

XPERTS



Mindwave

J. A. Shearer

Hermann Maurer, Coordinator
of The XPERTS Collection

XPERTS:

MINDWAVE

***You Will Create It
They Will Try To Destroy It***

J. A. Shearer

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Visit the Website www.iicm.edu/Xperts for the latest on new books in the XPERTS collection!

Author's Preface to "Xperts: Mindwave"

A search of the Internet will quickly turn up detailed, important pieces of knowledge that may represent years of work. These documents are donated; there is an implicit desire for the work to be useful, to make a difference.

So far, there is no one powerful entity out there that is going to take all the knowledge, in both public and private databases, and use it to create a better world. But there could be, if Internet enabled global citizens look to themselves and start to create the resource they need. I believe something very like Mindwave will happen, and soon.

I'd like to thank Hugh French for his understanding and critique of my ideas over a number of years, Professor Hermann Maurer for his knowledge, intellectual curiosity, and the scale of his work, Vint Cerf, who always "gets it," my husband John French, my family and my friend Elena Fedorenko for their support, and all the people who constantly build the Internet with enthusiasm and idealism.

Jenny Shearer
Sydney, Australia, May 2005

Editor's Preface to "Xperts: Mindwave"

This is one of the novels in the XPERTS Collection, a collection of novels I am coordinating. Some of them I write myself, but others, like this one are written by others. This one is written by a friend of mine now living in Australia, Jenny Shearer. Like all books in the series this one also follows an outline agreed upon between the author and me, thus making sure that the books fit into a general 'master plan'. I am reading and editing each of the books as they progress.

Each novel is completely self-contained, yet there is some coherence due to a set of persons that appear in each of the novels at some stage, usually playing a pivotal role.

The books in the collection are an unusual mixture of adventure, human emotions, supernatural powers ('parabilities'), science and science fiction with glimpses into the future, and this interwoven with often detailed descriptions of interesting places from all over this world, be it USA, Canada, the Arctic, Europe, Brazil, Pacific Islands, Australia, New Zealand, Africa, India, Bali, La Reunion, Borneo... you name it!

Some of the books have been written originally in English, others in German, but they are generally available in at least those two languages.

I want to cordially thank my friends for their continuing support, the Austrian publisher Freya and the US Publisher Booklocker for excellent cooperation, and my US friend and agent Andrew Burt for his endless patience.

Send me some feedback, positive or negative, to hmaurer@iicm.edu, will you!

Enjoy the book!

Hermann Maurer,
Editor of the XPERTS Collection
Graz / Austria, May 2005

“As a serious theoretical mathematician, I feel embarrassed at what he is saying. I work for him, and Jessica, he is a nice guy,” the young Dane had said in an American accent. “But I think he’s losing it in the artificial intelligence area. He’s a senior engineer for the Hyperwave knowledge management system and these systems have come a long way in the last few years. Adding huge portals and machine reading capability creates the potential for a global information base, sure, but here is he is saying he can extract and combine information with a working model that exploits billions of documents on the Web using data mining tools and automatic knowledge generation modules. He claims the system can suggest solutions to problems using particular rules, including universally accepted moral rules with associated principle-balancing techniques. He loves causing a sensation of course, and he’s probably going to turn it in to serious funding knowing him, but still there are scientific reputations at stake.”

“Including yours?” she asked.

He allowed a small smile. “Well, not really. He generally refers to the work as information or knowledge engineering, and that doesn’t get us into the controversies that have surrounded the field of artificial intelligence for the past twenty or so years. But to get the popular interest, he says he has developed a new approach to Artificial Intelligence—AI—to connect with scientists and the public so they get a realistic view of what computing-based intelligence is. And what it will never be, of course, is something that thinks like a human brain. Anyway, be there for this. There’ll be a good discussion, and it will actually be one of the best talks of the conference.” Luke smiles. He inclines his

head politely as she thanks him and searches in her handbag for a pen and the conference programme.

Professor Leitner undeniably has a presence, Jessica concedes, taking her seat a couple of hours later. The austere conference room holds an audience of over a hundred, comprising leading computer scientists of various specialities, plus educationalists and people from related disciplines. The buzz dissipates as the Austrian approaches the podium and sets up his laptop. From her earlier meeting with him Jessica remembers that his eyes are grey-green and changeable. Today he seems the remote academic—his eyes are lucent and pale, and he launches into his presentation without the usual joke. She leans back into her seat and concentrates on the introductory scheme on the screen. She relaxes the muscles in her shoulders, folds her hands, and the scientist's voice begins to imprint.

“It is no longer enough to carry forward in piecemeal fashion a science with power to create an hegemony that will make the power of countries such as China and the United States obsolete. Information engineering research is now proceeding at such a rate that within five years we could produce an assembly of agents that could carry out most negotiations and brokering processes on a mundane level, but also on a highly commercial or political level. The sophistication of public and private knowledge management bases that already exist show the opportunities for an intelligent module that could very significantly influence the way the world is run. And we need to ask ourselves, if this is possible, do we not need to ensure that this is a responsible power?”

She lifts her left hand and combs back her hair, and he looks at her for a second. She is sure he has

recognised her, but there is no warmth. He pauses while the minds in the room leap obediently from the realm of science to that of politics.

“A set of intelligent modules that will work for the good of people and the earth, and not one that will be created to be subservient to interests of money, of nationalistic ambition, of multi-national corporations securing the world’s assets. What I’m showing you today is a schema of a traditional logic based agent and information analysis module capable of independent solution creation and a self-auditing process, according to embedded values systems...this system could probably be set up now to show how to run the world in a way much more humane than is currently the case, even if I have to admit the concept should indeed undergo a bit of testing...”

Professor Leitner waits for the appreciative laughter to die down. His assured delivery, his good wool jacket, his swift movements, all communicate that this is not a manifestation of the professor’s best sideline, his sci-fi novels.

She glances back to see how the Professor’s research fellow is taking it. He looks resigned.

“What we have here is the concept of a powerful yet pragmatic approach to artificial intelligence. It is not conscious, it does not think like a human—or complain like one. But the scope of its information processing, its analytic programming and use of theoretically limitless knowledge resources creates an intelligent process that, without meaning to denigrate the abilities of my learned colleagues here today or to get mired in the philosophical niceties, demonstrates abilities far beyond the human repertoire. This is simply how it is.”

The Professor glances around at his audience. “I will now demonstrate, firstly, the mathematical basis of this process, and then will demonstrate the applications.”

As he bends to his computer five men in dark grey suits walk hurriedly into her peripheral vision. Two of them go directly to the podium and attempt to grab the Professor’s laptop. He whips it away from their hands with agility and retreats to the front row, where a couple of mild-looking computer scientists stand, snapping back their seats, and one, the session convenor, speaks.

“Identify yourselves! This is a conference room. You can’t just walk in here— I’ll call security!” His brown sweater seems suddenly to give his body a certain solidity. His younger colleague picks up a black umbrella with a long aluminium point and holds it loosely at his side. Suddenly, there is something of the street fighter about the way he stands staring at the suited men before him.

Behind her Luke, the research fellow, jumps to his feet, barges past his colleagues without apologising and crashes into a grey-suited man standing on the steps. The man hits him hard in the stomach and twists Luke’s arm high behind his back. His jacket hangs open and his blue shirt partly obscures his anguished face. A woman in an aisle seat screams at the man to take his hands off Luke and starts pulling at the pair.

The audience, turning in their seats and some half-rising, emit a shocked gasp. Jessica finds her hands are on her face. As she lowers them, she sees the entire Celtic pattern on her armband e-helper is flowing quicksilver, the sign of full activity. What does John want at a time like this? What is he going to say when she tells him that it looks like Professor Leitner is being arrested? The man sitting next to her glances at her

armband, clearly not recognising the latest thing in computing accessories. Not surprising, considering it isn't on the market yet. She tries to fight the sense of unreality, that the calm of a scientific lecture is being interrupted by tough looking men who are probably carrying guns.

One of the suited men steps up to the podium and raises his hands to hush the noise of protests and conversations that have broken out. His dark tie is pulled to one side and he looks uncomfortable, presumably unsettled by the violence. "We are United States federal officials carrying out a court order for the arrest of Juergen Leitner for copyright infringement and offences under the Computer Security Act," he says, as an agent wrenches the computer from the Professor, and then appears to be searching him. The agent gestures and the Professor walks swiftly toward the door, looking angry.

"Due to the nature of the alleged copyright and security violations, all material pertaining to this lecture is to be taken by us for review, and all bags, folders, and computers in this room are to be handed over to us."

The man's voice is lost in the ensuing outrage. People jump to their feet, and the back rows head for the doors, carrying their possessions close to their bodies. Uniformed police step into view and the stream of people stops.

"I need to point out to you that the penalties for concealing anything here today may result in a term of imprisonment," the man on the podium says. "And I'm sure that you have all backed up your own data."

At the end of a row a voice with an American accent comments, "National Security Agency. Hard to believe he had the marks to get into 101."

A slightly built woman wearing a red silk shirt under her black suit replies with heat, "Confiscating our computers is a violation of our rights. There's no way he can do this under cover of a copyright action, for heaven's sake. And Leitner? They're not seriously accusing him of disseminating a virus? It's ludicrous!"

The first voice has an instant answer. "Come on Barbara, you know what's going on here. Whatever Leitner's been working on, it's just been shut down. Yeah, yeah, we'll protest at the highest levels, but this will give Austria the message. I think his five year AI rollout has just been put back twenty."

The pair starts an extended speculation about the Computer Security Act of 2008, a hotly contended piece of legislation devised to deal with the epidemic of computer viruses that had been churned out around the clock until they reached the figure of one million new viruses per year. At that point the then President, George W. Bush, brought in wide-ranging and controversial measures targeting hackers, spammers, and people (and their hardware) involved with writing viruses. Shortly after, a more liberal President had been elected. Little action was taken against virus writers under the legislation, because, as the pair noted, how could you see inside someone's head and catch them about to write some nasty code? However, the American called Robert reminds Barbara, the untested legislation is still sitting there. Someone has apparently come up with the bright idea to use it to shut Leitner down.

The pair is just getting into possible counter tactics as Jessica steps forward from the line and sits down at the desk, opens her bag and takes out the programme and her fancy pen with the green plastic and the light, without fumbling. She switches on the light. The agent,

returned from the podium and screening each conference participant, looks in her bag, checks her ID. He stares at her, her beige pants, her fitted top with the conservative tie neck, matching silver jewellery. For a moment, she thinks he will actually hear the slow thumping of her heart.

“I’m a cyber ethics specialist,” she offers.

“Whatever. Do you have a computer with you? No? You can go.”

She throws the pen into her bag and walks quickly across the red patterned carpet of the conference centre. She has to repeat her request to enter twice before her room unlocks, because her throat feels so tight her voice emerges husky. She packs up, barely able to respond politely to kindly inquiries from the hotel desk staff, and catches the next flight home to Auckland.

The next day, she assembles her notes and tries to forget the ugly scene in the conference room. In the late afternoon she is pleased to hear the distinctive sound of her brother Hugh’s car pulling up in the drive outside.

He walks in the kitchen door and props his short red surfboard carefully against the wall. He runs his hand over it, brushing some sand off it on to the carpet, and walks across the warm native-wood kitchen floor to the sink. He leans into the stream of cool water flowing from the arched tap into the kitchen sink and has a long drink. He looks up.

“Oh all right. How was San Francisco then?”

He half-listens as his sister runs through the story... the waterfront, the sealions. Almost as good as Auckland, really. But not quite. Auckland has its surf beaches to the West, its calm bays to the East. There is nothing so good as sitting on your own (well Jess’s) deck, with the honeysuckle spilling over the sides. The

sun warms the cat stretched to maximum length on the grey boards, his long white underside hairs ruffling slightly in the moving air.

Hugh stretches his legs and rearranges his ham and salad sandwich, made from a warm fresh loaf and with plenty of good mayonnaise from a plastic pot. Jess picks up her second large glass of cold full-cream milk. As Hugh likes to say, John, his doctor brother-in-law, pays plenty to keep her, four years into a PhD and no end in sight. He shakes his head as she launches into the story of the Professor's arrest. Hugh, as a graduate computer scientist himself, is interested in the ramifications of the story. He listens, taking large bites. He nods approvingly as she tells him about bringing the computer through.

"So yeah, there's no nice way to say this, but there seems to be something wrong with your computer now. It's saying its hard drive is full," Jessica tells him.

The peace of the afternoon is abruptly ended. John, having just eased his car into the small space left on the drive, walks up the steps listening to his brother-in law, clearly audible through the open door of the wooden bungalow,

"Get it off, you total idiot," Hugh lifts the computer off her left arm, as she tries not to drop the half-full glass in her right hand. "What could you have done to it in a week? There's no way the hard drive is full, do you have any understanding of how much memory space this thing has?"

He flicks the computer hard, so that it unrolls abruptly into a flat shape, and then slaps it on the small table on top of some breadcrumbs, narrowly missing tomato slices on a plate. It emits a piercingly sweet bird song. The cat looks up.

"Careful with that," pleads his sister.

“This is careful,” he says absently, unfolding a black screen and making rapid investigations on the keyboard.

John bends to give his wife a kiss. Jessica is keen to hear about his day, which has included a tough round of the wards and the worry of treating several very sick patients. Her brother can deal with the malfunctioning e-helper. She has a bad feeling about it.

Later, Hugh admits that that he is confused. It isn't a feeling he likes. At age twenty-one, he has a limited interest in his graduate studies and is more involved in working in commercial R&D with a small firm in town, an offshoot of SR Inc, a business based on Great Barrier Island. Hugh knows very little about the parent company, but he is enjoying his work testing the remarkable computer he lent his sister for the week. The advantage of the arm-band to travellers is that it is worn at all times, so it won't get lost or stolen—well, at least not until the product becomes widely recognised. And of course, with its design appeal it is pretty much sure to catch on... the problem is he simply does not recognise the massively complex data that appears to have been uploaded onto the computer. Evidently the wireless firewall malfunctioned or she inadvertently switched it off.

He sits in the pool of light over the e-helper, his sister sitting in an armchair in the shadows. Eventually he speaks. “Tell me exactly what this professor said.”

Jess's right eye begins to throb, and she bends forward cautiously and cradles her head in her hands. She sees again the cold face of the federal agent. A term of imprisonment...had she broken any laws? Is she now in possession of Professor Leitner's AI, possibly the most powerful instrument the world has seen? As a cyber ethicist, she could not conceive of a worse

responsibility. She looks up and into the bright aqua-grey eyes of her brother. She knew there was something happening in that conference room. As Professor Leitner walked past her accompanied by those agents she'd felt a connection. She'd known she had to get the computer out, she simply had not allowed herself to think why.

"Have you any idea...?" He doesn't look up as his fingers whisper over the keyboard. "No idea at all why anyone would give you this. On the other hand, who is going to suspect you'd have it, someone who has just given a talk about why poor little kiddies should be subjected to games promoting reasoning, and then, of course, there are the fun competitions for levels of, what is it? Internet values?"

"It helps them to develop good cyberspace behaviour and gives them an appreciation of global society. You have no idea about my work. Actually I need someone to evaluate what we've got here, it has huge potential, it could..." Jessica's words trail off.

"Yeah, change the world, I know. I'll take it into the uni and see if someone will give me a hand. It'll beat the quiz afternoon at the uni bar."

Jessica glances at the screen. In red script she reads: 'Hey guys, let's unleash this beast and create total fucking chaos.'

Hugh laughs in amusement at her expression. "Just kidding."

Hugh is up early and soon striding across the wide expanse of concrete leading to the computer science department. The scattered nature of Rangitoto University's buildings have led some of the students to despair of ever finding a real campus life there. Add in the multi-cultural nature of the student body, and things

are even more socially complicated. The locals, many of European ethnicity like Hugh, tend to take arts or commerce; ethnic Indians walk around in groups, and Mandarin is often the top volume language in the café as Asian students, Maori, Pacific Islanders and a few Muslim students in headscarves dodge around each other in the streaming crowd. A few defiant mature students, neat in short jeans and trainers, bend their heads over their books as they eat their modest breakfasts.

A few hours later, fresh from a heavy lecture, Hugh and his three friends pause outside the cafe, confer, and decide to sit in the city park opposite the university. The park holds attractive Victorian relics, consisting of an ornate fountain and regiments of annual flowers of a brilliance to rival the t-shirts of the students sunning themselves between lectures. Uniformed city gardeners toil nearby as Antonia sits on the soft grass and gazes at the shifting shade patterns from the small tree beside her. Peter arranges his paper bag with the pie in it and sits close, but not too close. Richard Ng places his basketball beside him as he sits, and Leonard, an ebullient Korean who along with Richard has given up listening to people mispronounce his real name, falls on his back in the sun and begins to sing along to an old song playing in his earpiece. It has taken the group some years to get together as undergrads. Antonia and Hugh are in a slightly stormy relationship. Her Russian cultural background and his individualistic viewpoint frequently clash.

“Right,” says Hugh. “This is what we’ve got. The program is using intelligent agents in some sort of application that’s new, and then there’s code that’s going to need more power than we can possibly get our hands on in this lifetime.”

“...Niggas in da club”, sings Leonard with a slight Korean accent, his cap skewed sideways on his head.

“You’re a cliché.” Hugh feels his guts growing cold. How are four students going to have a hope of working out what to do? Richard, the mathematical genius, is having huge trouble working out the new model with the source code in front of him. If an Asian can’t do it, who can?

Leonard finally sits up and stares hard at Hugh. Hugh hopes he isn’t about to make unflattering comments about his own Master’s project in front of Antonia.

“What we have here is a working program that just needs massive computing power. We need to get it out there and let people sign up to share spare computing resources. We can split and upload the encrypted code and then the AI can reassemble and use it in cyberspace—end of our responsibility. It then becomes a secured open resource as it were. Theoretically, the more people download it, the more power it will have and the more stuff it will do, which will lead to even more people downloading it. Then it will start to work. Grassroots stuff.” Leonard leans back on his designer shirtsleeves and smiles.

Antonia looks thoughtful. “Your idea is jumping off the kind of work done by SETI, the Search for Extraterrestrial Intelligence, where people in the 1990’s donated computer time for astronomy data analysis. There’s also the successful World Community Grid research collaboration using computers belonging to individuals and businesses.”

“Of course, we need to keep in mind limitations on GRID owing to available datarates on the Net for transporting intermediate results among the cooperating processors,” warns Richard.

Hugh comments, "That situation is improving all the time, and the World Community Grid is now up to around seven million participants, but they're not into changing any existing power structures—they're purely scientific. Still, they've shown the way to spread a vastly accelerated integrated program. You're a legend, Leo."

"It is a weapon," says Antonia, a familiar dark tone in her voice.

"No, Antonia, it's not a weapon," replies Hugh, correctly guessing that Antonia is not using the word as an admiring exclamation. "Come on, forget this paranoia about artificial intelligence taking over the world and destroying the human race. That's what people do, not computers."

"It's a weapon," she persists, picking up a piece of sushi with wooden chopsticks and waving it for emphasis. "You are not looking at the reality of what we're talking about here. YOU think everyone is going to co-operate and everything is going to get better; the reality might be the opposite. Governments or big corporations might misuse it to distribute misleading information to the public still more convincingly than is already happening."

Richard smiles. "You are paranoid. In his system Leitner just has a set of programs deducing new facts from myriad disjointed facts. The system is designed to produce a statement, such as that there will be a locust catastrophe in a particular zone in five weeks, and then is able to give recommendations. You know, 'The locust catastrophe can be avoided if such-and-such actions are taken.' In each case terabytes of documents will have been examined to come to a conclusion. Each conclusion comes with a set of strings of documents, each string showing why the system makes the

statement it makes. Often it won't be one string but quite a few.

"You can look back through them to check on the conclusion if you want to. It's all good, apart from the fact that at some point the AI might conclude that the whole world would be a lot better off if half the people or lots of technologies weren't there." He thinks with some feeling of guilt of his sleek but wasteful black Japanese coupe with its state of the art sound system and very large engine. He hesitates before adding, "And the part it might be most concerned with could be us."

Antonia dismisses that. "The system of moral values built in will override it. I'm talking about terrorists, entire governments, who will see this development purely as an opportunity to further destabilise the West. They will immediately start to manipulate the system any way they can... crack and corrupt the source code, feed in misinformation, anything it takes."

"That is assuming anyone at all decides this is worth lending their computing power for. I mean, what would motivate them? Let's run a pilot with a few mates. I bet we could get a bit of spare capacity from the guys at the Institute of New South Wales. We'll keep it quiet for now."

Hugh can see that Antonia is in full disagreement with his course of action. But Richard and Leonard are for it. The alternative is to allow a brilliant body of work to be lost courtesy of spurious legal dealings that were designed, they feel, to hamper development of the Internet plus prevent new applications designed by anyone not represented by a big corporation. Any new work inevitably included some element of past work somebody could claim they wrote, and is thus covered under international patent and copyright agreements. It is an old battle. They are also contemptuous of the

American Computer Security Act, and concerned the Americans are trying to sell the idea to nations around the world.

Richard and Leo wander off to the library. Hugh pulls Antonia across his lap and kisses her. The warm air enfolds them and the distant buzz of voices fades.

