toes reach the sand gritty and pleasing, dig them in further as the cold goes away, I hear birds in the undergrowth too small to see, maybe brown like duck down bedding in the nest eggs rich for making cakes, motionless leaves fringe the sheltered stream where the drainage line cleaves the forest, healing branches reach across the scar as insects hover near the water, jewelled kingfisher flashes to a fingering branch, lethal Zulu tip, be careful crayfish with your claws and poor sight, bursts away blue death will be back another day, I hear a lyrebird's stolen chorus closing in, collected ten different birds in his wanderings and a chainsaw, how long has it been since a machine was here, did he learn it from another bird, I learnt your name from a book face of a chicken tail like a pheasant. My

hand reaches to a mossy log felled long ago left by timber cutters; hard life, simple leather strap holding up trousers too big for his waist strong back and stronger hands, tobacco flour sugar tea, hot work in summer drinking from the stream with hands cupped and shirt stuck to his back, pushes his face into the pool, too hard for the bullocks to drag out, too close to the stream with its water and rocks, such work and no reward for this grandfather of trees while a merchant in his city warehouse surrounded by crafted timber drinks wine from across the ocean; up I search the forest for the greatest of trees, shoes left by the water sticks dig in my feet, this one will do, hand rests on the unyielding trunk to remember the forest, the downpours, humid days and chilly mornings; walking on frosty grass that crackles, gumboots heavy and feet slopping inside them I'm off to check the calves after a bitter night, Dad calls me to hurry, now far in the past; slow life passes around me in the forest, passage of people, brush turkeys scratching the litter from the tree's fallings, breathe deeply the smell of growth, decaying and earthy thick as the mosses creep, spider's glassy web in the half-light, patient no sign of conquests past do you sleep as you wait little spider, through the bark I sense the water moving skywards, a pulse without a beat, place both my hands to the trunk and close my eyes, beyond the veins the core wood rests, layers of memories, see when the tree was young, competitive, escaping the shadows its fingers chasing the light, roots split rocks paths wide deep anchoring to the ground, sinews coated by unseen fungi sucking from the earth, go deeper another time another

Enhancement

memory there is fire, fear and crying; startled, I lift my
hands from the trunk and the scene is gone.

How poor my life was before enhancement.



About the Author



Ned Stephenson was born in Sydney, and then raised on a sheep farm in southern New South Wales before returning to Sydney to study biology and earth sciences. Since then, he has worked in the agriculture and mining sectors in Western Australia, the Northern Territory, and New South Wales. His short stories have been published in the Newcastle Short Story Award anthology and in the Grieve Project anthology.