Hugh raises his head and looks at her, smiling. "Let's go to the movies tonight. I scabbed two cheap tickets." She smiles back. He is relieved that she isn't upset with him over this new project, and that she is making time to go with him. Antonia is also trying to fit her social life around a part-time job and full-time study, and he is never sure of where exactly he fits in her life.

Jessica is keen to hear how Hugh got on, and she is still not happy about the message he sent his friends. He finally turns up the next evening, and tells her of the response from Antonia, Leonard and Richard. She is momentarily silent, feeling shocked at how quickly things are progressing. It is getting late, and John is revising an academic paper under the light of a reading lamp. Hugh yawns. It has been a long day.

"You know," Jessica says suddenly as they walk through the kitchen to the back door. "It is hard to take this in. One minute we have a computer with unknown code, the next you are talking seriously about launching a pilot scheme for something that theoretically could start taking over important planning functions for many areas of human life for the whole world. It's...well it's scary. Do you feel that we should even be doing this?"

The pair stroll down the drive, a sliver of new moon above the trees lighting the way while the cat weaves a trail around their legs. Jessica's sigh sounds loud in the darkness as she leans against Hugh's car.

His voice sounds thoughtful. "I think we have every right. You know our grandfather went out and fought in a world war for what he thought was right. It isn't too much to ask from us that we go out and have a go is it?"

Jessica nods. Their mother told them the little family history she knows. New Zealand was a small country; people who settled here wanted to make a new life for themselves and their descendants, and they worked hard. New Zealand suffered large losses during the first and second world wars and few families remained untouched. John's great grandfather was wounded in the First World War, and Jessica and Hugh's grandfather served in the engineering corps of the New Zealand Second Expeditionary Force. He lied about his age and went as a volunteer. When they got back, the soldiers didn't want to talk about their experiences. They built up businesses and families. But many, like Jessica and Peter's grandfather, didn't live to enjoy it for long. He had served with the Eighth Army in North Africa, Egypt and Italy, contracted malaria and nearly died, and this was thought to have contributed to his death in his early fifties.

Hugh says, "You know that the engineers were working just behind the front line much of the time, and the Germans bombed them constantly because they realised the strategic importance of what they were doing, preparing for the tanks and infantry to advance quickly. I've been doing some research. They were real unsung heroes."

Jessica nods. Hugh's interest in World War Two has been a constant since he was young. Some people called the New Zealand engineers sappers, but their mother said that their grandfather always called them engineers. He was a corporal by the end of the war and he was proud because he brought all of his men home.

Then they all died, one after the other, until at fifty-two years old he was the last. On the few occasions he'd talked about the war he told terrible stories. In some of the better ones he talked about dragging tanks out into the North Africa desert during the early morning using bulldozers, because the tanks had either no engines or no fuel and the army didn't want the Germans to know. Then at night, the bulldozers would go back out and drag the tanks, with their crews, in again. He talked about the massive barrage at the historic battle of El Alamein and the ammunition dumps being blown up and lighting up the hills as though it was daylight. And how the New Zealand engineers, who didn't like taking orders and had only one commanding officer, invented a new variant of the Bailey bridge to transport the tanks. Their language was so bad they swore at a general who got in the way, but they did what had to be done. The army didn't like them, but their work was essential. Their mother told them how their grandfather and his mates had been locked up in Cairo for weeks under threat of court martial at one stage for disobeying orders, but when the court heard what the men had been through, they dropped it.

The group of engineers had gone through appalling privations when they were left in the desert constructing a railway and the supplies stopped coming. They washed in petrol and ate ulcerated goat's meat and kept building, along with one thousand Arab workers. They stopped talking to each other because they'd already told every story they knew. They became what he termed 'sand happy.' Later, Hugh and Jessica's grandfather drove supply trucks around the hills of Italy in darkness, stalked by enemy aircraft. The men drove without lights mere feet apart. If one truck went over

the mountain edge, the others would follow. Jessica and Hugh never heard if this had actually happened.

When they came back from the war, every man started his own contracting business, including their grandfather. He married their grandmother and they went farming together. These stories, part of Jessica and Hugh's consciousness, come back to both of them as they stand in the darkness that is only dimly lit by a streetlamp. Jessica feels the prickle of tears.

"You're right, we are entitled. Go for it."

Hugh agrees. It is time for some serious work.

It is an informal grouping but everyone sits roughly equidistant around the large coffee table. The trees of the park are visible through the large windows, and all is quiet in the computer science department tearoom as some of the senior staff contemplate their coffee cups. The departmental head has his feet propped up on the table. He feels that since he always put his feet up on the table before he became departmental head, this doesn't constitute an abuse of authority.

The network manager clears her throat. Then she ventures, "We're seeing an increase in bandwidth use from the grads."

"Oh well. Maybe they're working hard," replies the graphics specialist, an optimist who frequently wins the teacher of the year award.

"How much of an increase?" asks Brian, a computer languages teacher.

The network manager tells what she knows. Bandwidth usage is up a third. Some of the grads, namely Hugh, Richard, Leonard (everyone groans; that hacking incident is never going to be forgotten) and Antonia are working on some sort of project. She's heard it is an attempt to tackle AI problems in a new

way, which sounds ridiculous except that people from all over are downloading encrypted code off the departmental server and the grads are pretty excited.

“Didn’t Juergen Leitner just cause a fuss in the US over getting arrested with a system that has AI features, whatever those are?” asks a bearded lecturer. “And they’re holding him in custody on copyright and anti-virus investigations.”

“Oh yes, they haven’t passed those anti-virus laws here yet, thank goodness,” observes a senior lecturer over her coffee cup. “And who is Juergen Leitner?”

“He did a stint here a few years back,” says the departmental head.

Brian’s eyes widen behind his glasses. “Well students are supposed to be the critics of society after all, and the AI area needs to go ahead... but let’s face it, scientific freedom is a joke now, and the question is, do we want our students to get arrested?”

“You mean, do we want to get arrested,” states a long-term staff member from her usual spot in the corner seat. Everyone observes their coffee cups.

“Look, I’m sick and tired of these stage one students who won’t accept their assignment marks,” said Brian. “They’re in and out of the office and they won’t take no for an answer.”

Everyone lets out their breaths and shakes their heads. Brian has a perennial problem with this.

“Send them to me Brian, if they’re a problem,” says the departmental head. He catches the eye of the graphics lecturer. “Get these grads to put this collaborative, um, project on paper, and I’ll sign it off.”

The graphics lecturer nods. “I’ll talk to them”.

2. The Unfurling.

February 2012

Downtown Washington DC on a Sunday morning is very quiet. The grey buildings seem immensely tall, and the vagrants lingering behind vast pillars seem robbed of all color as they lean out to watch the man stride by. The heels of his rubber-soled shoes squeak on the pavement as he walks with urgency down the avenues. In the distance a small cavalcade of brightly dressed children and mothers cross at an intersection, heading toward a museum. Their tiny figures are offset by a couple of small bare trees. A walk of several blocks brings the man to the correct grey building, but the exercise hasn't taken away his nagging anxiety. He sets his shoulders and enters the building through thick glass doors, feeling hidden eyes assessing him, though his arrival is timed to the minute.

He shrugs off his coat and heads for the lift. In deference to Sunday, he is wearing checked wool pants and a yellow patterned sweater that he doesn't consider loud, but is more an homage to his Wisconsin country origins. He smiles his open smile and leans over to shake hands as he sits down at the table. Opposite him Secretary of State Dick Kippenburger is clearly suffering from impatience. He is wearing a dark tweed jacket and casual trousers, and is looking forward to a lunch at the Virginia country home of a friend. Several CIA officials have gathered for the briefing, mostly wearing casual clothing.

"Bob, glad you could make it," Kippenburger says briskly. "What have you got?"

The issue put simply (he senses the Senator isn't going to tolerate it any other way) is that even though

Leitner is still in custody, the legal opinion is there's not enough to go on to press charges, and he can't be held for much longer due to the growing media storm being generated by top scientists. And unfortunately, it appears that despite much effort, his programs have somehow been released, and are being assembled in cyberspace all over the Internet..

Data from Echelon's Waihopi base indicate the origin of the now encrypted code to be Rangitoto University in New Zealand.

"How do you know this is the code? How did it get to a Pacific Island?" interrupts Kippenburger.

"It appears that one of the conference delegates, a PhD student from Auckland, may have been wearing some sort of computer. A former army officer who sat next to her finally remembered that this woman appeared to be wearing an electronic device on her arm, and he reported it. During the arrest things went wrong for long enough to allow a probable transfer."

Bob's superior leans forward. Janice Slickton is an NSA workaholic who is rumoured to call people at 5.30am before her morning run. Bob knows this is true because she called him at that hour this morning to nitpick his presentation. She is wearing a suit and a shirt with three buttons undone, her skin offset by a large pearl on a gold chain.

"The scientists took the structuring of the new anti-virus laws rather badly as you know," she says. "We believed it was essential to deliver our message publicly, so their organizations, such the ACM, couldn't start accusing us of secret police action, that kind of thing. They have to understand that they're now operating in a changed environment." She leans back.

Bob continues. The problem is all in how the thing develops. At present it is harmless code. But according

to telephone communications between the New Zealand PhD student, Jessica Shepherd, and Luke Gudnitz, a research student of Leitner's who narrowly escaped serious assault charges, the AI device is now being programmed by students to protect its encrypted status by state of the art turnover techniques. The encryption is such that even enormous NSA supercomputing resources will be unable to break it.

The calls suggest that the structure—which is designed to form and reform on a daily basis in cyberspace, thus routing around damage to any of its components or participating computing resource—is designed to use spare global computing resources donated to it by anyone who wishes to be involved. People have become familiar with the idea of collaborating in cyberspace to use shared resources during the MP3 years, where they got together on an informal basis to share free music digital tracks. The ultimate aim of the project is nothing less than to pioneer what they are referring to as a 'compassionate market' reorganisation of the world's economy and life, and to establish a peaceful political order by making the system the most powerful advisor mankind has ever had.

Kippenburger laughs. "This is worth missing breakfast for. But how does the NSA imagine this computer program would manage to achieve all this? And who is going to support it anyway?"

"Well, that we don't know," says Bob. "But if the system works even to some degree, it could have a major destabilising effect on how we see world trade. Our information suggests that the changes would be made to work within guidelines such as those laid out in the United Nations Charter on Human Rights."

“Outrageous,” snaps the Senator. “Whole economies would be turned upside down, and I’m not having American interests attacked by this virus.”

“Furthermore,” Bob continues, “it appears that the system may well make suggestions of public action that would target the arms industry, poverty, hunger, and disaster issues, and will propose some sort of sustainable environmental program that includes enabling the poorer nations to be able to catch up in economic terms while protecting their natural resources.”

“If these people want to declare war on US military supremacy they’ll be taking on more than they bargained for. What are they calling the virus? The Communist Manifesto?” Everyone except Bob laughs. Bob, who was brought up in a Christian home and has never had occasion to question his beliefs, wondered on his way over whether Jesus, if he was around today, would have too much of a problem with a system proposing measures deduced and put together from billions of documents and based on globally accepted moral rules. Such a system could maybe start up small and make a few waves...and could do more. He looks at the Secretary of State, who is clearly storing up a good story for his lunchtime gathering of insiders.

“What do they call this thing?”

“Mindwave. They’re calling it Mindwave.”

Kippenburger snorts and Slickton leans in again.

“We’ve developed a containment strategy. First, obtain the source code from Auckland. Leitner claims he has disposed of all his copies. And we’ll be watching him. Secondly, keep the thing quiet and starve it. We’re approaching Macro Data and suggesting they send out a Code One virus warning—you were right on to that one, Senator—and instruct their worldwide software base to

shut out any propositions or contact from Mindwave. That will give us time to find a solution.

“We don’t want to get the kids offside on this. You will recall the MP3 outbreak.” She gives him an inquiring look.

Kippenburger nods. He picks up his briefing notes. “This scheme is going nowhere,” he says with emphasis. “I’ll have dinner with Will Bates and see what I can do to help things along.”

Will Bates, chairman of Macro Data, is in for a long, tough charity dinner, Bob decides. On the way out he questions Slickton. Is she sure that Will Bates is going to play along with this virus warning idea?

She flicks him a glance out of cold blue eyes carefully ringed with eyeliner even on this Sunday morning. “Well, if it doesn’t, you’ll have a problem on your hands, won’t you?”

“But it wasn’t my idea,” says the analyst slowly.

“You were responsible for strategy development. I’ve just helped you along a bit on the day. And,” she raises her hand in admonishment, “I’m not interested in hearing people complain.” Janice gets into the car that has appeared, swinging her legs neatly, and rides off without a backwards glance. Bob analyses his own position. It will be his fault if the idea doesn’t work, and her brilliant suggestion if it does.

He begins the long trip home. He thinks of his detailed report that probably won’t be read, and the astonishing scope of the Professor’s vision. He starts to feel a slow burn in his chest. He plods along for several blocks before he realises that the heat is anger.

Far across the planet, Jess is finishing the short journey home from the university, deep in thought on the same subject. She walks in to the house, throws her

bag in the corner and goes into the bedroom to change into a T-shirt that is so old and stretched that its bottom falls in a loose frill around her stomach. As a student, she feels buying new clothes is an extravagance, and she only occasionally falls from grace. The rest of the ensemble, cotton knit tracksuit pants and an elastic tie, she takes from a pile placed on the native wood chest at the end of her bed. She grabs her hair and pulls it into a ponytail, and walks into the living room to put on some familiar music. She moves into some stretches as a precursor to half an hour of dance. She dances to relax, but more, she dances to think. Following the line of her arm moving in the late afternoon light, she turns and sinks into a sweeping turn. Her breathing and a long improvised sequence of unhurried extensions and patterns merge until her dancing is 'talking' the many ideas that rise in her mind to put themselves forward, one after the other. The form is still little more than intuitive. It is enough to feel the harmonious movements in space, to feel the muscles working and the energy flowing through her limbs and body in strong currents.

Discussions with the others have established that Mindwave is using known concepts in a new way. Mindwave is transforming the moral into the mathematical, she thinks, taking moral rules and applying them to information about human society and economics using a concept that enables intelligent agents to gather information for distributed analysis. A created feedback suggests active responses through the network.

Moral rules create a virtual ideal worldview. Given the huge computing resources of the shared-capacity grid system and the public and private databases on the World Wide Web Consortium, the system could

process a plethora of cross-linked information units into structures of enormous complexity. The resulting evolution of social and economic strategies would be developed along with the means to effect change. People could see how their contribution would change the world's actual structures. The system would notify governments, the media, newsgroups, and interested individuals of its conclusions.

Jess reaches high and slices through the space of the living room. She bends and feels the stretch through her spine. The result, she thinks, will be unlike the structure of a human brain that has artistic creativity and passion built in. But this structure will be in effect hugely intelligent, capable of processing information to the point of creating solutions no person or group of persons would ever be capable of. The scope of information analysis would be incomprehensible to the wisest genius. But even better, this mind, with its global reach, will have none of the faults that sometimes infest human brains like a prehistoric plague.

The rules that guide it are simple. People in the world are considered to be equal, and hurt to them is to be avoided. A peaceful and sustainable physical, economic, and cultural environment with species and cultural preservation are other parameters, along with such functions as forecasting negative effects of certain actions or natural disasters. In its programmed drive to replicate itself, the Mindwave system will generate constantly changing solutions as the global information state changes and as physical states change through daily global measurements. It will never stay still; it will never shut down.

The structure is supported by a classical supercomputer protocol running all kinds of audits in parallel. In the event that the AI module throws out

solutions that are extreme or threatening, possibly the result of bad or inadequate information and the bypassing of moral parameter protocols, (this is statistically inevitable, Richard considers) then the logic computer will override. The effect, Richard has said, will be similar to a mechanical override such as the 'deadman pedal' coming into use on a runaway train. Richard believes Mindwave is the result of a lengthy collaboration by a top-performing team. It appears the mystery team has decided to stay quiet and allow Professor Leitner to be the spokesperson for the project. That could be, he says, because the field of artificial intelligence has had a history of huge promises that have not been realised. As always, he says, it has been a process of working through the possibilities to get to the solution.

Jess runs across the room, turns her head, and falls into an unhurried return with a series of small rhythmic steps. Anyone could see, she thinks, that the future of the human species demands a smarter leadership than any single or national collective group of men or women could ever provide. This day is inevitable. But until now there has been a lack not only of the technical means to implement something like Mindwave, but maybe also not the courage to fuse this with general rules acceptable to all, so that a new global politics is created. Those concepts are likely to be controversial. Professor Leitner and his team are cautious, she thinks. What is he going to say when he realises that his creation has already been released in seed form into the wilder reaches of the Internet?

She heads into the kitchen for a cup of tea. Despite the release of the code, Mindwave is lying fallow, waiting for resources to shower on it like rain. She breaks off a row of macadamia nut dark chocolate

segments and has made her decision by the fourth. She will write an explanation of Mindwave and post it in chat rooms and newsgroups of all the relevant special interest groups she can find on the Internet. People can make up their own minds if they want to support the project. Will people choose to listen to advice given by an advanced computerized system when they are already groaning under repeated terrorist attacks and terrifying global weather aberrations? Global divisions are becoming more entrenched each year. Will people be able to imagine a world where despair and hate are redundant?

She asks her replacement e-helper for the time. She wants to see Hugh off at the airport. He's found that although the Mindwave pilot is demonstrating its abilities, full financial and economic functions won't be online until a release code is supplied by the program's creator, Juergen Leitner. It appears the Professor has attempted to build in safeguards to maintain some control over it, and Hugh now intends to request that the Professor release the initialising code even though the release of Mindwave has been completely unauthorised. This could be some job, Jessica thinks. Hugh is spending his savings to fly himself first to Sydney to see some of his collaborators on the Mindwave project, and then on to London, ostensibly for a holiday.

Early on, Hugh had begun to worry about the armband computer and its contents. Firstly, the source code belonged to Juergen Leitner, and though it was entrusted to Jess, Hugh believes he has a responsibility to restore it to its owner. Furthermore, the code might have a high value to others. He doesn't bother to speculate who the others might be—lawyers in the case of a legal action, secret service people, who knows? But

he had decided that the worst-case scenario would be to come home to his student apartment one day and find the armband gone, with no trace of who took it.

Only Jess, Antonia, Leonard and Richard know of Hugh's solution—he has posted the armband through the development company's offices in Auckland to component suppliers in London, with instructions for them to hold the computer until he picks it up. From London, Hugh hopes to restore the data to its owner, and to request the final initialising code for full operation status. The computer will be written off as a test model that has served its purpose. Antonia has been desperate to go with him, and Jess hates to think how upset she will be at the airport. She drives her car into a parking space at the international terminal, sticks her parking ticket in her tracksuit pants, combs her hair at the mirror and pulls at the sweater she has thrown on over her T-shirt. She quickly finds the pair of them, hugging outside the departure area. Antonia looks at Jess with dark, anxious eyes.

"I've told Hugh what I think," she says, her hand clasping one of his tightly.

"This isn't a secret any more. There could be an enemy out there who wants to exploit this. You think that no one cares about a student experiment, but that isn't what this is." She turns to Hugh, who stands silent and miserable in his best faded camo trousers and a new grey T-shirt, holding a very slender laptop case by his side.

"Doesn't it matter that I'm going to be worried about you all the time you are gone? Just get rid of the armband when you get there. Dump it in the Thames, go and drink some awful warm beer in a pub or something, and then get on the plane and come home." Antonia hides her face in Hugh's shoulder and he bends

his head to her. Jess turns away and nearly collides with a rapidly moving backpacker. She avoids the interested gazes of a number of families gathered at the departure point. She thinks about how Hugh could be going to fly into trouble and she turns back and pats him on the shoulder.

“Come on Antonia, I’ll give you a lift home. We’ll have a coffee,” she says, feeling helpless that the small steps the group are taking aren’t going to be enough to control the huge forces that may be gathering, events that may overtake their plan like a crashing wave that might toss them all off their feet. Trapped between the hard lights of the airport terminal and the shining floors, she suddenly feels fragile and transient. It is a relief to see Richard and Leonard lurking at a tactful distance, allowing Antonia and Hugh space to say goodbye. As she waits with them, they decide all four of them should meet at a café in Ponsonby in half an hour to cheer Antonia up. They meet and settle at a good table near the footpath, order a round of lattes and insist Antonia eats a huge brioche covered with caramel syrup, as a cure for her emotional devastation.

Richard launches into what he hopes will be some hot gossip. “Leo has a new girlfriend.” Leo grimaces and sits back in his chair.

“Really?” says Jessica. “Since when? Tell us all about it.” Leonard shakes his head, smiling.

“Well,” says Richard. “We were sitting on the bus a couple of weeks ago and Leo starts chatting to this very pretty girl and he says to her ‘how old are you?’ and she says ‘nineteen’, and he says ‘have you got a boyfriend?’ and she says ‘no’, and he says ‘well if you haven’t got a boyfriend by the time you’re twenty you’ll end up marrying someone ugly when you’re twenty-three because you can’t do any better.’”

Jessica looks incredulous and Leonard shrugs. Richard's recall is impressive.

"So she says, 'oh no, what can I do about it?' and Leo says 'parties, you have to go to lots of parties,' and she says 'but I don't really know people who have parties' and Leo says 'I do and I'll take you to one this Saturday if you'd like.'

Both the girls laugh. Antonia leans over and pats Leonard's arm. He starts to laugh too and shakes his head at Richard.

"I can't wait to meet her. We must get together this weekend," says Antonia.

Jessica brings the group up to date with her plan to write an introduction to Mindwave, including an explanation that it is a special set of computer programs that uses the Net to send out 'intelligent agents' that collect data from computers of people who have allowed access, and then analyses it.

"There is one point—you know, when people say that computers are only as good as their programmers? Why will this be much better?" she asks.

Antonia tips her head thoughtfully. "That's a popular misconception. A mediocre programmer can program a computer to put a satellite into orbit, but not even the best mathematician could perform all the necessary calculations in time. Also, the system watches both the forest and the leaf as you might say; for example we now have programs that have stored the electrocardiograms of one hundred thousand people who had normal hearts for ten years after the ECGs were taken. If a new person's electrocardiogram is compared to the other ten thousand electrocardiograms and an aberration is found it is a strong indication that this person will have heart problems in the near future."

“But how can you compare one electrocardiogram with one hundred thousand? Aren’t they all different, and the new one will be as well?”

“Yes, of course they’re different,” says Antonia. “But there are techniques that were invented around the year 2000, called discrete transformations, that allow us to extract typical features of very large sets of data. If a measurement does not have these typical features it is a very strong indication that something is wrong. The car industry has used this technique to check its motors since 2001, and their rate of detection exceeds 99.9 %. So the analysis component is using these powerful methods and others, of course, in the areas of economics, environmental stability and social cohesion. And that’s a lot of computing power, but it will produce good results.”

“You sound very positive,” Jessica remarks.

“I’ve always been positive about the technology. There are other issues, such as people wanting a magic bullet to fix their problems, and people with bad intentions...”

“And people making mistakes with their data. Just people generally,” adds Richard.

“Spoken like a true computer scientist,” says Jessica.

Computer science is a refuge, set apart from the unpredictability of everyday life, reflects Juergen Leitner. He rests both hands on his desk and looks out the window at the familiar view of Graz, a view he longed for during the distasteful incarceration by the Americans. Though he is trying not to show it to his colleagues and even to Teresa, his personal assistant of fourteen years, he has been severely shaken by the arrest and the uncertainty of whether he was going to be charged officially with serious crimes or released. By

the time he boarded the plane for home, he was past even being angry that he had received no apology over his treatment. These concerns have been eclipsed by the knowledge that his code has been released. Juergen takes little pleasure in noting how many people on the Internet have instantly recognised the next big thing and joined the pilot scheme. He has had to call Marcus Simmer, head of SR Inc, a New Zealand based business that bought out Hyperwave in 2007 for several hundred million dollars. The project that is now out there as Mindwave is an extremely advanced offshoot, financed by Simmer. Now the project has not only had an unauthorised release, it has actually been released by one of Simmer's own employees, Hugh Shepherd, who has not managed to work out why the code had been transferred to an SR Inc computer. Marcus Simmer, who wants his role kept quiet, is trying to work out what to do next. Professor Leitner is very busy catching up with his work and is also developing a new theorem with a colleague in Finland in an attempt to allay his anxiety.

His next appointment is a welcome distraction: a visit from a distinguished computer scientist from a university in Shanghai who is showing interest in collaboration with Graz. Teresa pokes her head around the door to tell him that his visitor has arrived. Juergen heads out of his office to welcome the visiting academic, Dr Wen Peiyan. Soon they are settled in his office and move past introductory small talk. Dr Peiyan, it appears, is interested in collaboration between his research institute and Professor Leitner's.

Juergen leans forward. As Dean of his research institute and Chief Engineer for Hyperwave, he is not in the habit of letting funding opportunities pass him by. "You have mentioned the figure of fifteen million as a

set-up cost for the collaboration,” he says with a warm smile. “Now, let me know how we can help you, and give you a great return on your investment.”

Wen Peiyan settles his slender frame more securely in the comfortable chair. “We need access to a certain program that you have developed,” he says, and then pauses, allowing a silence to develop. Juergen’s smile disappears. This exceedingly generous offer of funding immediately following his arrest over the Mindwave incident may be no coincidence.

He replies carefully, “We have a number of active research programs, some of them very hot topics with major commercial implications. Then there are other pet projects of mine, one of which didn’t turn out too well, because as you may know I was recently arrested for even trying to describe it.”

Wen Peiyan nods. “Yes, the program they are calling Mindwave. This is the code we are interested in accessing.”

“I must be frank with you, Dr Peiyan. This code is not available for release, and indeed is highly protected. There is no possibility that it would become available at any stage of our collaboration; however, there is another speculative project in its earliest stages that you may well find very interesting.”

Dr Peiyan unfolds his hands and places them on the arms of his chair. “We need the Mindwave code, Professor Leitner.”

“I regret it is not available.”

Dr Peiyan glances around Professor Leitner’s office. Bookcases full of books, group photographs, stacks of papers, and on one shelf a small silver-framed photograph of Professor Leitner, slender and fit in climbing gear, standing on a rock amid snow.

Dr Peiyan rises and walks to examine the photograph. Juergen watches him uneasily. The photograph was taken many years ago when he was an active mountaineer, though in all truth, not a very good one.

“Mountaineering is a dangerous pastime,” says Wen Peiyan. He picks up the photograph and neatly and coldly breaks the frame and the glass with a loud cracking noise. Juergen doesn’t bother to ask if he is being threatened. He ignores the mangled photograph, his precious memento, sitting on the bookcase. He remains seated and speaks calmly, though he hasn’t felt so violated in a professional setting since last year’s budget round when the Vice-Chancellor threatened to move fashion computing into his genetics lab.

“I could not give you the code even if I wished to. It was written in collaboration with a number of computer scientists in remote locations. It was evident that security had to be paramount. As you would know,” he lowers his tone into a parody of courtesy, “computer scientists have a somewhat unusual way of finding fun in developing elaborate mathematical schemes that other people would view as hours of very difficult work.”

Juergen looks up as the door opens and Teresa walks in, apologises for the interruption and places a paper on his desk. He sees at a glance it is of trivial content. He feels a burst of irritation as he thanks her with his usual pleasant manner. It is his belief that the most capable people work best if they operate with a lot of independence. Never mind that his staff occasionally drive him to the point of madness.

He picks up the threads of his argument and tries not to display the intense animosity he now feels toward his visitor. “As I was saying, one of our number created a

very elaborate mathematical theorem to protect the back-up for the code that is in an off-shore secure facility. A number of people need to contribute their portions of the access 'game' to release the entire body of work. There is no way that one of us could recreate the very complex project without literally reengineering the whole project from scratch."

It is as though Juergen has not spoken.

"We need the code," Wen Peiyan says again. "If you wish to turn down our generous offer of collaboration, you leave us with no choice but to proceed without it. The colleagues you mention are your oldest friends. The group of students at Rangitoto University and the doctoral student Jessica Shepherd are also implicated by your refusal."

"Jessica Shepherd has no technical knowledge. She is of no use to you," Juergen says automatically.

"I ask you again, Professor Leitner, for your full cooperation in obtaining the code, and I will not be able to accommodate any delay."

Juergen realises that for once he has absolutely no idea what to do. The implied personal threat of the photograph being broken is bad enough, but the thought of his friends and some innocent, even not so innocent, students being threatened is intolerable. In that instant the door to his office opens and the building's amiable security guard walks in and stands too close and directly in front of Dr Peiyan. His smile is missing and his large hands are gently curling and uncurling. Teresa looks around the door, one hand covering the bottom half of her face, her eyes round and anxious.

Juergen rises from his chair. He sidles around the unmoving figure of the guard and addresses Dr Peiyan, "Thank you for your time, Dr Peiyan. I now have other business." He lets out a sigh of relief when the other

man rises and stalks from the room. He runs his hand over his face and nods at Teresa. "How did you know?"

She glances at the photograph. "I didn't like the way he appeared out of nowhere so soon after your arrest, either. We all think you should take some time off until this Mindwave business settles down."

"I agree that I now have to address this situation, but not by taking time off. Many thanks, Werner," he says, shaking the guard's hand. "Teresa, what would I do without you? We must warn everyone associated with the Mindwave project to look after their own security. Teresa, find the Minister urgently. I need police protection."

Hugh receives the warning from Juergen but swiftly dismisses it. Juergen is overreacting like Antonia. They're positively Machiavellian, he thinks. He has spent a day engrossed in talks with people from the Institute of New South Wales in Sydney. Their view is that global support, especially from people in the international academic and student network, is rapidly moving Mindwave to the point where it will present actionable scenarios.

"Yeah man," Gordo, his Australian counterpart, comments over several friendly beers.

"It is now political. We need a lot more information out there about how to make this thing work. As soon as your sister has finished her statement we'll spread it around the Net."

Hugh is encouraged by the confident approach of the Australians. He's also enjoyed a night on the town with Gordo and a few of his friends. Hugh thinks of the lights across the water in the early hours down at Darling Harbour, and how the warm wind sent tiny waves rushing against the shoreline.

Now he brushes a few grains of sand from his face and sits up. This afternoon he's enjoying Sydney's famous Bondi Beach. Gordo decided to take him surfing, but Hugh had a few doubts. As Gordo and Hugh walked down the hill at Bondi carrying a pair of surfboards, a vast sweeping beach opened up before them. Long waves rolled in from open ocean. A crowd of colorfully dressed people, who all seemed to be beautiful and smiling, checked out the seaside cafes in the sunshine. It didn't get much more glamorous than this, Hugh thought.

Gordo and Hugh had leaned over the hillside railings to check out the surfers, about twenty of them in black wetsuits. Every so often one of them would take a wave, usually giving a brilliant performance before nonchalantly sinking back into the water and paddling out again.

"They're good," Hugh had remarked. "Those waves are seriously big."

"Yeah, well, we'll see how you get on," Gordo had replied.

Hugh is now biding his time on the sand, people watching, or more specifically girl watching. A blonde, tanned girl walks past, kicking up sand with her feet. Most of the girls are wearing bikinis, but this one is wearing tiny surf shorts, with the name Billabong printed right across her backside. Hugh turns his attention back to Gordo, who is asking a question about the encryption used by Mindwave, while putting on his sunscreen. Gordo throws the tube to Hugh.

Hugh muses. Cryptography has been a central issue of Internet development, and it has taken some time to educate the public about the importance of privacy in communications. He and Gordo start to reminisce about the cracking of the Enigma code, the famous German

cryptosystem of World War II. That initially set the public image of cryptography as something studied by learned scientists in secret, something ordinary people didn't need to concern themselves about. With the arrival of the Internet, it soon became evident that this viewpoint was dangerously naive. With the increasing amount of information about individual lives being put online along with the hugely increased sophistication of spying technology, it was no surprise that Governments were smacking their lips in anticipation of the biggest power grab over their own citizens the world had ever seen.

"The ability to talk to someone else in private, to send private mail, to have security of medical and financial records, and to communicate on matters of personal sensitivity or political importance was just assumed, mainly because of the lack of a threat to most ordinary people in that area," Hugh comments. "I mean, a wiretap gained by a court order, someone listening at the door, was about as far as it went in the old days. So the right to privacy of communications was largely unexamined."

"I guess that battle was won by people developing and insisting on the right to use strong public key encryption," says Gordo, referring to a technique that involves a 'public' key, a scrambling agent that everyone has access to and can send someone electronic data by using their particular 'public' key. The private key remains the secret of the person who holds it, and is used to 'unscramble' the message sent. Unless there is access to the private key, the code is difficult to break. Governments were left scrambling to catch up with and regulate cryptographic techniques being used by people who were well aware of the civil rights issues involved. Researchers soon began to produce papers detailing the

way supposedly confidential information held by Governments was often sold even for paltry amounts by corrupt officials; even if some Governments were above using access to private information to procure a stranglehold on citizens, the risks were completely unacceptable.

A further development, using digital signatures with certification from a third party called a certification authority, meant Internet users could confirm the identity of another person or organization using the Internet.

This provided a partial solution to one of the most important problems of electronic data: its authentication. Though the material still might not be true, it was confirmed as being from a particular verified source. The stage was now set for an unprecedented all-day all-night burlesque show of e-commerce, and a global information and uncensored discussion base.

“All of this really took place in the 1990’s,” Hugh continues. “Early on in the US the Clinton Government promoted the use of key recovery schemes, whereby private keys had to be made available to the Government on request. The other scheme discussed around the world was key escrow where the government would hold private keys, presumably in trust. In fact, many citizens knew they had good reason not to trust their government with the key to all of their personal on-line communications. Governments tried to limit the use of strong encryption to certain entities such as banks. The issue came to a head when members of the Internet community cracked a less effective type of encryption, the 56 bit DES encryption, that the US Government was trying to say was strong enough for general use. Actually Vincent Rijmen, the guy who

invented the replacement system, actually a symmetric rather than a public key code called AES or Advanced Encryption Standard, has been working with Leitner for eight years in Graz.”

“Oh, okay,” says Gordo. “It is interesting to think that the Internet basically wouldn’t have had the potential to do half of the sorts of things we do now if that view hadn’t become so strong among Internet users—that the use of various types of sophisticated cryptography is crucial to the use of the Internet. Then they really started to keep watch on other encroachments, in law around copyright, software patents, that sort of stuff.”

Hugh follows his line of thought. The US legislators feared that unbreakable cryptography would have created a threat to national security if terrorists, drug dealers, and other criminals used it, and that confidential business transactions would aid tax evasion, and pornographers such as paedophiles would be difficult to detect.

“It was heavy stuff, but they were persuaded that their fears were pretty much groundless. Most citizens do their duty and pay their taxes; use of cryptography wouldn’t change their bank accounts and transactions. Drug dealers and criminals are sophisticated in hiding their transactions and communications, and there are many other ways of catching them. And the thing about pornographers is they go out into the public forum to meet each others and that’s when they’re caught, by law enforcers posing as other offenders and so on,” muses Hugh. “So the Internet community has been shown to be right to take a stand.”

“Enough of this,” says Gordo, “We’ve put it off long enough. Let’s get in the water.”

Hugh picks up his board and follows Gordo into the surf. He enjoys the cold shock of the spray. Neither is wearing wetsuits, and their board shorts flap in the water. He feels the strain in his shoulders as he and Gordo paddle out, ducking under the large waves, and feeling the power of them surge over him. Gordo and Hugh join the rest of the surfers waiting patiently for a perfect wave. Hugh is happy to sit there enjoying the warmth of the sun and the view over the wide expanse of ocean. He waves lazily at Gordo and lets the waves roll.

The conversation has brought one truth home to him: Mindwave wouldn't be possible without the foundation laid by all the people in the Internet community who had worked so hard and believed in it; the same people who had the initial ideas, and the vision to realise the World Wide Web could expand to take in the whole world, and even more, that the whole world was entitled to it. On this base a whole structure had been built, based on the premise that the Web was for the use of the global society, and that Governments, e-commerce and all the rest had to accept some pretty basic ideology based around privacy, access and open infrastructure for all users. The ethics of the Internet had since got pretty sophisticated, and campaigners such as members of the USACM public policy committee had fought hard and long to protect individual freedoms along with the essential infrastructure of the Net.

In some ways, thinks Hugh, gazing out over the blue expanse of peaceful ocean, all roads have led to this, the ultimate Internet collaboration exercise, where cryptography protects the structure of Mindwave from subversion by Governments or rapacious corporations, and where people have learned to share resources to get

things done. They now know that donating their data and resources to Mindwave will enable one key factor to ensure its success: its universality. Is it possible that people will get behind the project? The prospect is awe-inspiring.

Hugh watches Gordo take a wave, gracefully riding it and kicking back over the top with a flourish. This is a hard act to follow. Hugh starts to watch the sea carefully, to read the form of the waves, and he prepares for one that looks right.

“Looks good, mate,” yells Gordo. Hugh paddles into the face of the wave and swiftly stands up. He stays up for an exhilarating few seconds, speeding across the face, adjusting his stance. In this moment of flight and excitement, everything is right, the white foam, the emerald green glass of the wave surface, his body balanced in space below a sky of endless blue. In a split second he realises his line is wrong. His arms flail once as he fights to stay up, then the board throws him and he flies into the sea, sensing rather than seeing the dark shape of his board being hurled over his head in the white chaos as he is tossed around, arms and legs everywhere, his loss of control complete. Finally, he emerges, grabbing at the board tethered to his leg, the wave thundering on to surge harmlessly up the beach.

He turns and begins to paddle back, feeling the exhaustion in his muscles but overwhelmed with the elation of riding the ocean wave.

“That was amazing,” he pants, joining Gordo.

“Oh mate, that was awful,” Gordo laughs. “Get your feet further forward next time.”

Eventually Hugh and Gordo call it a day and struggle out of the water, shaking the saltwater out of their hair and laughing about their exploits. They shower at the beach and put on T-shirts. To thank

Gordo for his hospitality, Hugh offers him a meal. He finds a great little restaurant down a side street, and the pair are soon sitting at a small outside table and wolfing down a huge breakfast, even though it is 3 pm. Bondi evidently knows how to look after its surfers. The end of the last glass of fresh Australian orange juice, the best Hugh has ever tasted, signals the start of business. Gordo and Hugh are soon hatching a scheme to engage the world's digerati in the Mindwave project by promoting it to groups like the non-profit foundation Nozilla. The pair hope Nozilla can help by coordinating a Linux-like voluntary global effort to create software functions to increase the active output of Mindwave's analyses. Linux was originally a phenomenally successful independent open source server project that had since advanced into many other areas. They hope to recruit tens of thousands of the worldwide community who are interested in furthering Internet development as champions for Mindwave. This group will spread Jessica's statement in discussion groups, business forums, even newspaper ads, and persuade people to sign on with their data and spare computing resources.

"We already have several thousand hosting the code. I think it is achievable," says Hugh, as he and Gordo get up to leave.

Hugh is now on the next leg of his journey. He discreetly adjusts his arm, which is resting against the arm of the woman sitting in the aircraft seat next to him. He notices she is wearing a soft wrapped top in pale peach tied in a bow at her left hip, the one nearest to him. Her skin is perfect, and her hair holds many shades of light and dark blonde. Her short black jacket has been discarded and is now folded in the pocket on the rear of the seat in front. He thinks she looks too

elegant to be travelling in economy. He feels awkward about moving his long legs so they fit beside hers. He sighs quietly. He has caught a cheap United flight through LA, and is now on his way to London. The seat already feels uncomfortable, the noise boring into his head as he sits in his place behind the wing of the super jet powering its way across the Arctic. He pulls his mind back to the present as the woman next to him puts down her magazine and asks him if he is Australian. He laughs and says maybe he wishes he were. In the next few hours, he talks to her and enjoys the brief respite from the looming problems of the Mindwave project.

Her name is Leonie, she says, and she is an aid worker assigned in areas as far flung as Lebanon and the Pacific. She specialises in the problems of detainment of illegal immigrants and refugees, a problem that has become acute over the past decade of climatic and political instability. Leonie is fired up about the rights of children to live in freedom whatever the circumstances of their families. Hugh gazes at her animated face and the bronze lights in her hair, and tries to subdue the twinge of guilt he feels for enjoying the company of this woman when Antonia is waiting at home for him. But what is the harm of immersing himself in talking over a glass of wine for a ten-hour plane trip? He and Leonie will never meet again.

He tells her a little about himself, sticking to the story of taking a holiday on a whim. He talks about his background in computer science and his wish to make some sort of difference in the world. Leonie understands this, she says, as the sacrifices involved in her way of life mean she has to get up and feel real motivation every day. They both take a nap as the jet drives on into the night. When he wakes, Leonie is leaning against him with her head resting on his

shoulder. The human warmth makes him feel relaxed, and he feels truly positive for the first time since he left home.

He fields the inquiries from a mildly hostile but bored immigration official, collects his luggage and stares out the window of the train as it sways through harsh-looking suburbs with names from long-ago nursery books. He tramps up and down escalators and gets off at the Angel tube station. He consults his map and walks along the cobbled streets to the address of a cheap hotel Leonie gave him. He is fascinated by the sense of age and the almost violet shading of the late afternoon light as workers stream homeward. He checks in to his hotel and then finds a corner pub. He sits in the corner by the window, his glass of beer sitting on the rickety table, and eats a tandoori chicken pie and a pile of chips. Everyone ignores him and he crosses his ankles in front of him, leans back with his hands clasped behind his head and looks around, unable to resist a smile at the mix of wildly dressed young people who look as though they've come from all over the world, until they open their mouths and classic London accents emerge. They drink alongside middle-aged workers and a couple of older men and women. A Pakistani starts a conversation about cricket with an Englishman, Simon, who works in the city but played cricket at Cambridge. Bored, Hugh starts to listen in. He nods to himself as the Pakistani dissects the English cricket team and the Englishman comments on the West Indian team, due to play in a series this Northern summer.

“The West Indians have been consistent with neither bat nor ball, except for Brian Lara, for the last twenty years. Of course, now that Flintoff's shoulder has packed up again, the England team is looking for

replacements for our increasingly aged pace attack,” Simon concludes.

The Pakistani, whose name is Ahmed, sips his orange juice and replies. “Well, remember the New Zealand team due over here this summer has the skill level of a good county side, but it’s not up to international standard.” Hugh slides him an affronted glance, which the Pakistani intercepts. For a second he looks surprised.

“However the captain, Daniel Vettori, is still a world class bowler,” he offers. Hugh gives him a wry smile. The small incident has gone over the Englishman’s head as he attempts to find cracks in the Australian team’s game plan. This is not an easy task since the Australians have dominated world cricket for two decades. Hugh suddenly feels at home, and decides it would be easy to slip around a city like this unnoticed, just one of the colourful crowd. He gets up, nods politely to the Pakistani, and returns to his hotel, a shabby terrace house with iron lacework on the upper balcony. His room is tiny, with a fearsome antique iron radiator for heating, brown carpet and yellowed cream paint that is chipped around the door. Flowered curtains disguise the view of roofs and chimney pots. He is up early the next morning, eating his toast and margarine with a small pot of weak tea in the downstairs dining room. He hands his key in to a woman who insists on discussing the weather at some length (fine but cold) before he heads out, zipping up his jacket and putting his hands in his pockets. He consults his map and prepares for a long but enjoyable walk through the byways of the city of London. He’d collect the armband e-helper and then think about calling Professor Leitner to arrange the next move.

He is crossing the road near St Paul's Cathedral when he begins to feel that eyes are watching him. Under the cover of a group of suited men heading back after lunch and discussing football, he looks back and sees what any watcher of TV crime dramas might immediately conclude are plainclothes police—two of them. He walks on, his heart beating fast. They stand out from the crowd in a subtle way, a young man and woman, both wearing jeans that are too pressed, jackets that are pale and too anorak-like, and even though they are chatting to each other, there is something purposeful about their walk. He realises they've been there for several blocks. Earlier he collected the armband computer from the London branch of the firm. It was easy; they hadn't been even slightly interested in him. He swung out the door feeling confident and focused, set on getting the job done and feeling the anonymity of the stream of people as a comfort and an advantage. Now he feels exposed, as though he is walking alone through the cold day. Is he about to be arrested? Or is he being completely paranoid? He glances back. The two are still there, pacing him but well back in the crowd.

Adrenalin hits and he runs unthinking across the road, leaping past a slow-moving black taxi. He heads up an alley beside a tiny park that appears from nowhere, and along a lane bordered by high brick walls that appear to be part of a large institution. He runs by ornately carved stone gateposts and finds himself in a large deserted garden square. He slows to walk along a bordering street, and suddenly feels, rather than hears, a car close behind him. He shoots a look behind him and with a shock finds he is trading glances with three men in a gleaming Audi that is sneaking nearly soundlessly alongside the footpath. The men are bulky in dark

jackets and black knitted hats. He looks around and sees no refuge, only a small sign advertising Dickens House. Hugh feels the panic of a stranger in an old city that has seen centuries of footpads, thieves and murderers on its streets. The tall Georgian windows are blank as he walks on, searching for a plan. The silent stalking ends. The car's engine races as it surges past him and drives up on the footpath at a careless angle. The doors fly open as Hugh spins and runs for his life. He is fit and fast, and he knows he has one chance—to find the pair of plainclothes police officers before these men, who exude menace like nothing he has ever felt before, catch him.

Behind him, the doors slam as the car is bounced brutally off the curb and turned with a brief squeal of tires. In full view, he heads around the garden fence with too far to go to get to the alley he came from. They have caught him in the open, but his feet pound the uneven pavement and his breath hisses in his ears as he sprints around the chain link fence, his small backpack thumping his shoulders. He glimpses two light coloured jackets moving fast under the trees of the alley. The two strangers spot him, slow to a brisk walk and appear to admire the shrubs in the heavily fenced garden square.

He stops in front of them, breathless, reaching out with both hands, desperate for them to be what he thinks they are, uncaring if he makes a fool of himself.

“I think you're police. I need your help.”

“Who, us?” The man, who has already dropped his shoulder like a rugby player to move smoothly past Hugh, shakes his head as his hand reaches inside his jacket.

The woman blocks the car heading toward the group, her flat leather boots slapped on to the road, her arm raised in the classic stop position. Hugh's protector

starts talking rapidly, and raises a gun with both hands as the car races toward them. With seconds to go it slides into a turn, tires grating in a loud, painfully slow parabola over the road surface. The rear of the car swings into the woman's back in a glancing blow as she turns, too late, to jump out of the way. She hits the road rolling. The black Audi whines up the road and fishtails around the corner. Hugh's protector lowers his gun without having fired a shot, returns it to his jacket and runs to the woman who lies huddled on the ground. A lot of restraint with the gun, Hugh thinks. Definitely an English cop. Two people emerge from the brick building near the woman and run over.

Hugh feels shock setting in. He wants to sit down in the road and wait until the sick feeling of fear has passed. He feels he should stay and see if the police officer is okay, but she is already sitting up and his opportunity to escape is fading rapidly. He walks swiftly into the lane, moving close to the shadowing bare branches of the trees. In the dying afternoon he merges into the crowds of Russell Square tube station. As the escalators take him away into the depths, he realises it must be the armband they're after, whoever they are. Presumably Leitner's warning was for real, and now he may only have minutes to decide what to do. The police will now be after him with a vengeance, and the assailants in the car may have backup moving in on him right now. Mindwave is barely up and running, and if the armband source code falls into destructive hands at this stage, the whole operation could be spoofed or otherwise irreparably damaged. He will have single-handedly screwed up Leitner's big plan, or worse, delivered it to some big-time crime syndicate. Every second he holds on to the armband is a risk. He starts looking around. There are no rubbish

bins, they're a bomb risk, and he can't drop it down behind a pillar here because some concerned citizen will think it's a bomb and call security. He moves swiftly to the end of the platform and takes a small Australian flag from his backpack, given to him by Gordo as a joke. He looks around and seeing that no one is paying him any attention, swiftly unclips the armband. He wraps it in the flag and drops it off the side of the platform, where it lies, looking like a tawdry discarded scarf. He thinks it will be weeks before the rubbish collectors notice it in this obscure corner. Hugh feels uneasy about the action he's just taken, but he struggles to control his breathing and walks casually up the platform to catch the next train.

He climbs wearily up the steps of his hotel. He feels quite surprised that he has made it here without having been arrested or attacked. He has nowhere else to go, and plans to collect his stuff and head for the airport. In the lobby, head down and preoccupied, he almost walks into Leonie.

"What's happened? Are you alright?" she says. "You're white. Have you been mugged or something?" She puts her hand on his arm.

"I guess I have, yeah," he says.

Back up in his room, he sits across his bed, leaning tiredly against the wall as he tells Leonie about the events of his day, and his fears of a connection with the Mindwave project. He tries to leave out any mention of the armband and the source code, but his thoughts spill into a disjointed story that sometimes veers close to his secret. She sits in the room's one armchair as he tells her about the scope of the project and his fears that he is either about to be arrested or possibly kidnapped by people who are gangsters or political thugs of some description. She holds his gaze steadily as he talks, his

voice becoming slower and quieter as he reaches the end of his story.

She rises and picks up his backpack.

“Come on, move into my room. They’re never going to pick up a connection there, even if they come looking, because there isn’t one, right?” She smiles.

“Just pay, walk out so they see you go, and sneak back in.”

An hour later, Hugh sits in the identical armchair in Leonie’s room, eating a Chinese takeaway with chopsticks and drinking a glass of wine while she sits on the bed and asks him what his plans are.

“I don’t understand what you have that they need,” she says. “And why were the police following you?”

“There’s stuff you don’t know about, Leonie,” he says with finality, feeling the pressure of the day. “I’ll move on tomorrow and I’ll make sure you aren’t ever involved with my problems again.”

In the silence she meets his gaze. He is suddenly struck by the intimacy of their situation. In the aftermath of the events of the day he feels vulnerable. His emotions are surging close to the surface, and he realises that he wants her desperately.

“Maybe I want to be involved with your problems,” she says. Her eyes are warm and she leans back, her skin glowing in the lamplight. He recognises the invitation and he doesn’t want the moment to end. In that moment he lets his guard finally drop.

“Why don’t you come here?” he says, looking at her with hunger.

Her head dips. “Why don’t you come here?” she replies.

Hugh is exhausted. Is she playing a sexual game with him? He stares at her in silence. Suddenly he sees in the curves of her beautiful shadowed face the austere

lines of a hunter. Her eyes gleam as she glances at him, but his perception catches a subtle nuance of the light so her eyes seem watchful. She is coiled on the bed, he thinks, like a predator, a beautiful one. His mind spins. Who is she? Was their meeting on the plane really chance? He feels overwhelmed with the betrayal of Antonia he is rushing toward without a thought.

Maybe his revulsion for his own behaviour shows briefly on his face. Leonie stands. "I think you should leave," she says. He gets up, walks past her, picks up his bag, and walks out the door she opens for him, into the cold London air, into the dark lit by occasional street lights. He finds people still on the streets, the life of the city continuing through the night. He can rest later, he thinks. For now, he has to freeze his emotions and be on watch.

He flicks a glance to his right and sees a white patch detach itself from the shadow of the wall across the road.

3. The Global Citizen.

March, 2012

Quantum Magazine's news editor isn't too bright in Bryce's view. Bryce is Scottish, ambitious, and currently working out of Singapore as the science and technology editor for the prestigious global publication. Here is a very big story, but the problem is his boss has never heard of anything like it; it is outside his frame of reference. He thinks he knows a lot about women, he can read a company report and, Bryce concedes, he can run around and make a lot of noise, which tends to keep him the centre of attention. He feels the excitement and adrenalin generated by a big story and he wishes he could offer a transfusion of it.

"This is more than a lead for the Science and Technology section," he says. "It is a cover story."

"We could call it the entry into the post-human political age. This movement is just surging through the Internet. People are saying that it's the end of superpower control of the world, that there's no ideology to contend with—just a socially useable implementation of a set of programs called Mindwave that construct certain aspects of artificial intelligence. It could contend with the power of the multi-nationals and suggest pathways to restoring equity in the global marketplace. The anti-globalists are dancing in the streets, virtually speaking."

He catches his breath, enjoying his own loquacity.

"Internet gabble, the next big thing," scoffs the new kid, a school student on work experience who doesn't bother to hide her animosity toward Bryce. From the way the junior leans against the boss's desk, it is evident she is related to someone important. Bryce

glances at his boss, who is looking at the sinuous oriental artefact posed beside the ceiling-high windows. The problem: no fires, no wars, just a concept that is just too threatening for this guy to grasp. He tries again.

“This document talking about the aims of Mindwave has caused huge interest since it was released on March 5. If we get an investigative team on to it we can have the definitive story this week. The kids particularly are latching on to it.”

“Hardly our demographic,” the news editor sneers.

“We have a source that says the arms industry is already being targeted. The industry chiefs and all associated corporations are being listed and the intention is to cause boycotts of anyone and anything associated with them. The renewable energy groups are getting huge support and the oil industry spin doctors are waking up to find the whole global oil situation is under intense criticism. One strategy of the Mindwave project is to micromanage the campaign on an individual level. It is creating twelve person action groups and is communicating with its resource people by name and in their own language. It’s using a ‘friend’ interface; very advanced stuff.”

“Oh please,” Clara the new kid murmurs.

Bryce looks out at the hazy blues and the new tall elegant buildings that now occupy the skyline near the waterfront. For a moment he is musing to himself.

“It really is a hell of a story. If the arms and oil industry are destabilised, and of course it takes only a small percentage drop in their profits to change the scenery completely, then the whole market may downgrade. The financial and political fallout could be huge. There’s talk of a campaign over the refugee crisis and a new plan on global early warning systems that includes action on hunger issues called Predictor. And

that's just the action we know about so far. Even the on-line publications are out of the loop with this."

The news editor raises his eyebrows and drops them back again. He grimaces and shakes his head in resignation. "Go for it then, Bryce. And I want the policing angle—are these Mindwave people going to be charged under international jurisdictions? And who exactly are they? Who is speaking out against them—go to the UN. Get US State Department comments. Go to the kid's safety groups and get them to speak out about the dangers of the Mindwave craze or whatever this is. Get some academic to call it the biggest potential threat to the Western political system in ten years."

"Bigger than the terrorist nuclear threat even?" Bryce ventures, straight-faced. "I'll look right into the angle of more people not getting shot as the result of a global boycott of the arms industry. It's dangerous stuff." Bryce's mouth shuts, probably too late, he thinks.

The news editor's view is that Bryce is too clever by half. Bryce found this out when he was gossiping at the tennis club with Wendy from Finance. Apparently the boss thinks Bryce is after his job, but reckons his self-righteous attitude would soon sink him if he got it. There was a small matter of advertising and corporate media policy, Bryce thinks, and there are no prizes for guessing what the big bosses were going to think of this development. He looks at Clara, who is sending a message on her miniature but highly polished media mutt. He supposes the tiny grey tweed skirt is her version of formal work-wear.

"You can have Clara for a few days to help you." The news editor meets Bryce's narrow-eyed glance with an innocent stare and the hint of a smile. "Let me know what else you need when you get going."

Bryce finds Clara a spare workstation.

“Okay, so what do you want me to do?” she asks.

He sits down on the office chair feeling relieved at pushing the story this far. He wonders how his two children are doing at preschool today. They are his this month, and he has to leave work early to pick them up.

“What do I want you to do?” he repeats. The desire to tell her to get him a coffee is suppressed. There might be a journalist lurking under that arrogant exterior. “Clara, we need to find out who authored the statement that has been released to newsgroups, special interest groups, and others on the Net. Obviously the person who wrote it wants to remain anonymous. But if we could get an interview and find out what the agenda really is, that would be the central plank of the story. I’ll work on the potential political and economic fallout. You hunt around your contacts on the Net, anyplace you can think of, to try and get us a lead on this. Let me know what you come up with by the end of the day.”

It takes four hours. Clara, an ungracious hero, wants to do the interview herself. After all, she argues, she produced a contact number for Jessica Shepherd, the author of the controversial piece circulating on the Internet. Bryce negotiates a truce. They will use the conference video facility in the boardroom and Clara can contribute questions, if they manage to speak to Jessica. Bryce wants an interview, even if he has to fly to New Zealand. But he has no intention of allowing a good story to slip through his fingers—if Jessica is available to talk, he will ask the hard questions immediately, he explains to Clara.

Success comes early the next morning.

Jessica is clearly enthused by the Metamind project. “I’m asking you, Bryce, does anyone now believe that world leaders, or worse still one dominant world leader,

can possibly have all the answers even if he or she were a perfect human being? It's not so much the sheer complexity of running the global system, with the problems of global warming, the continual armed conflicts—it is that one person, with the prejudices and nationalistic ideas that are part of him or her—that one person can't speak and act for everyone." She absently pats a cat that strolls across the table she is leaning on. Clara uses the screen zoom technology to follow the animal.

Jessica adds, "The United Nations hasn't really worked for similar reasons—the nationalistic loyalties of the people involved."

"Who is the cat?" interjects Clara, looking bored.

Bryce gives her a death stare.

"Jessica, how do we know that the Mindwave artificial intelligence system is not going to get out of control and create disorder if it gets bigger and more successful?"

Jessica laughs. She leans forward on her arms and makes eye contact with Bryce's image.

"People are over these Hollywood movies about bad robots and evil computers—they're blatant propaganda and you're aware that some people are starting to ask why it is so important to some interests, or should I say corporations, to put down this kind of approach to AI. At this stage it is potentially an incredibly useful tool only, with nothing approaching a human consciousness—or morals, for that matter. I mean you can simply pull the plug. It only works because people give it the resources."

Bryce follows up. "Why would people transfer power to a system using artificial intelligence in the first place? Doesn't everybody have a different view of the world? There are the different religions, countries

that don't have democracy. Surely the last thing they want is yet another dictator?"

"The Internet has the potential to create a global public conversation that has no imbalances of power or control by particular sets of ideas. This conversation, if you like, can lead to e-democracy, a consensus of what is needed according to the best global principles, such as free speech, peace, environmental protection, justice, fair markets, and political decision-making for everyone. You know Bryce, I think that, above all, people all over the world now accept that people want a more even distribution of wealth and political freedom. Mindwave mediates, gives suggestions on optimal courses of action—avenues for action in fact."

"Isn't that replacing the role of governments?" Bryce asks.

"No, just enhancing them," Jessica replies. "For example, currency manipulation and speculation can be incredibly damaging to small economies but no existing government or coalition has the will to put a stop to it. No one stops the arms trade and it is immoral. They have a field of dreams approach—if you build guns, they will kill."

Jessica and Bryce both laugh. Clara looks confused and opens her mouth as though she is about to say something. Bryce hits live audio video block causing her image in the split screen to disappear. "Then what problems do you see coming up?"

"Initially, Mindwave approaches people in a personalised introduction, having been given their permission to mine data on them. But Mindwave has not been constructed as a neural network model, it doesn't talk back to people like a human, and it isn't your friend. It is a good impersonal advisor, nothing

more. I'm not sure how people are going to adapt to that."

Bryce glances away and then looks searchingly at Jessica's image. "Isn't your group being irresponsible to trial an untested system on a global basis without any authority?"

Vulnerability flashes across Jessica's features. Then her face sets. "Do not underestimate the anger out there. This is how revolutions begin."

"Thanks Jessica. You have talked to us on condition that we don't reveal your identity, and we assure you we won't reveal our sources. Get back to me; let me know if something comes up."

The screen blanks out. Bryce observes the rebellious look on Clara's face. He sighs. "Okay, champ. Let's have lunch before we start writing."

The pair stop by to invite Gloria, a Singaporean journalist in Bryce's section, and then join the briskly moving throng of well dressed locals on Orchard Road. The trio head for a convenient lower ground floor food court which is full of people eating local dishes. They seat themselves at a small table. Bryce is struck by the delicious smell of a dish being eaten by the man at the table next to him, well within elbowing distance. He asks if the man where he got the food. His neighbour replies in excellent accented English that the dish is in fact Malay curry, and indicates with a smile where to buy it. On his return, Bryce sees with satisfaction that Clara is tucking in to a meal. She looks too thin, and besides, a square meal might put her in a better humour.

"What do you think, Gloria? Should we get Clara to write a by-lined sidebar on the swift uptake by young people of Internet developments such as Mindwave, explaining how they interact with each other in such large numbers?"

“I think that would be a good idea, yes,” says Gloria. Bryce notes that Clara looks thrilled for a second before she controls her expression.

“Could be cool,” she says, with an airy wave of her chopsticks. One of Gloria’s perfect eyebrows lifts slightly. Grovellingly grateful might be overdoing it for an opportunity like this, but still...

Madrid, March 16, 2012

Ana sets up her laptop. She is sitting in front of a stone colonnade that is warmed by the early spring sun. She has paid full attention to the menu sitting at her table. Food is her job and her passion: the wine must be right, the textures and the flavours must blend beautifully in the mouth, and any new combination or trend must be carefully noted. She takes a sip of water, puts down her glass, and without hesitating registers as a Mindwave supporter. She likes to know what is going on, and the subject came up yesterday in conversation with a client. She has a considerable depth of experience in marketing, and believes that not only is a streamlined system overdue on the international scene, but that her job has importance in delivering healthy food in a way that does not disadvantage the producers. She has built her business on giving customers full information on where their food is sourced, whether it is genetically engineered, whether the producers of it are adequately paid, whether it is a traditional food, and informing them how it should be prepared.

She signs on the screen to give Mindwave rights to spare computing capacity and most of the data on the company server, reserving some private files. She has a little time before her companion is due to join her. She will have, she thinks, paella valenciana today.

“Hello Ana,” she reads. The message is written in Spanish. “You are acquainted with vagaries of currency shifts and the havoc that this plays with small food exporters from developing countries. You also understand that manipulation of food markets due to tariffs, stockpiling, price undercutting and so on is carried out by large players. All of this works against fairness and sustainable economies in many areas of the world. Added to this are the environmental impacts of loss of diverse land uses and small farming, which have an impact on vulnerable communities. Our aim is to monitor transactions and markets in order to manage economic change. We will ask people for precision boycotts and ethical buying strategies by firms such as yours, plus public education and commitment by our consumers. We want to make currency manipulation internationally illegal, in order to provide stability to market providers living on small profit margins.

“We don’t believe a perfectly free market is possible or desirable under the conditions that prevail in the world today. But what we want to achieve is a free market with fairness; essentially, a compassionate market.

“Thank you for donating your resources to the Mindwave project. Your actions and knowledge input will help us to formulate a bioethics based on global environmental and human needs.”

British Columbia, March 17, 2012

The Canadian sits at his computer and thinks about his wife and kids. He can hear them arguing about homework in the kitchen, but he decides to lie low in the study. He often wonders and worries about their future. He is tired after a hard day’s work teaching at

the small high school, but he's been meaning to get around to this for days. Through his picture window the last light catches the mountains and gleams briefly against the patches of white snow that cover their gracious lines like a threadbare garment. He thinks of many years ago when the mountains were covered in a glorious cape of snow, and the trees, hung with glittering ornaments of snow on every branch, were set against the indigo of the mountain folds and the richest, deepest green of the lower forests, so that the scene had the grandeur of a bejewelled Elizabethan embroidery. He shakes off the memory and inhales the aroma of the hot soup standing in a mug beside him, flexes his fingers, and begins.

“Hello Thomas,” he reads. “Thank you for considering the future of all children; this much is evident as your files show that you participate in charity work. Your charitable organization is now donating spare computing resources to the Mindwave project. You are helping us to work out how to protect children from war and how to assure their physical safety. The Mindwave project asserts that all children have a right to be educated, and more, that they grow up participating in the world they live in as active global citizens. We would welcome your active involvement in Internet-based knowledge and teaching systems for your own, as well as less developed countries.

“One of our critical development modules is called Predictor. It collates information continually being gathered by intelligent agents about global weather patterns, geological events, cultural and political developments, economic data, past events and so on. Where we are allowed access, we integrate data from existing early warning systems from all over the world. We will predict imminent adverse events in terms of

human rights abuses, natural disasters and so on. This will have impacts in terms of saved lives, management of sustainable economies, and efficient responses to identified hazards, among other things.”

Thomas is interested in this module. Because of his background in civil defence, he is aware that early warning systems exist just about everywhere. National governments are interested in possible epidemics, or agricultural disasters caused by weather aberrations; scientists are interested in volcanic eruptions and tsunamis; police are interested in drug use patterns—the list is endless. He can see that it would be exciting to have a huge multi-linked global module that enabled the disparate early warning systems in the world to be formed into an interactive system that produced predictions.

“Predictor will suggest how to put in place either avoidance strategies or how to lay down key infrastructure to deal with predicted events, and will inform Mindwave supporters of what needs to be done. When a disaster does occur somewhere around the world, the system will provide a vast knowledge and communications resource to assist with problems in a timely and efficient way.”

“So, it’s more than an integrated global EWS; it provides an action plan. Impressive,” Thomas murmurs.

“Long range problems include global warming and ozone depletion, species loss and degradation of the environment in various ways such as deforestation. Our strategies include community environmental monitoring of pollution and species loss, and some of this work could be carried out by schoolchildren. Also, the fostering of alternative energy strategies such as micro scale wind and solar power generation, new energy efficient housing and vehicles running on renewable

energy sources are all part of long-range societal strategies to assist in solving these problems. At least, they will help to create the best possible outcomes, given the damage already done.

“Mismanagement of the AIDS epidemic has led to a global consensus among diverse groups that, as the problems spreads, every person in Africa and elsewhere has a right to education about transmission of AIDS, access to the new sexual protective methods, and use of anti-viral medications at least for pregnant women with AIDS, as their babies have a good chance of avoiding infection. People are now sending these supplies and vigilante groups are distributing them. Social breakdown in AIDS afflicted areas is finally getting the point across to people in authority that many women in these societies don’t have a choice about saying no to sexual contacts, and that until those attitudes are changed, there are practical measures that can be taken.”

Shanghai, March 20, 2012

Lin and a group of her friends have assessed the risks of being found out accessing data on Mindwave. The Chinese government has proved nimble in the past at blocking attempts by its own public to access outside news and information on dissident views from outside its borders. However, as prosperity increases in China, and nearly 100 million are online, cracks are showing. Lin has discovered the same file sharing technology used for music downloads is being utilised by Mindwave to make regular bulletins. She and her friends gather round in Lin’s office to read the first Mindwave communication, presented in fluent Chinese. The view of the Oriental Pearl TV tower across the

river is a stunning sight. Shanghai is still a great modern city, though sadly quieter since the tourists went away after the last avian flu outbreak. This is a solemn occasion: one of Lin's relatives died in the Tiananmen Massacre of students who called for democracy, and the memory still burns in her heart. The bureaucracy of China is not moving fast enough to make good the promises of prosperity and freedom to its people, or not half fast enough for the modern generation of young Chinese business people.

"Hello friends in China," the message begins in Mindwave's impeccably tonal Chinese. "Information gathered by our intelligent agents indicate that you are unable to donate computing resources at this time without a significant risk of discovery and punishment by your government, which has banned contact with Mindwave. However we have developed a communicative mode that will give you access to our vast information base, will accept your input and use it to develop a recommended action plan for peaceful development of human rights, labour rights, and democracy in China. This file sharing operation will be carried out across many business and entertainment modules in collaboration with commercial firms who trade with China and who support the Mindwave project.

"Support for this action is increasing daily outside China, as a result of polarised public opinion caused by the avian influenza epidemic of 2009, and the response of your Government to it."

The group listens intently. All of them suffered during the avian flu epidemic that virtually shut down commercial activities in the city for weeks. Old people died in their apartments, too afraid to go out in the streets, while citizens who did have to go out lived in

fear of being suddenly struck down by the virus, which killed within days. The vaccine was months in coming—ordinary life had been a gamble in a number of viral hotspots in China for all that time. Lin was keen to hear the full story.

“You may not be aware of the sequence of events in regard to this disaster. When the flu was first diagnosed in a hospital on the outskirts of Shanghai, Chinese authorities showed that they had learned little from the outbreak of the SARS virus years before. They prevented news of the new virus leaking out for a week. By then, the disease was well established. A group of six doctors who released the news of the avian flu internationally via the Internet were arrested. By then, tourists had spread the virus to Japan and Indonesia. Swift action in both of these countries led to an unprecedented containment strategy that kept the loss of life down to under one thousand people in total there. Family members were kept from one another, commerce was disrupted, and public outrage was vented against the Chinese authorities. The treatment of the six doctors, who were released following several weeks of re-education, has become the centre of continuing international anger. While some countries placed diplomatic sanctions on China and others have imposed limited trade sanctions, we have no shortage of commercial firms who are still dealing with China and who are also willing to collaborate with the Mindwave project to inform and educate the Chinese public as to the responsibilities of their Government.”

“Key Mindwave principles are that war will no longer be regarded as a legitimate instrument of foreign policy, and that every world citizen should have access to a fair legal system, access to markets, and freedom of speech. At this stage, China is trying to maintain its

place in the world while denying its citizens basic freedoms. We will provide a forum for peaceful political change that may become China's virtual democracy. The bulletins can be disseminated from the cities to the rural areas where Internet access and literacy is low."

Damascus, March 21, 2012

The Syrian engineer, exhausted from yet more political strife that has made his day-to-day business life a struggle, turns to the Mindwave project. Five years ago Syria still had one of the lowest rates of Internet access in the world. Then the Government decided to introduce a national Intranet, a highly censored service that aimed to bring commercial opportunities to Syria while maintaining the purity of fundamentalist anti-American Islamic thought. Within a year of the introduction, the Internet-hungry population had grabbed the opportunity, and outsiders had devised programming to evade the Intranet controls. Some highly publicised prosecutions of young Syrians increased public scepticism toward the motives of the Islamic fundamentalist autocrats, and the movement toward open Internet access rolled on until Syria's pure Intranet was given lip service only. Aram treasures his excellent communications systems and tends to work frequently from home, often with the Arab TV networks on throughout the day. Mindwave has rated a mention on one of the news shows.

"Hello Aram," he reads. "Now, more than ever, it is time for you to hold your religion in your heart, and try to make a difference to the problems of your region using the best powers of your mind."

“Over the past decade, terrorism has become the intractable problem of your region, and has spread through the whole world. No area now feels safe. Our artificial intelligence analysis concurs with the research findings over the past decade—that terrorism cannot be stopped by conventional military or security operations, because it is the actions of individuals who feel despair and a sense of dispossession. They act in small cells, and their intentions cannot be predicted. The basis of the rage of the dispossessed comes down to issues of money, land, and lost communities.

“The Palestinians of the West Bank, the refugees from the continuing disorders and droughts of Africa, the asylum seekers from the fracturing Indonesian state, all require such goods as land, economic support, and cultural safety. The process of negotiating citizenship and the transfer of precious land require goodwill and high-level exhaustive negotiations. Those negotiations can be mediated by Mindwave, an entity without an army, but with the ability to cut through circular debates and the baggage of history.”

The Syrian calls his extended family together. They gather around him, picking up their coffee cups, and listen as he reads.

“Equitable solutions must be derived from global principles, because, like a cancer, terrorism is not a problem of one group but a problem of the whole world. Where there is a process of justice in place, terrorism is simple madness.”

They nod thoughtfully, the old ones and even the young ones.

“As you know, the balance of power in your region and the reason for much historic injustice may be linked to oil production. Mindwave seeks to greatly reduce the reliance of the industrialised world on imported oil. Oil

production has created wealth in your region, with the by-products of wars and corruption. The radical scaling down of oil production will create a breathing space for your community to reflect on a sustainable future. Actions of your Government in forcing the rest of the world toward renewable energy sources would be highly responsible in global terms. If, around the world, supply of oil is refused, and consumption of it is declined by responsible consumers, military interventions by the United States will become pointless.”

This is not news to the family. After all, oil has been the curse of the Arab world for generations. It was responsible for the worst governing regimes that greed and foreign interference could provide. But how could Mindwave create such sweeping change?

It is possible, they decide. The chaotic political situation of Iraq and the withdrawal of American troops into compounds has left the Arab oil cartels with less control of their own people than ever before. A number of regimes are in a fragile state. If, as Mindwave proposes, the sustainable energy initiatives are to be supported by a tax system that poured compensation direct to civil institutions of the Arab states, these regimes may have little choice but to comply with the production step-down.

In terms of slowing the advance of global warming—with its projections of flooded capital cities, storms, and devastating climate change—there is little choice but to act, according to Mindwave. The clerics, of course, see Mindwave as a response to American military supremacy and are preaching in favour of it.

The family sits down to a tranquil mealtime, secure in the traditions that are their fortification against

centuries of crusaders, avenging clerics, savage rulers and modern armies bristling with guns.

“Every knot has someone to undo it,” observes Aram.

Boston, March 23, 2012

The group are around at Zee’s place and he is reading out a piece from this week’s online Quantum, quoting Professor N. Egerton Bygraves. It shows a picture of the professor wearing jeans and holding a book in his hand, his grey hair swept back, his expression severe.

“Whilst recognising that there are qualitatively diverse modes of trading in information and communication—what a moron—this development is a perversion of the post-Marxist paradigm. The pseudo-cultural engineering component Mindwave is in my opinion the biggest threat to the Western political system we’ve seen in ten years. Citing the eco-social market economy as the key to global sustainable development is simply asking us to sacrifice elements of our lifestyle to co-finance increased development in the poor countries of the world. It is naive.”

“I really don’t understand that. He’s calling Mindwave supporters perverts?” says Larry.

“Who cares?” says Zee.

Zee spends a lot of his time in front of the computer, and a lot of time interacting with people with similar interests. Sometimes he’s talking to his friends from around the corner, but he doesn’t actually care where the people he interacts with come from. When he goes online there is always someone there to talk to. He long ago drifted away from his family; it was still there but in an alternative reality. His friends call him an addict,

and he knows he spends too much time online, but he needs the escape. His friends understand that, and they admire his secret world, the games and his ability to find stuff out. His parents think he is blanked out in front of the screen all the time, but in fact he is active, very active.

“Mindwave sounds okay,” says Deirdre. “My parents say I’m not allowed to have anything to do with it, but the school librarian is all over it. Ms Mangan says Mindwave is the best thing that’s ever happened and we should all be getting involved. She says all the librarians are going to lobby the Government to have schools signed on.”

“Go the librarians,” says Allie. “Let’s take a look.”

“There’s all this stuff about biodiversity and saving species. This could be our next bio project. They’ve got data about treatment of farmed animals and habitats of wild animals and plants, and the effects of development and pollution in our area. And here’s a design competition for a renewable energy SUV. Some high school teacher in Canada is running it and he’s hoping to get the winner into actual production.”

“Hey, a battery on fat wheels,” says Zee.

“Where would you sit?” asks Deirdre.

“Hey, you wouldn’t; you’d be running alongside it. It’d be too embarrassing to drive it.”

“So, that’s how it would work. It’d be a low friction small vehicle that you’d pull along, powering its generator, and then when you wanted to ride you’d get in and use the stored energy. I win!” says Deirdre.

“I’ll do a battery cycle with pedals,” Larry decides.

“I’ll do a bus-size battery cycle with pedals for forty passengers, like a Roman galley with slaves at the oars,” says Zee.

“Sounds really fun, Zee,” says Allie, raising one eyebrow.

“If I’m cracking the whip, Allie, it will be.”

Allie doesn’t bother to reply. She bends over a picture in her magazine. Has Britney really had the new skin grafts to stop wrinkles? No way, you’d be able to see the fuzzy outlines around the edges of her face if she had, she thinks. They’re making it up again. But wait—on her stomach?

4. The Impacts.

April, 2012

John Fleetfoot sinks into his favourite leather armchair, picks his whiskey in its plain glass off the side table, and unfolds the week's copy of Quantum magazine. The cover story catches his eye. As national security advisor to the president of the United States, all foreign policy matters are his business, and he likes to keep a close watch on what the journalists are up to, both nationally and internationally. If he needs to he can make a few calls to ensure this administration continues to be seen as firm and stern, living up to its current label 'the Boadicea Years.'

He unconsciously mouths a highlighted quote: "Do not underestimate the anger out there—this is how revolutions begin."

He is horrified to read that the Mindwave phenomenon, as the magazine puts it, is projected to involve thirty million by the end of next month. On an exponential curve, global uptake could be massive by the end of the year. He slaps the magazine onto his leather ottoman, picks up the phone and calls a meeting.

The key administration people around the table include the Chairman of the Joint Chiefs Of Staff Leroy Callon, Pentagon spokesman William Lyrebird, Secretary of State Dick Kippenburger, NSA deputy Janice Slickton, and analyst Bob Taft.

Fleetfoot indicates his concern at the unfolding saga of Mindwave. He turns to Slickton. "What are you doing to contain this thing?"

"At the moment we are maintaining a monitoring role. A CIA operative has developed a profile of the collaborators who have set up Mindwave and we have a

surveillance operation running. The computer holding the source code unfortunately slipped through our fingers and its whereabouts is unknown. So far, we don't see any behind the scenes method for putting a lid on this thing. Leitner flew back to Graz the moment he was released and has continued with his refusal to cooperate."

Kippenburger is more than ready to state his position. "There isn't enough concern about this Mindwave around the country. There's a high uptake among the young and irresponsible; it's a fad, but one that could destabilise the economy. We've tried to get Will Bates to put out a Priority One patch to treat Mindwave as a computer virus." He shoots an angry look at Bob Taft. "But he's told me that it isn't a virus, and Macro Data doesn't get involved in politics; it's business pure and simple."

"Worse," Slickton interjects, "it appears Macro Data is developing a new interface programme to link in the Mindwave feed, create personal links and streamline voting, financial transactions and lobbying forms. The rollout will be well ahead of the similar open source project being developed, and will likely make masses of money."

"I say it is time to take a military response to this Mindwave," says Kippenburger. There is a thud as the feet of the Chairman of the Joint Chiefs of Staff hit the floor after falling from their formerly comfortable position on the desk. Callon is known to feel considerable animosity toward Kippenburger, and his first response to Kippenburger's statement is to wonder if he is proposing to rip up transatlantic fiberoptic cables using nuclear submarines in order to disrupt Internet traffic. There is a sarcastic edge to his tone and no one laughs. Seeing he has caused offence, Callon

then asks in a more conciliatory tone exactly what Kippenburger envisages.

“It’s about time we started using our electronic warfare capability. We’ve spent enough money developing it, and we could also put an NSA unit to work clearing the Mindwave program out of US servers and other major support areas.”

Callon leans on one hand and coughs uh-huh loudly. Lyrebird shakes his head. He thinks that could be a hard one to sell.

Fleetfoot picks up the copy of Quantum Magazine and begins to read from it. “Firms involved in e-commerce may make future contributions to global Mindwave infrastructure. Our sources maintain the shots are now being called in global commerce by increasingly concentrated cartels who do not accept the traditional responsibilities of power—that is, the welfare of people under their control, and that the World Trade Organization has been unable or unwilling to modify their behaviour to any extent. A key objective of the Mindwave project, they claim, will be to bring back responsibility in international affairs and commerce.

“Nations will retain their cultural identity, but will no longer make independent judgements about waging war on other nations—I don’t believe this—instead, armies will become international policing agencies with operations facilitated by the Mindwave project and mandated by the United Nations. Is war about to become redundant? So far, Pentagon officials are tight-lipped—and had better stay that way too—this bright new future may all be in the Mindwave.”

He places it exactly in front of him on the table, and looks around. “It does seem that this is a direct attack on our rights as a nation toward self-determination on the international scene. The economic consequences are

also considered to be unquantifiable by our economists. What is the view of the NSA in relation to waging an electronic war on the Mindwave complex? Bob?"

Taft hesitates. "Yes, the proposal is feasible, Mindwave could be hampered by effective worms or specific attacks on major hosts. However, civil action, a law change to make access or support to Mindwave forbidden, would probably be an effective approach. Military intervention, starting an electronic probe targeting civilian computing, is a last resort." Privately, he thinks it is akin to a book-burning expedition, and almost undoubtedly in breach of the Constitution.

"Well, we have to consider all the options, though your off-the-cuff recommendation for a military response should probably stay in this room at this stage, Dick," says Fleetfoot.

Fleetfoot feels that he has sufficient material to brief the President. As the meeting breaks up, Callon offers to walk him down the corridor.

Callon says, "I can't see a day when the dominance of US military might is reduced to our being a global police agency for a computerised plan set up by God only knows who. But I'm not entirely against some sort of formalised global input to international military actions. It is an interesting concept because even if it provides only the illusion of balancing of power, it might work for rather than against the US in international relations. I'm sick of our forces being seen as the schoolyard bully."

"US security is uppermost. I wouldn't consider anything that might downgrade the US military response to threats to the United States. But I've no idea where the President stands on the issue," Fleetfoot replies. This admission confirms to Callon the whispers around Washington that though the

President's aggressive personal style has swiftly earned her the name 'Boadicea' (after the warlike British Princess who defied the Roman armies), senior staff fear she may in fact be something of a Dove.

Callon now has this extra private worry to add to an unpredictable terrorist agenda threatening attacks at home or on interests abroad; the military and civilian structures of the US are under constant and demoralising stress. What will this Mindwave occurrence do to morale in the forces? Here is another challenge, and there is much work to be done by the ten Chiefs of Staff to assess its likely impacts. He walks beside Fleetfoot, both men in thoughtful silence.

The purposeful tread of feet in long corridors echoes in Hugh's ears as he obediently follows the police officer from yesterday. The cop moved in and arrested him as soon as he hit the street last night. Hugh wonders why he wasn't arrested in the hotel if the police knew where he was. Hugh's hesitant question about the welfare of the cop's female colleague was met by a hostile stare and he has decided to shut up. He spent an uncomfortable night in the cells and was now, apparently, going to be asked a few questions. His tall captor seems to have a word and a nod for every single uniformed cop who passes, and there are a lot. Hugh is shown into a grey painted room with a mirrored window in the wall. He sits on a steel framed chair in front of a table. A man with a tired face walks in and sits down on a chair opposite. He is wearing a grey suit.

"Well it looks like rain. Not going to be a good day to be out and about at all," he says. Hugh stares at him. He cannot be serious. The man is talking about the weather when he, Hugh, has been tossed in the cells with barely a word.

He attempts to be civil. "I wouldn't be averse to being out and about as soon as possible, actually. But I wish you could tell me if the police officer who was hit by the car is okay."

"Detective Clover Singh has sustained scrapes and bruises but she is back on duty today, yes," replies the man.

He taps his fingers briefly on the table and looks at Hugh for a long while. His eyes have a focused but strangely empty stare that Hugh typically associates with front row forwards of the New Zealand All Blacks about to front their arch-rivals, the South African Springboks. The look says I'm going to kill you but it's not personal. Well, maybe slightly personal.

"You've turned up here and you've been chased around by a crowd of very nasty men who could have killed one of my detectives. Then you left the scene without authorisation. Now, you are going to tell me the truth about why you're here."

He takes Hugh's wallet out of a bag in his pocket, pulls it open and places a small receipt slip on the table. It is the slip they gave Hugh when he picked up the armband computer. Hugh's back hurts, but he sits up straight. He tells the policeman about Mindwave. He tells him about the source code on the armband, after all, that problem is solved, no harm in it now. He moves on to the point when he realised he was being trailed by police, and how he turned to them for help when the unknown assailants chased him. After Detective Singh was hurt he panicked.

After that he got out his map and went straight to the Embankment, where he walked along the picturesque walkway. He threw the armband into the river when no one was looking. Then he went back to the hotel to get

his bag. He met Leonie again, and was thrown out of her room.

“So you propositioned her. And do you know her other name?” asks the policeman.

“No,” says Hugh, a deep sigh finding its way up from his chest as he thinks about the events of the night.

The policeman taps the table again. “Perhaps you ought to be a little more,” he takes his time choosing his words, “careful about the company you keep.” That stare again.

“I think I’ve learned that,” says Hugh, accepting the unspoken message. So Leonie was after the armband after all. But who the hell was she?

The policeman’s soft voice breaks into his thoughts. “So, you gave her the computer to look after.”

“No, no I didn’t. The computer was gone.”

The policeman’s communications unit beeps and he gets up and walks out of the room without a word. With the sudden break from strain, Hugh slumps into his seat, brain buzzing with the lies he’s told.

He is staring at the grey wall speculating on what charges he’s going to be facing, when he realises that the door has been left partly open. From a distant buzz of conversation he distinguishes the word ‘Clover.’

He strains to hear. It sounds as though the female officer from yesterday has arrived. He has trouble making out what her light voice is saying, but he recognises the voice of the tall detective, who is evidently making a few jokes about her not being able to stay away from work.

“...So nothing too badly wrong with the knee then?”

“That’s what they say. Next time I have to run I’ll probably be flat on my face,” the voice of Clover replies cheerfully.

Hugh can't catch the next bit, as the voices are lowered. He leans toward the door.

"...Way over his head. The dementors are after him but Penguin has just told them to get knotted, in a nice way of course."

Hugh can't catch Clover's reply.

"He says he doesn't smell like a terrorist—and he should know. And he was nearly the victim of a crime after all. And Penguin said to them, what have you got on him? And you know what they said?"

Clover emits an extended murmur.

"I know. They use us for surveillance duties because they can't justify doing it themselves and then they just want us to hand him over and then they'll keep him for weeks over a computer program that doesn't seem to be breaking any laws here anyway. The boss doesn't like having to deal with the Americans every tick of the clock either. I think it's a good call."

The voices grow stronger as the pair stroll past the door. Clover is filling her companion in on the latest on the Mindwave program.

"...Could really help Interpol and day to day policing, the archiving and retrieval capabilities are amazing, and will bring places in the old homeland right up to speed. Then think of the training opportunities with the language and communications taken care of..."

Hmmm, that was interesting, Hugh thinks. Clover seems a decent sort, and he wouldn't have picked that one up himself. He wonders if someone would bring him a glass of water. He is tired and stressed out and he doesn't think the cop believed him about the computer. Maybe he should have gone straight for the lawyer option instead of trying to talk his way out of this, as his famous charm doesn't seem to be working too well.

He can guess who the dementors are, the secret service, and if they are anything like the New Zealand security service, the GCSB, they aren't the sharpest knives in the drawer. He wants to stay right here, where he is. He mulls over the reference to the Americans. It has to be Leonie.

The tired policeman walks in. Hugh can tell by his expression that something had been decided—the man is no longer interested in him. He clenches his teeth. It seems to take a long time for the policeman to speak.

"I'm going to give you some advice, lad, and I suggest you listen. You are going to be taken to the airport and I advise you to get on the first flight out to New Zealand. Now I don't care where you go as long as you don't come back here. We don't want you, okay?"

He turns to leave the room.

Hugh says in a slightly cracked voice, "Thanks."

The policeman turns, surprised. The wrinkles around his eyes fold up and his jacket falls open around his slightly portly stomach as he puts his hands in his pockets. He has small feet, placed close together.

The policeman nods. "All right," he says, "off you go."

After what they've been through with Hugh, Clover and the tall detective, whose name appears to be Ian, evidently feel they only need to spend a few minutes on the weather as they drive through London in an unmarked police car. As the car stops at traffic lights, Hugh stares out the window at the aged buildings, the people streaming past on the footpath, people with backpacks, handbags, briefcases, all going somewhere in a hurry. He tries to take an interest in the latest English football results as discussed in the front seat, but in the back of his mind he is wondering about how

he is going to manage the call to Antonia back home. Maybe he could buy a couple of bottles of hard alcohol at the duty free and drink that first, but then rejects the idea. He had a brush with alcohol when he was nineteen or so and he doesn't want to revisit that period of his life. So that leaves a carton of cigarettes perhaps...but even if he sat and smoked all of them, he was still going to have to face the call sooner or later. Yeah, so I've been arrested, and I've been eyeing up another woman, a spy actually. Oh, good Hugh, just an average week then. Love you. Hugh realises that he can't tell her now. He'll have to call her and lie when she does the 'something's wrong, I can hear it in your voice' routine, which she's really good at. He'll overdo the chase and the arrest; that should put her off.

For someone who has always prided himself on his integrity, he seems to be doing a bit of lying lately. Finally, he and his bag are dropped at the airport. He walks in to the international concourse, sits down, and opens his laptop. He wants to catch up on the progress with Mindwave. An hour later he is sitting browsing over progress with the Predictor module. This year many millions will be displaced by climate change and civil unrest, or a combination of both. Hugh sits alone, surrounded by strangers who take no interest in him at all. He's been thrown out of Britain and he doesn't know what to do. He's tired and hungry. This is just a tiny taste of the sense of dislocation a refugee feels, he thinks.

They're probably sometimes quite simple people. Their land has created the contours of their heart, and all their memories are built around the small places and the few people of their families. When they are forced out, the smiles, the daily routines, the shadows falling across the yard in the evening, the familiar birds

calling, are all gone. They lose everything. Maybe Mindwave really is going to make a difference to the dispossessed, maybe it can calibrate the impossible task of finding a place for everyone, a place where they have rights and a home, even if it's not the home they've always known.

It is a task worth pursuing, he decides, and it is not time to run for Auckland. He needs to talk to Professor Leitner to get the final financial go-ahead and also to find out whether Leitner really does possess a 'kill key' that would stop all the parts of Mindwave communicating with each other. Richard and the team have suggested the presence of such a disruption protocol. Hugh needs to find out face to face what Leitner's intentions are in regard to the Mindwave project, and whether he is prepared to help.

Hugh sends a carefully worded e-mail to Leitner, and goes in search of a meal and a shower. Soon he is flexing his stiff shoulder muscles as the warm water rains down, and the white noise of the shower fills the void of his tired mind. Despite the inviting presence of a fluffy towel and fresh clothes waiting for him when he steps out, he feels he could stay in there forever, warm and sleepy. When he emerges and checks his e-mail, he finds Professor Leitner is on the job—there is a ticket waiting for a flight to Vienna, and the professor says Hugh will be met at the airport, by a friend of his, Marcus Simmer. Marcus will take Hugh on a short holiday, as he, Professor Leitner, is currently attending a conference elsewhere.

Several miles away, the backwash of his visit is sweeping up the M4 in the form of an employee of a discreet security agency, on her way to a Government Minister's country home for a briefing. She is very

surprised to be called to the country house; it must be something urgent. She parks her car and crunches across the gravel to the house made of creamy gold stone with portals carved in graceful arches, and small panes in large windows. As a strictly city girl, she hasn't seen anything quite like it. Neatly pruned roses and lavenders just starting to flower, and a round garden with a central urn off to the right, a few pansies with little yellow and orange faces spilling out of it. She lifts the old style knocker and wonders where the security is. As a professional, she appreciates that either there isn't any, which isn't going to happen given her boss's position, or that it is very unobtrusive. The slightly chipped deep red door opens. In the stone flagged hall beyond stands a slender woman in a pretty wool dress with a cardigan and well polished leather shoes. A very old brown dog, possibly the ugliest and most moth-eaten looking animal she's ever seen, rushes at her around her mistress's legs. She tries not to recoil.

"Oh I'm so sorry, Catherine isn't it. Don't mind Bustle here, he won't hurt you," says the woman, stepping in and offering her hand. "I'm Julie, David's wife. Please come in, he's around somewhere, I'll get you a drink and go and get him." She really has a lovely accent, the former policewoman thinks, following her past the old sideboard with a beautiful bunch of flowers and an antique mirror, through to the sitting room. It has sofas with rather battered fat tassels, a serene view of the sweep of green lawn and huge oak trees in the garden, and some rather nice paintings, the one over the fireplace possibly a very good print of a Turner, with a stunning sweep of greys, blues and yellows over the sombre waters of what would be the Thames River.

"Please sit and relax," says Julie. "He's insisting on finishing something out there. We're going to create a

tropical garden in the old shale quarry out the back. Do you think that will work out?"

Catherine sinks into the flowered cushions on one of the sofas and admires the gently glowing collection of old copper objects near the fireplace. Thank goodness; Julie is lovely, she thinks. She was terrified the place would be posh.

The Government Minister arrives and takes Catherine to his study, a room with many books and a small fire in the grate. They pull up comfortable polished wooden chairs to his computer screen and the Minister carefully removes a framed silver photo of a dog. That would be Hustle, now deceased, Catherine thinks. She's trained to notice such things. The Minister explains his problem. A New Zealander was detained briefly by the police and admitted he had a computer containing the source code to Mindwave in his possession. Catherine nods. That's a big one. He is leaving the country today, and the police have accepted that he was chased by persons unknown in what turned out to be a stolen car, and that he disposed of the computer between that incident and his arrest. He claimed that he threw the computer in the Thames, but the arresting officer noted the time between the chase and the time he turned up at his hotel would make that a very tight time frame indeed. There was a period of some hours between the man returning to the hotel and the arrest, due to an intervention at the request of the Americans. When he was picked up, the computer was gone. However, the computer wasn't stolen and the New Zealander has committed no offence. The Americans swore they didn't take it.

"For some reason, the secret service people haven't managed to make a case to keep him here for further questioning. I suspect they've been profligate recently

in detaining people, and the media has got right off the leash about it. But as you'll understand, if there is any chance at all that that computer is still floating around London as it were, then I see it as definitely being in our interests to get it. It isn't something I'd want to shout about from the rooftops, and of course we'd have to put some thought into what we would be doing with the information should we retrieve it. Nevertheless, someone needs to be looking to the future. Take a look at the interview video and the reports; see what you come up with."

A couple of hours later Catherine has exploited the Minister's clearance status to make a number of checks through databases that would not normally be available to her. Though she has trusted status and has handled a number of sensitive matters for him, he sits patiently watching as she goes about her work. Her inspired guess pays off. The integrated surveillance system designed to protect London from terrorist action has successfully matched Hugh's photograph to the man appearing on the Russell Square tube surveillance system on the specified date and within the specified timeframe. As she follows him from camera to camera she alerts the Minister to an incident on one of the platforms. She plays back the video. Hugh is seen walking casually to the end of the platform, and taking a coloured cloth out of his backpack. His body obscures what he does next as he turns away, close to the edge of the platform, but another camera angle catches the colourful cloth now resting near the tracks.

"I'm betting that's it," she says.

"Now, let's see how long it takes for the maintenance crew to pick it up-it may be a lost cause, I'm afraid."

For another half hour, she scans the video. Then she strikes gold.

“Look at this.”

A roughly dressed kid, maybe sixteen or seventeen, drops down onto the track and scoops up the object dropped by Hugh. The Minister winces.

“Who would do such a stupid thing?”

“Well, this lad would, it appears. It seems Hugh Shepherd decided the computer was too hot to keep any longer, and he was probably right. The police reports would indicate the people who were after him were real pros—they haven’t left a trace. Anyway, it doesn’t matter.” She turns to the Minister. “The police computer has an identity for the boy but he has no fixed address. If you wish to offer a very substantial reward, sir, I’ll put the word out on the quiet. London has a very efficient criminal network and it is a lot harder than people think to hide something that someone is prepared to pay a lot to recover. There’s a good chance we’ll get it back in short order. It could be that boy’s lucky day.”

Catherine is pleased. She is very good at her job, and the Minister pays well. Some things need to be handled discreetly, and she knows that he always puts the interests of his country first. It is her concern to find the computer and get it to him quietly, and what happens then is his concern. She is happy to accept another cup of tea from Julia. Unfortunately she has to decline an invitation for a look around the garden as she has to get back to London to set things in motion herself. The game is all about contacts and getting things done in a civil and organised way.

5. Austria.

April, 2012

Hugh walks into the busy airport lounge at Vienna. It has a cosy feel, and he can't wait to sample some of the local coffee. He looks around for the person he is supposed to meet. His eyes are drawn to a man a little older than himself and wearing casual clothes and holding a small placard with 'Hugh' written on it. Hugh approaches the man, who looks vaguely familiar.

"Are you Marcus Simmer?" he inquires formally.

"Hello! Nice to meet you at last. Juergen says we should spend a couple of days together as there's a lot to talk about. Let's go."

Hugh is astonished to hear Marcus is in fact his employer at SR Inc. back in Auckland. Marcus, who explains that he has his reasons for keeping a low profile, keeps Hugh's branch at arm's length. In addition, Marcus owns Hyperwave, the knowledge system that was evidently the starting point for the Mindwave program. In fact, Marcus explains, he financed Juergen Leitner's pet project. Marcus explains that he is actually Austrian, and has chosen to live with his family and a few friends at Great Barrier Island, several hours out of Auckland.

"You'll be interested to hear the chain of developments. It started when Juergen realised he was about to be arrested at the conference in San Francisco. There was only one copy of the Mindwave code, apart from a very heavily protected backup that is frankly an old version, and he wasn't about to give it up for American examination. The arrest was totally unexpected, and he only had a minute to act," explains Marcus.

“He thought he recognised Jessica, and when he set his computer to searching for a potential host for the data, and it picked up an available SR Inc prototype in the room, he put two and two together and realised that the data would be retrievable, because it was one of our new ones and held by a New Zealander. He authorised the transfer and destroyed the data on his computer. It all took less than a minute.”

“Of course he wasn’t banking on being held in custody for a couple of weeks, and emerging to find Mindwave was global!”

“Well, I had no idea...” begins Hugh. He wonders if Marcus can see that his hands are shaking.

“Actually, Hugh, this thing is already bigger than I ever dreamed it could be. I have to admit your team has been ingenious with the launch. Let’s just accept that what is done is done.”

Marcus reveals that Professor Leitner has asked him to fly over to try and make some sense of where the Mindwave project is going. It’s good timing that Hugh has turned up just as things are really getting interesting. Hugh, his confidence restored, finds Marcus to be good company. He is soon seated in a low-ceilinged bar, eating a large serving of ‘Wienerschnitzel’ (because Hugh wants to try a local speciality) and drinking an excellent local lager served by a young and attractive blonde woman whom Marcus consults at length. He is talking rapidly in German, using what Hugh thinks is quite a honey-coated tone for someone who has a family back home. The young woman leaves, laughing, and Marcus turns back to Hugh, who intends to limit himself to one beer for the evening.

“Prost!” says Marcus, instantly losing the soft timbre to his voice.

He listens intently while Hugh discusses the Mindwave project and his own problems in London. Hugh feels he should lighten up.

“So, Marcus,” he says, “how do you see Mindwave solving the problems of the world?”

“With difficulty,” Marcus replies drily. “How does Mindwave deal with the fallout of the most intractable problems of the past ten years? Look at the Pacific with rising sea levels and the storms—Indonesia started to go to pieces once the US lifted the clamps internationally after Iraq didn’t work out, Australia is in a state of war readiness every day because of it... I could go on and on, obviously. Due to history, many of the geo-political problems are virtually unsolvable.”

“Turn it around, Marcus,” Hugh urges. “What is needed is an intellect that can ignore the past and has no particular axe to grind. Mindwave is contemporary while the past is, I don’t know, tragic.” He spreads his hands. “You see, there are people who will never forgive or forget the past. But there are more people who want something better. Make no mistake, this is a new political age. Individuals, mostly in the developed countries to begin with, but also the ones using the new stripped down cheap access computers, are going to make a huge difference.”

Hugh finds Marcus wants to discuss the wider, more philosophical implications of Mindwave. It is as though he is past marvelling at the technological properties of the programme. What absorbs him most is the relationship between what is happening now and the philosophies of the past. Hugh thinks this is a somewhat European preoccupation; however, to be sociable he thinks back to some of his conversations with Jessica, and starts to feel his way through the topic.

"I guess there was the religious time when thinkers, in the Christian tradition for example, were dominated by the theological approach. And of course there are many who are still in that place today, but there are other streams of thought running alongside it. There was the philosophical and scientific Renaissance approach, and then the political historical approaches like Marxism that came later."

Marcus catches the eye of the young waiter and soon has a Coke sitting in front of Hugh and another beer in front of himself. Hugh stares into the dark liquid and notices the warm old browns and glowing lights of the bar reflected back at him, given a new dimension by the gleaming droplets running down the side of the glass. He realises he is enjoying himself.

Marcus continues thoughtfully. "A system like we have now, based on uncertainty, accidents of nature and human temperament, where the democratic system has maybe been subverted into a free market competitiveness... it doesn't engage people in the ways of the past. It alienates them and makes them despair. So people want to find their souls again."

Hugh nods. "In that sense the new politics is replacing the coldness of the old Information Age with a belief system again. People who think that love is important, who have values, they'll subject themselves to the social constraints, even laws, developed by Mindwave. So a community of global citizens will be created."

"They feel they have a responsibility to each other and the earth," muses Marcus.

"It is a powerful motivator to drive Mindwave, but it could also represent a big threat to existing power structures." Hugh gives Marcus a frowning look.

They walk back to their hotel through the crisp cold, ready to fall into their beds and agreeing not to meet for breakfast until at least ten o'clock the next morning.

The next day Marcus decides to take Hugh alpine bike riding near Graz. They head off in Professor Leitner's car with two borrowed mountain bikes from his apartment. Marcus delivers a running commentary on the scenery as they drive. As the road becomes more deserted and they start climbing into the mountains, Hugh wonders at the wisdom of going so far from the protection of the town when there is no confirmation that the threat posed to him by the strangers in London has been resolved. Surely they have realised that he has disposed of the armband by now. He has no intention of conveying his anxiety to the older man, who seems to be confident that this will be a great day out. Hugh's looming paranoia, something he knows he tends to suffer from anyway, will settle down with a bit of exercise. The men have an apple and some cheese, and stash their water bottles.

Hugh breathes in the cool air and admires the icy-pale sky with fluffy white clouds chasing across it. The ground is damp and a little muddy, the blades of grass are little green knives interspersed with grey rock. In the distance the mountain range fades to soft greys and blues. Marcus promises to take it slow on the trail as it's the first time Hugh has tried mountain biking. Hugh follows him, leaning well forward and enjoying the exercise and the challenge of reading all the small bumps and twists of the terrain as they ride. He takes some deep breaths and listens to the sounds of the birds echo in the clear air. The sunshine warms him as shadows from the clouds move across the hills. The pair cycle through low trees and around huge rocks across the side of the mountain, then into a valley. They are

now more enclosed as they drop their speed to negotiate the rocky paths, and Marcus's rear wheel kicks up small clods of earth with its wide tread. Hugh feels his anxiety return in full force. The opposite hillside is covered in small trees and large rocks. In the silence of the valley nothing stirs except for the two riders picking their way through the trail. Hugh controls his breathing and starts looking around him, alert for any changes in the air and the valley. He finds it difficult to sweep his eyes around the hills and ride too. He considers dropping back but decides to stay close to Marcus. Soon they'll be out of it and back on the open hillside.

Marcus's wheels hum steadily and Hugh feels his heartbeat ticking off the seconds. He wishes he were back home stepping out in the lush, secure bush of the Waitakeres park, with Antonia beside him and a decent picnic in his backpack instead of these unfamiliar Kaiser rolls and sausage. Staring at the back of Marcus's helmet in irritation, he thinks he should have realised that the incident in London was going to leave him with some sort of post-traumatic sense of danger. Reflecting off the helmet is a red spot that quickly runs down and glows on Marcus's back. Instantly recognising the dot of a laser gun sight from photographs he's seen, Hugh lunges down with all his strength on his right foot, sending his front wheel hard into the back of Marcus's wheel in under a second. Hugh ducks and Marcus wobbles violently, nearly falling off and carrying out a clumsy correction over rocks on the side of the path. He yells "What are you doing?" but the scuffle doesn't cover the unmistakable whine of a ricochet off a rock to their right, followed by a distant crack. It seems Hugh doesn't have to tell Marcus what the sound is, as Marcus abruptly throws the bike off the path and takes off in a rapid jolting

descent toward some trees. Hugh follows, head down, legs pumping furiously, the ground rushing past, large rocks appearing and disappearing behind him, the bike leaping into the air and creating a spray of mud and small stones. The wild ride ends in under a minute as he feels the rear wheel go into a terminal slide on a patch of smooth rock covered in fine stones. He hits the ground with his right foot, lets the bike slide away from under him and dives into the shelter of a large low rock, hitting the ground hard and losing his breath. He rolls into a shallow depression and hugs the ground, feeling the damp seep through his camo pants and long-sleeved T-shirt. He spits a bit of vegetation that has found its way into his mouth. He thought he heard a second shot but couldn't be sure. He calls out. Beside him the back wheel of the discarded mountain bike slowly stops spinning in the air.

“Marcus. Marcus, are you there?”

“I'm here, I'm okay, I'm behind the big rock just down the hill. What the hell was that?”

“We can't stay here,” calls Hugh. “The sniper can just come and get us anytime, he's probably on his way down the hill now.”

“Don't move, he'll shoot you. Just stay where you are,” Marcus calls with urgency.

“I'm out of here. What chance do you think we have against a rifle?” Hugh tenses his muscles and prepares to make a dash for it. He's not going to get shot on the ground, at least this way he has a chance.

“Wait, Hugh,” Marcus sounds desperate. “I have a weapon. I can handle this.”

“What, you have a gun? Why didn't you tell me?” Hugh feels furious. He'd been a second away from making himself a target like a running rabbit on the

hillside, a pathetic creature dodging helplessly as the gun muzzle moves after it.

“Just shut up. We have to wait for him.”

Hugh lies on the ground, his eyes uselessly searching the grey lichen-covered rock in front of him and the view over to the trees to the right and left. He waits and the minutes stretch out as his hand grips a stone, a useless stone that is no defence against what he faces. A distant scraping sound to his right precedes the arrival of a dark figure picking its way quickly through the trees, not bothering to take cover. With a shock Hugh sees the slender shape of the sniper rifle, its scope visible against the dark clothing of the man walking steadily through the trees, the gun held across his chest. The man reaches the last line of trees and raises the rifle, pointing downhill. He lunges forward as if to run and suddenly appears to trip, falling sideways as though he's been tackled. Marcus appears at a dead run, and jumps on him. Hugh lurches to his feet and rushes across the turf, slamming one foot on the man's thigh. Marcus shoves the gunman's head to the earth and wrenches his arms behind his back at a painful angle.

Hugh grabs a spare stretch cable from his backpack, and the pair tie a tight knot around his wrists. They use the man's belt to tie his ankles. He is silent and appears dazed.

“Leave him. Let's get out of here, there might be another one somewhere,” Marcus gasps.

Hugh grabs the rifle and Marcus kicks the man so he rolls down the hill. Both men run, grab their bikes and make an awkward dodging climb up the hill to the trail. Hugh slings the rifle over his shoulder. It is matt black and too elegant an object to have been made to kill a man, he thinks. They fly back along the track in silence,

hoping the man is alone and they're not right now in the sights of a backup assassin.

They dump the bikes and run to the car. Marcus is holding on to his left wrist with his right hand. Hugh sees that Marcus is in pain and probably not going to be able to manage driving. He flexes the fingers of his left hand and Marcus tosses him the keys. Hugh unlocks the car and takes off before Marcus has managed to close the passenger side door. Already moving, Hugh snaps in his seatbelt, flicks off the automatic drive and guns the car away in second gear. He stands hard on the brakes coming in to a tight corner, the assisted braking system shuddering up through the floor. Hugh pulls the car's nose in hard left centimetres from the rock wall of the corner and muscles the car around the corner. As he takes off again Marcus listens to the motor snarling up to its high registers and notes the tachometer needle is about to red line. Hugh hits the brakes again hard for the next corner, the left front wheel hitting a piece of broken tarmac on the extreme left of the road and making a nasty thump. As he changes gear for the short straight, Marcus, holding on to his seat hard with his good hand, suddenly laughs in elation at having made it out of there. He gestures at the speed-reading stiffly with his sore hand.

"Do you know how much Juergen paid for this car?" he remonstrates.

"About a hundred thousand US dollars," replies Hugh. "It understeers like a bitch."

He drives fast into a corner with good prior visibility and throws the car into a short but vicious slide. Marcus gives up and lets him get on with it. As the brakes are again abused around a particularly tight bend, a large campervan appears, taking up most of the road in its stately progress around the turn. Hugh nods toward it.

“Better thrashing this than risking them.” Marcus nods back. With the worst of the alpine corners behind them, Hugh speeds along a clear straight, the motor singing as he neatly passes a Porsche going the same way whose driver leaves it a second too late to decide he wants to have fun too.

Hugh sighs heavily, taking his left hand off the gearshift and placing it with emphasis on the steering wheel.

“Are you going to tell me what happened back there?”

Marcus is still looking a bit white, and he looks uncertain as to what to say. “What do you mean?”

“You didn’t shoot him, you didn’t have a gun,” Hugh says grimly. “Yet you waited for him and you downed him. How did you do that?”

“He tripped.”

“He didn’t trip, you downed him.”

“Okay, look Hugh, we’ve had a rough day. Maybe you didn’t see what you thought you saw. Or maybe I just can’t talk about this right now. Just leave it, will you? We’re safe, that’s what matters.”

Hugh gives Marcus a long, disbelieving stare. There’s something going on here, something that makes Hugh feel disoriented, and Hugh doesn’t like mysteries. But he owes Marcus. He still can feel the horror of facing that run across the side of the valley, and he doesn’t ever want to feel that fear again.

He decides to give Marcus some space.

With the Porsche breathing heavily down their exhaust pipes, Hugh and Marcus finally reach the outskirts of Graz. Trying to be cheerful, Marcus says it is just as well Juergen picks up plenty of speeding tickets himself, as he may not notice a few more collected by his car. But now both men are feeling

downhearted as they reflect on the near disaster up in the mountains. There's no way they want to create a further mess by involving the police.

Marcus decides to spend the next day catching up on work at his hotel and resting his wrist. He advises Hugh to be careful and stay in. They plan to meet Professor Leitner for a meal that evening, and then leave for Auckland the next day. By mid-morning Hugh has done a few hours on his Master's project, and checked up on Mindwave's global remittance bank scheme, ready to launch as soon as Professor Leitner gives the go-ahead sequence. He can't get into it. The events of the past few days have left him with a strong sense of unreality. He needs to get some fresh air, maybe see some sights, and just relax. He can't believe that the people chasing him, whoever they are, will attack him in front of a town full of witnesses. Their behaviour so far indicates that they are careful to try and catch him alone. Besides, he thinks, their first target yesterday wasn't him; it was Marcus. Hugh decides he can't afford to give in to fear.

He strolls through the town, taking the precaution of wearing a navy cap, dark glasses, and a scarf around his neck. He'd have trouble recognising himself, he thinks. He leans over the bridge and gazes into the mountain river rushing through a deep channel in the centre of town. He places earpieces in his ears to listen to a new music program Antonia insisted he take with him and try called Florasound. It is a crazy new age thing that purports to pick up the vibrations of flowers, trees, and other vegetation, transforming the signals into music. The resulting sounds, according to Antonia, are soothing and also very entertaining. She said they would give Hugh an entirely new perspective on his experience of the places he visits.

Hugh walks around the city centre until below the central park on a hill he finds an avenue of young trees, their finely drawn branches just beginning to be covered in a multitude of green leaves. They flicker in the sun and the light breeze. Immediately, he hears a soft continuous flood of notes, strangely joyful and rippling. They are gorgeous, and slightly reminiscent of a Chopin piano concerto. He walks on, alternately surprised by the sonorous and mournful tones of a severely bollarded tree set in the footpath, and clear high notes from some early poppies nodding in a small municipal garden. Enough, he thinks. How did they design that? Definitely a women's program, he thinks, smiling.

He sits and has a leisurely coffee in the centre of a steep street closed to cars, and consults his guide pamphlet. Nothing has happened so far, and this is a very pretty town. He is still restless and decides to take himself off to the provincial armoury. He is interested in modern weapons and warfare, and the old stuff holds some interest for him as well. He pays at the door and follows a couple of tourists into the dim chambers full of a treasure trove of armoured suits, pikes, and other ancient weapons. The armoury dates from a time when Graz was a fortress at the southern border of Christian Europe, the townsfolk armed to the teeth to keep the Muslim hordes at bay. Then, when the danger passed, the chamber was locked up for centuries, to be rediscovered intact. The armoury is now a proud reminder of the history of Graz and a unique store of military hardware of the distant past. Hugh stores his dark glasses and cap, and is soon absorbed in the detail of the cuirasses and the different types of ancient muskets on display. It is the world's largest historical collection of weaponry.

He examines a full suit of armour that is made for a war-horse, and imagines riding such a steed into battle, pennants flying, invincible behind a beautifully forged breastplate. How cool would that be? A faint noise behind him brings him back to the present. He's made the mistake of letting down his guard, he thinks. He looks cautiously around him. Somehow, without his noticing it, the other tourists have drifted out the door. It seems he is alone in the shadowed room of memories; the guard who had been standing inside the doorway seems to have gone away, for a tea break maybe.

Then what was the noise? Hugh turns in a slow circle. A movement out of the corner of his eye makes him snap his head to the right. Slowly, from behind a rack of armoured torsos, a gleaming iron helmet is rising—and there's someone in it. The fearsome object is accompanied by a leather jerkin and an ancient sword that looks large and heavy. The silvered edge wavers as the figure—he, or she, can't be more than five foot five inches tall, Hugh notes with surprise—moves stealthily and swiftly through the shadows toward Hugh with a creaking tread on the ancient wooden floorboards. A couple of seconds pass as Hugh's shock holds him paralysed. He's been running and running, he has felt the stress of fear and worry until his head hurts, and he has almost turned on complete strangers because they accidentally brushed his sleeve. The flood of nervous energy and cold anger that takes him over as he confronts his enemy is almost a relief. The assailant's actions suddenly seem slower as Hugh's eyes focus with the intensity of a killer. He will commit everything to take this armour-suited fool. Who would be arrogant enough to attack someone in an armoury? The figure facing him hesitates almost imperceptibly, as though he or she can sense the aggression in the tall slim figure.

Hugh turns and in a clean sweep grabs the nearest weapon out of the rack behind him. It is a solid lance with an iron tip, and he immediately steps in and swings it in a furious arc toward the helmeted figure. The figure blocks the stroke with the heavy sword, and the lance spins off and crashes through a row of iron helmets. Some of them bounce high in the air, and one glances off the shoulder of Hugh's assailant, who turns to check through the slits of the helmet that there isn't another person there. So, thinks Hugh, he can't see properly. Hugh has decided he's fighting a man, as he can't afford any ambiguity in his approach to this deadly threat. He grabs a couple of fallen helmets, backs off and rolls them like bowling balls at his opponent's feet. His opponent looks down but stands firm. He'll have to be careful moving forward or he'll trip over the rest, thinks Hugh.

He backs quickly down a row of muskets looking for his next weapon. He hefts an axe and throws it with all the force in his right arm and shoulder at the man's chest, keeping another one in his left hand. As the axe spins lazily through the air the man seems to forget about his breastplate, dives away from the axe and takes down an entire rack of short pikes. He rolls to his feet, now holding a pike in his right hand and the sword in his left. He advances on Hugh. Hugh feels sweat break out on his skin from the exertion of using the heavy weapons. He grabs a round shield and makes a dodging feint, the pike passing him by a whisker. He throws himself forward with all his force and hears the sword clang into the ironclad shield. He feels the blow deflect into his thigh and knows he's taken a cut. He uses the edge of his shield to punch upwards into the chin section of the iron helmet. His assailant's head snaps back and rebounds off the sturdy wooden joist behind

him. He hears the man's breath hiss out, amplified by the metal helmet. Hugh jumps and feels the heavier man buckle under him. The weapons clatter as the two men and the shield hit the floor hard. They roll through a display of a couple of suits of armour and Hugh gasps from a punch in the ribs. He is trying to get his left arm free to strike with the axe he still holds. Suddenly, his assailant seems to be lifted off him. Angry voices in German replace the sound of clashing ironware. Hugh reluctantly looses his grip on the axe in his left hand. He groans with much feeling, and bends forward on the floor to clutch his injured thigh, which is bleeding freely. He points at the helmeted man, and says very clearly, "He tried to kill me." He knows his copper coloured hair will be standing on end and that he'll be looking young and frightened.

It seems the guards understand English, and they're shocked at the sight of blood. Both turn their attention to the helmeted man, who starts struggling furiously in their hands. Good, thinks Hugh, rolling to his feet and disappearing behind the nearest display. He ignores the shouts behind him but can't resist one longing glance at the smashed up displays. He could so use one of those axes, he thinks, running for it out through the old arches into the sun.

He limps back to his hotel room and calls Marcus. As he waits for him to come he holds a towel on his leg and reflects on the progress of the brawl. It is the first time in his life he has hit another person in anger meaning to hurt, meaning to kill, and no matter how necessary his actions, they've created a shadow in him. He tries to concentrate on the present. There seems to be a strong element of intimidation, he thinks. In the first attack they seemed to want him along with the armband, as they could have just run him down if

they'd wanted to. Out on the hill it seemed to have been Marcus's life in danger, first anyway. Maybe they were more scared of Marcus than of him and they might have good reason to be, Hugh thinks, considering what had happened to the gunman. Then, in the armoury, was the guy trying to chop his arm off with a sword? Of course he was. It was a terror attack, aimed to take him out of the picture and to send a gruesome message to Marcus and Juergen to back off from the Mindwave project. Whatever his intentions, he's failed, Hugh thinks, wincing as the pain from his cut really kicks in. And I'm not giving in.

Hours later, Hugh is sitting in a quiet restaurant with Marcus and Professor Leitner. His leg now has four stitches and a bulky gauze dressing that is causing his jeans to pucker and fall short on his right leg. He has also had a tetanus shot and antibiotics. The medical attention was administered by Professor Leitner's friend, who is a doctor. She told him that the real problem with the wound is the bruising left by the ancient sword, rather than the superficial cut. The attractive physician has agreed to accompany them to dinner, and creates a warm sense of occasion.

Professor Leitner has heard all the details of the attacks and is clearly very concerned. He looks severely at Hugh. "You really are creating an enormous sensation out there with the Mindwave release. I wonder if you really considered the consequences of releasing this code, which incidentally does not belong to you." He raises his hand to stop Hugh's response. "Furthermore, your actions appear to have placed you at considerable personal risk, and Marcus as well, which I very much regret. For myself, I have little concern as I am well guarded. But we urgently need to find out who has been chasing you, or rather, to run an

investigation to see if there is a link to prove the involvement of Dr Wen Peiyan, who appears to be a very serious threat.

“If you were my student, I would kick your ass,” continues the professor deliberately, causing Marcus and his friend to look shocked. They’ve never heard him use bad language. “However,” Professor Leitner takes a reflective swallow of his wine, “you are not my student. I do take exception to your remarks about my car though.”

Hugh sees that the Professor’s feelings are hurt. He slides Marcus an accusing look. Marcus shrugs.

“I’m really sorry about any comments I may have made about your car in the heat of the moment, Professor Leitner. I really wouldn’t know. I usually drive a white hiace van back home,” Hugh says untruthfully, pleating the linen tablecloth.

“Oh well then,” says Professor Leitner. “Call me Juergen.”

The conversation moves on to Mindwave and the document Jessica wrote for distribution. Professor Leitner is quite impressed with it, and believes that it is partly responsible for many groups around the world starting to write additional code to suit their purposes.

“Certainly, I think Jessica has captured the key intentions of Mindwave as we conceptualised it. And she has also addressed one of the important issues—creating public understanding of the new global threats and the resulting responsibilities.”

“The stuff she wrote spelled out the breakthrough in integration of existing agencies that Mindwave represents,” says Hugh. “People support the idea of sustainable development, but when you get down to how it is going to be achieved, there has to be real change in so many fields—economic, in the way people

consume and pollute, the long-range outlook in ecological terms for hundreds of years into the future, and the need to end poverty by continuing to create wealth even to some limited extent.

“The aspect of universality, of getting the authenticated information to every PC and networked device, is crucial to the democratic process we need. The social aspects, even, of coordinating policies, governments and non-government agencies, will all take a huge effort.”

Juergen’s friend looks up from breaking her bread roll. “For someone like me, I mean, I don’t have enough hours in the day, and for me to be presented with key information that is global in scope but gives me the relevant action path, means I can do something. I can stay in touch with the figures, for example that fifty per cent of the world’s population is urban, that fifty per cent of the world’s oil reserves are exhausted, and that fifty per cent of the world’s surface has been altered by human actions. I can follow my own concerns that so many species are becoming extinct and I can contribute to individual programs. I can also contribute to medical research and global health initiatives.” The others nod. “But what I really like is the thought that these initiatives aren’t happening in isolation, and that effort made in one area isn’t being negated by some massively polluting or destructive commercial enterprise in another.”

Marcus says, “I agree that there is a feeling that Mindwave is establishing some sort of control over current events just by posting an action plan, and that the deregulated global market is no longer running amok like a dinosaur. And it is no longer a question of trust, because Mindwave isn’t a person. No one has trust issues with a machine, right?”

“I hope so, Marcus,” says Professor Leitner. “But the scale of the changes and the parameters of balancing everyone’s interests with the long-term ecological strategies are going to test everyone’s tolerance to the full. We’ve got the interesting paradox of the Internet working full on here, in that the very people who are sponsoring Mindwave and its amazing experiment in distributed computing are the people who are supposed to be the hard-nosed ruthless commercial concerns who don’t care. Commercial websites, for example, provide most of the free high quality information of the Internet. Now those same commercial concerns may stand to lose money because of the slowdown in the consumer economy proposed by Mindwave for America and other developed countries.

“Certainly, the Marshall Plan planetary contract put forward by Franz Josef Radermacher in 2004 has helped prepare people for the economic structure proposed by Mindwave, with its emphasis on a tax on global financial transactions set to finance co-development in less developed countries. The major standards setting bodies also need to combine their rules to create a universal economic framework. The aim is to create a market where the less successful countries are able to support their people without resorting to cannibalising their ecological and cultural resources—the Brazilian rainforest being a sad example here of what we mean. Our initial aim is to realise the factor of ten rule—that we maintain quality of life but we do it with just one tenth of the resources and with one tenth of the environmental damage.”

He observes the doubt on some faces. “Yes, it is realistic, given commitment and some great innovations. Rules about property have been enforced ruthlessly on a global basis but people have been left to

starve or drink filthy water, or forced to set their children to work in conditions not much better than slavery. Most people accept that it is past time for a better global system.”

Juergen looks around the group. “But one mistake, one disappointment from Mindwave, and the Internet contributors may cease to believe or be willing to pay the costs. However, I’m prepared to accept that the program is up and running, and to give the best chance for positive change, I’ll release the initialising code for the financial transaction and economic programming module. I’ll handle that myself when I get back this evening.”

The group eventually gets up to leave. As they wait for their coats to be retrieved, Juergen has a quiet word with Hugh. “The understeer, do you think it could be tire pressure?”

“Could be worth a try. But that model has basically got a few problems. Anyway, cheer up. Yours is probably one of the several hundred million standard motor vehicles that will have to be got to be off the road in five years under the Mindwave plan.”

“I really will get mad with you if that happens,” Juergen jokes.

On the way back to the hotel, the group discusses immediate concerns. It is agreed that Hugh and Marcus will go back to Auckland and work on finding out who is behind the attempts to injure or kill them. The best lead is the attacker in the armoury, who is currently in police custody. Juergen plans to use his contacts in the town to get as much information on the arrested man as possible. He also confirms the existence of a ‘kill key’ for Mindwave, but assures Hugh that he will consult him and his friends if he thinks it should be used. Hugh wonders if Marcus has remembered to mention to

Juergen that there is a loaded sniper rifle in the boot of his car. He is too tired to even raise a smile at the thought of Juergen's face if he finds it while out doing his shopping.

It is a rare moment of quiet for the President. She walks thoughtfully through the spaces of the downstairs reception rooms of the White House. With spacious yet intimate proportions, the rooms seem to speak of elegant occasions, the jewel-bright upholstery of the chairs and sofas waiting, arranged for another gathering. Her gaze moves over the Rembrandt-Porte portrait of Thomas Jefferson hanging in the Blue Room, sparking the memory of his famous quote: "I like the dreams of the future better than the history of the past."

She glances through the tall, armour-glazed windows and sees the black-clad booted figure of a soldier carrying an automatic weapon. His stark presence is a sobering contrast to the well-kept and silent gardens. She passes through the doorway into the dining room and sighs. She'd never say it, but despite all the beautiful things in the White House, she is irritated by the indiscriminate colors used in the dining room. It just never has looked right. She runs her hand over the top of a chair and moves on. The President has strong views on most things, but she knows how to prioritize as well. She has taken a moment's personal time as she deals with a pressing problem, the abrupt emergence into international prominence of Mindways. This really is a tricky issue. The President is mindful of the popular appeal of the new technology, but her top military and political advisors have come up with a multitude of doomsday scenarios involving loss of market share for American manufacturers, a popular global worldwide movement to limit the United States exercise of military power, and a complex chain of domestic changes.

6. The Speech.

May, 2012

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including impacts from a postulated slowdown in immigration of top minds from less advantaged countries. This immigration is a process that has helped keep the economy of the USA rocketing along for decades.

In a number of meetings her senior advisors have urged her to take proactive steps to ensure Mindwave is legislated out of existence, at least in the USA. There has been only one real voice of dissent. The President takes her mind back to the briefing. She'd asked for a wide-ranging discussion using at least a dozen senior people. During the hour-long session an NSA analyst she hadn't met before, Bob Taft, had abruptly challenged the points made by those at the meeting. He proposed the view that Mindwave should be interpreted as a catalyst for positive change. He claimed that the AI's use of horizontal fusion of information would mean coordination of all aspects of intelligence organizations around the world, and that such a system would have prevented the 9/11 attack in New York and the Beslan catastrophe. It been established by the CIA that Mindwave was the work of respected scientists, some of them American, and that it had a transparent operation. The President was aware of the looming environmental problems and the unsustainable nature of the economies of the United States and other developed countries, he said. In practical terms, Mindwave was the only technology that had the potential to actually address many of the interconnected issues before it was too late.

At that point NSA deputy Janice Slickton had intervened, observing with a smile that Taft was having what she termed a 'Harvard moment,' and was taking the meeting outside the relevant discussion area. The

President, struck by the sincerity of Taft's manner, politely instructed him to continue.

Taft said, "There is an opportunity here to, um, institute something new in terms of governance. For technophobes, it means passing responsibility to a machine. For people who understand computing, it is the realisation of the dreams of the Internet generation if you like, that by working together and developing global solutions—quite radical solutions assisted by moral collaborative technology—we're going to dig ourselves out of the hole we're in."

Taft ran out of breath, and from the look given him by Slickton, he probably thought he'd run out of career as well. The President called for further input and was impressed by the comments of veteran Senator Bob Nunn and his work on the ever-increasing threat of catastrophic terrorism, whether by nuclear, chemical, or biological means.

"The root of the problem is this," Nunn said. "We are moving too slowly. Our leaders and parliamentarians still have not acknowledged by their actions, research priorities, and level of cooperation that the threat of catastrophic terrorism is the most likely and potentially devastating threat we face; that it threatens all of us equally, that it demands urgent action and that it requires a new level of cooperation."

Nunn described the global research efforts already underway, but considered the efforts currently being made fell far short of what was needed. "Sensible people will usually put aside a smaller dispute to defend against a bigger threat. The unprecedented cooperation will not happen because we are all suddenly overcome with affection for one another. It will come from the realization that if we don't address this threat, nothing else will matter."

The president climbs the stairs and walks into the Oval Office. Once there her demeanour changes. She issues a number of instructions, sits behind the precious 'Resolute' desk made from naval timbers, and begins to write.

It is time already, Steven thinks as he hovers in the back reaches of the auditorium. How have these days gone by so quickly? As speechwriter on this project he's taken the President's notes and produced a speech that is going to be the highlight of his professional career. He's come a long way from his scholarship days at college. He's been accepted into Washington, served a long apprenticeship with congressmen whose speeches have sometimes been more about throwing up smokescreens and laying false trails than about matters of political substance, to this. Finally, he has the opportunity to impart a sense of urgency and importance to real policy change, and to communicate big ideas to a general audience.

Steven can hardly handle the wait as the preliminary speeches wind up. The large crowd of non-profit organization and charity delegates attending the national conference applauds. The President sits, composed in dark pants and white jacket, smiling occasionally. Steven slips out to the front of the auditorium and takes his seat near the media. There are a large number of reporters; the word has been carefully leaked that there is going to be a major policy announcement.

The President is a hardworking and professional politician, he thinks. But she also has the brains and audacity to stay ahead of the pack. He leans back as she stands and moves to the podium. As she begins her opening remarks, he hears the rhythm of her voice reading the lines he has written. His work has come

miraculously alive, it is personal yet authoritative, and thousands are hanging on every word.

“I remember standing in the shallows of a river as a child. The water was so clear that every stone shone in the sun as the water glided over it. I am telling you today that every child should have the right to stand in such a river and marvel, as I did, that the water is so bright it must surely be flowing past the throne of God.”

The President waits for the applause to die down.

“I think that all of us have thought and worried about what sort of world we are leaving our children. These are the compelling questions; are we going to leave them with safety and peace? Are we going to attempt to solve the problems of a self-destructing human urge to misuse without restraint the treasures and resources of our planet? Will wastelands and unliveable cities be our legacy?”

The President’s voice drops and slows its cadence.

“It is rare that we find ourselves at a crossroads of human history. But today, the phenomenon that we call Mindwave has created a situation of perilous balance. This vast artificial intelligence network has polarised the world community, it has sent waves of change pulsing through our financial, manufacturing, communications and agriculture industries. But more, it has caused many of us to question the basis of our political life. Can this vast computer network assist men and women of our time to master the demons of terrorism, hunger, and environmental destruction?”

“I say today, yes it can. Let the future be one of hope.”

The President pauses. There is a moment of hushed silence. Then, slowly, applause begins to build through

the auditorium. The President raises her hand to still the sound.

“I make a commitment that the United States of America will throw its full support behind the Mindwave initiatives, in the form of thoughtful collaboration of government agencies, financial support of projects, and full consideration in future policymaking.”

She stands waiting for applause to die down.

“I commit to the view that war is no longer to be an instrument of foreign policy in this country, that international disagreements will be mediated by Mindwave, and our forces will commit to a peacekeeping role.”

“This represents a hope and a will for the many millions in the United States and in countries around the world that there can be a better way, and that the immorality of terrorism and the threat of war may soon fade into a weary memory...”

The President’s voice breaks on the last words.

The senior press secretary makes an instant decision that later causes her to break out in a nervous rash. With one motion of her hand, she indicates that one of the media photographers should go forward. The young photographer scurries in, the secret service detail are stopped in their immediate response by a warning look from the press secretary, and the camera’s motor drive whirrs briefly. The press secretary thinks her career is on the line for a single close-up shot, but her guts are what keep her in the job, after all.

The President recovers and finishes her speech. It will be the first elucidation of the new administration’s ‘Hope Doctrine,’ an approach to international affairs in which the United States intends to embed itself into the processes of international affairs, to support

technological solutions spearheaded by Mindwave, and radically decrease dependence on military solutions and hardware.

Within hours, the press secretary's decision is vindicated: the mercilessly close shot of an emotional US President with the tracks of tears clearly gleaming on her cheeks appears on screens and front pages across the world. The press secretary thinks the best headline accompanying the shot is 'The Human Face of Power; US President Backs Mindwave.' Other captions range from 'She Lies,' (a pesky Middle Eastern news agency) 'She Cries,' and 'President Pledges Peace.'

The press secretary immodestly accepts congratulations. Although one newspaper has run the photo alongside a story on waterproof mascara, the coverage almost universally acknowledges a huge positive shift in US policy.

Chairman of the Joint Chiefs of Staff LeRoy Callon brushes his staffers out of the way as he strides into his office and shuts the door. No one is to disturb him except his wife, of course. She's feeling a little down today, and he's feeling even more down after watching the President's speech on television. The Chiefs of Staff can wait, he has to try and make some sense of this mess. He picks up his putter, adjusts his stance just so, breathes out and taps the golf ball across the carpet. Did any group of past military strategists have to adapt to the rate of change he's had to deal with? The President believed that a way had to be found to take the heat out of the international anger against the US military actions of the immediate past; the Iran thing, well, let's not go there. And this development certainly was going to shake things up, he thinks. The word here was leadership. The United States military needed to find a

new, well-defined role. The key concept would be quantifiable sanctions.

The old concept of US military might creating its image as a 'global policeman' had faded with a number of military actions that were perceived internationally as wars based on self-interest without United Nations support. He himself has wondered if there is an opportunity for the US military to calibrate its actions with international public support mediated by Mindwave. The people of the United States are in the middle of one of their most intense cycles of repudiation of US military casualties, and the 'quantifiable sanctions' policy could take the burn out of essential military interventions required to keep the global situation stable. Americans would be able to see for themselves that the minute the objectives were met, the troops would come home. Being dumped in at the deep end by the President's speech may not end up being a bad thing, Callon thinks. His putting is improving by the minute.

He looks up as his door opens. It's Kippenburger, and he's not happy.

"Am I interrupting your work?" Kippenburger's face almost holds a sneer. "For chrissake, do we have an army anymore? Did you have anything to do with this?"

"Yes, we do have an army, and no, I didn't have a whole lot to do with this, but I fully intend to make it work for us," says Callon. He lays his putter against the side of his desk and surveys Kippenburger's face, flushed with anger, his white shirt blousing out over his gut like a spinnaker. "Dick," he says, "it's quite possible that a radical image change could save the lives of troops on the ground, and I've never been of the

view that America's military position should be used in support of multi-national corporate goals anyway."

"Can we get our feet back on the ground here for a minute? What about the defence budget? What about all the distance warfare initiatives, the ships, the current commitments in strategic areas? There need to be firm guidelines to manage this new policy and I'm going to make damn sure there's no loss of financial commitment to the hardware that secures this country, or a loss in real terms of deployment capability."

"How your friends in the armaments industry take this policy change isn't my problem, Dick. And as for the private contractors running and securing oilfields every which where, that isn't my problem either. International legitimacy and homeland defence, yeah, I'm very interested. There is going to be a huge development in software capability to co-ordinate this new system, of course. There'll be a whole pile of new friends for you, so don't worry."

"You shouldn't be in this job, LeRoy. There's nothing worse than a war hero," Kippenburger puts a sarcastic emphasis on the last two words, "gone soft in the head."

"You need to have few less lunches and get back to business, or you're going to end up with a heart attack," advises Callon. He doesn't bother to watch Kippenburger leave as he walks around his desk. "Hey Annie," he calls to his assistant. "Get me some mines for the outer office will you?"

"Yes sir!" Muffled laughter. Kippenburger's visits are always guaranteed to liven things up.

Bob Taft can hear things are humming in the building, but it is very quiet in his office. For days after the White House meeting when he spoke his mind,

hardly anyone has talked to him. That is until Slickton walked by him in the corridor. Bob shudders at the memory.

“Oh, Bob,” she said. “I know you’ll be interested to hear that there’s a review in the pipeline for the Wisconsin office—I think it’s the Wisconsin office—I’m thinking we need a transfer from head office to get things together.”

She walked on without another word. Bob doubted there was a Wisconsin office but the message was loud and clear. He’d crossed Slickton in front of the President and since then it was like he had a communicable disease. How did everyone find out? Bob hadn’t lived in Wisconsin since he was an undergrad. Janice’s threat had made Bob think about his childhood; it was idyllic really, with summers spent camping and fishing on Lake Wisconsin or one of the other lakes. In the winter, there was ice-skating. The school years were a quiet and sedate procession with Sundays at the local Episcopalian Church, where Bob listened to the sermons with his customary care and attention. Life got a bit more exciting with his undergraduate degree in Madison, but it was at Harvard during his PhD years that Bob really felt he started to live. He liked going back to see his parents, but he found it hard to believe his new life, the one he had made for himself, was about to end. He felt he was staring down an endless darkened valley.

Then, coming as a complete surprise to Bob anyway, came the President’s Mindwave speech. One of his colleagues actually ran into his office with the news. Bob is playing the speech again on his screen, finding the turnaround hard to believe.

A woman strolls into his office, causing Bob to look up in confusion. Who is she? His replacement perhaps? He stands awkwardly and extends his hand. "Bob Taft."

The stranger shakes his hand, tosses her head to flick her red-gold hair back off her shoulder and settles herself on the side of Bob's desk. This doesn't look good.

"Claudia Rucker. I'm with John Fleetfoot's office."

Bob is confused. National Security Advisor John Fleetfoot's office? Was his outburst in the meeting going to result in some sort of disciplinary action?

"John's asked me to kick things off with a new team to co-ordinate the Mindwave plan, so here I am. You're first port of call, of course. There's the usual urgency, but I guess you've got a few people in mind," Claudia smiles encouragingly.

Bob smiles back. "Pardon me? Is Janice Slickton running this?"

"Yeah, no," says Claudia. She looks at Bob for a long while. "Look Bob, don't get me wrong; I love the whole boy down home thing, but you've got to sharpen up. Keep the smile but take up the responsibility, you know? We've read your stuff. You're going to select the people, make the team work and report to John. The President has laid out the plan and she wants you in the top slot."

"Yes?" says Bob.

"Yes," says Claudia. She touches Bob on the shoulder and looks around. "I'll get someone to shift your stuff to the new office. We'll need you close."

Bob sees her to the corridor and returns. A slow smile dawns on his face. First things first. He takes a sheet of A4 and deliberately writes a list of names: his team. He wants it tight, but most importantly, he wants

it bright. There are one or two people he can think of who just don't qualify on either front.

He lowers his paper and stares at the grey wall of his little office. It feels as though a glorious technicolour swirl of ideas is playing across this blank plane of wall, firing like small explosions as his thoughts chase around the possibilities. It's pretty obvious where the Mindwave project is heading, the economic growth mantra has clearly had its day. His first move will be to shore up Mindwave's global remittance bank, known simply as Mindwave Money or simply MM. Just launched and attracting hundreds of thousands of enrolments per day, the project taps into the huge global capital movement of remittances made by members of families and communities who celebrate their move to a wealthy country by sending some of their income back to their families in the poorer countries where they came from. The MM project aims to facilitate the money flow of billions of dollars so that the recipients receive the full amount in a timely manner, while paying minimal fees to banks and financial institutions. The full amount in the remittance circuits is close to two hundred billion dollars. MM takes a commission for itself of a fraction of one percent and that immediately makes it a very powerful global player. Who wouldn't support it, with its multi-language capability, virtually unlimited processing ability, and the means to negotiate the best deals with banks and other financial organizations? People who use MM also know they are setting up a huge global capital fund that secures immediate emergency relief for starving people and refugees, but will also finance constructive co-development of the less privileged nations they are supporting. When the proposed global tax on financial

transactions is secured, billions more will become available.

Very nice, thinks Bob. The plan that he is now in a position to support with computing capacity and guarantees from the US is truly grand in scope. It involves several major outreaches, and one of the more vexing ones is the removal of debt from targeted countries. Many debts have already been written off, but the process now needs to be extended from the poorest and most desperate nations, to the struggling mid-range nations who are so desperate to develop their economies that they accept other countries' toxic waste, create industrial hell-fired factories to create throw-away products, and turn their cultures into commodities for tourist consumption.

The new plan covers the spectrum of activity—hold that thought, thinks Bob, still seeing the swirls of red and orange, the glint of gold in the ideas that pass for riches in his careful Protestant mind. 'Spectrum economies', he thinks, will make a great policy paper. The money will be used directly through existing non-profit organizations and charities, but also as a political lever to enable swifter development of civil infrastructure such as courts, libraries, police forces, hospitals, schools, housing, and environmental protection schemes. It will also be used to create projects for arts and culture, comedy and music, drama, scholarly works and writing of all kinds. Culture has been shown to be a key driver of successful communities, he thinks. Mindwave will carry out immensely detailed audits in order to counter the corruption endemic in many needy countries.

The dichotomy in this project, thinks Bob with satisfaction, is that as the populations of the poorer nations become more educated, healthier, and hopeful,

the income streams will gradually level out at a Mindwave-mediated per capita minimum living standard. There would be nothing to stop individual stars emerging, like the old pop group ABBA (a personal favourite) who won international fame and vastly boosted the economy of their tiny country. Mindwave aims to make the rise of such stars possible by supporting indigenous cultures against the remorseless push of multi-national corporate marketing of popular music. Excellence will find its own place, Bob thinks, and the developed countries will downsize, minimize, design and dream their way out of the lifestyles of excess that in the past have been sold as a grotesque aspiration.

He hurries down the halls to find Claudia. He needs to set up a meeting with John Fleetfoot immediately and get things rolling. Claudia brushes off her two assistants and ushers Bob into his office, where a particularly hard sofa in deep turquoise waits. Bob can't sit on it for more than a minute. He strides around the office detailing the immensely complicated design for the future he sees before him.

"It's a unique opportunity and we're in a position to anchor it." He looks at Claudia.

Claudia sighs. "Hmmm, my forty pairs of shoes, my house, and my Cessna are all wrong? Should I have recycled my two exes? Oh come on, I don't think the elite is going to give it all up so easily. I mean, do you know who I have lunch with? I'd seriously invite you along if I didn't think you'd packed your own sandwiches."

Bob starts walking out the door. "No, show me," he says over his shoulder. "I'm going to pick up all the skills and the people I need to make this thing work. You'll change. In a few years time you are seriously

going to wonder why you turned fancy furniture into a religion." He flicks the azure sofa as he passes by. Claudia grabs her handbag, a foal skin Parisian clutch secured with cute little gold hooves. The price had nearly made her bankcard curl.

In the corridor Janice Slickton advances with the inexorability of a tracked military vehicle. "Bob, Claudia—John said you were around."

"Hello, Janice," says Bob levelly. He deliberately unclenches his hands.

"Janice," says Claudia, nodding in acknowledgement.

Janice turns to Bob. "So you're in on the MinCwave development thing—it's terrific to have our team on the inside running. I've already got an NSA focus development plan underway, and I'll take on the operations side while you focus on the research—going to lunch are you? Let's work on it right away."

Bob sends Claudia an apologetic glance, and faces Janice. "The last time I saw you, you told me I was headed for Wisconsin," he says.

"Oh get over it, Bob. What do you expect when you take on a high-risk strategy? We need to work together to make the most of this opportunity for the agency."

"I'm not working with the agency now, and Janice, I have other priorities for the development team."

"Developing what?" Janice's eyes narrow. "Without our support it'll be a lame duck. What do you think you're doing here, someone with no experience and profile? You're a disposable public relations exercise and I certainly won't be encouraging people to throw their careers away on something that, let's face it, is totally over-hyped. Have fun while it lasts, because as soon as Fleetfoot feels the heat go off him, you'll be

out.” Janice walks off, and Claudia turns from her examination of the beige wall beside her.

The two step out again. Claudia engages Bob in a discussion about the possibilities for high altitude windmill farms. He suspects she is trying to calm him down, and he tries hard to focus on the debate about whether the wind farms would sound the death knell to private aviation.

“And you wouldn’t even see them in poor conditions. One minute you’d be flying along and the next, chop, chop, you’d be aeroplane sushi. I mean it’s my relaxation from the stress of life here and I have a right to the skies, don’t I? Isn’t life overregulated enough? Don’t you agree Bob, or are you one of these Green fascists who’d like to turn people like me, who want to continue their traditional pursuits, into mulch?”

“Am I going to live with that mental image for ever? Actually, I favour ultra-high altitude wind power solutions,” says Bob. His hands have stopped shaking. He’s made up his mind that he’ll do the best he can with the time and resources he’s got. Janice has done him a favour in making him realise how swiftly the political winds can shift. He knows he needs to set all the new developments he gets involved with on a secure footing. Who knows when the blade may fall?

7. The Silk Thread.

May, 1012

Antonia strolls along the beach, her feet sinking into the warm sand, the waves small and fuzzy in the shallow water. The sun falls on the side of her face, and she halts abruptly to let a pair of kids run on past, splashing into the water with thin cries like little seagulls. She smiles briefly at their harassed mother who is in pursuit. She walks on, ignoring the distant sound of traffic along the tree lined road bordering the beach. Out on Auckland harbour the yachts are heading out, but it is a quiet Saturday, and her mood matches the somnolent, greyed-out feel of the scene. She looks down at the grains of sand and stirs them around with one foot. She was so pleased to have Hugh home—is pleased, she quickly corrects herself. He headed out on his mission like a brave little trawler, flag flying, into the open sea. Then he slipped quietly into harbour sometime during the night, lights extinguished, clearly having sustained damage and without any news he wanted to talk about. She waited up for him at his rented house, shifting uncomfortably on the dark brown synthetic fabric of the old chair in the living room as the hours passed. When he finally walked in he dropped his bag and held his arms open without a word. There was something sorrowful about him, Antonia thought. She wrapped her arms around him and kissed him and he hugged her so hard she thought her ribs might crack. He kissed her and walked her backwards into the bedroom, turning on the central bulb that hung unshaded from the ceiling. In the unforgiving glare Antonia's tired eyes took in the rumpled sheets partly falling off the striped mattress, the crumpled duvet, the

pile of clothes on the floor, and the old fashioned plastic Venetian blinds that didn't close properly, exposing strips of sinister dark. She winced, clicked off the light, and reached for the warm eager body of her boyfriend. When he touches her, she feels irresistible, and he makes her feel perfectly happy. But she has yet to hear about what stormy seas have tossed around her normally playful boyfriend. She slipped out of the house as he slept and went to the beach to give him time to recover from the flight and to re-bandage the odd cut on his thigh.

She buys some fresh bread and flowers and returns to the house. Hugh sits at the kitchen table, freshly showered and wearing a pair of shorts. His hair curls around his neck and waves of light seem to cascade down his bare skin as though he is his own energy source. Music pulses through the rooms of the house and Hugh is looking alert and more like the person she knows. She smiles at him and sits down. He leans forward, his eyes warm and intent.

"It is so good to be home."

He starts to tell her about the trip. They make toast and vegemite with coffee and eat it at the kitchen table as the story unfolds. He hesitates as he gets to the part about the London hotel and Leonie. She moves into interrogation mode instantly, as he knew she would.

"How did you meet her?"

"On the plane. She was sitting next to me, and we started talking. She fed me a total line about being a refugee worker and I swallowed it, as you do," he smiles warily.

"As you do," she replies calmly. "So what is she like?"

“Oh well, quite fit looking, I should think she goes running, with sort of blonde hair with different colours in it...”

“I wasn’t asking how much time she spends at the hairdresser’s having caramel laser highlights put in,” says Antonia in a deadly tone. “I was asking what sort of human being she is.”

Her own smooth dark plait suddenly swings across her shoulder and twitches like a live animal as her chest heaves. Clearly, she’s lost her temper and he’s made a fool of himself, exposing the very secret he was trying to hide from her so she wouldn’t be hurt.

“She seemed quite nice but she was some sort of secret agent, I’d say CIA from what the London police let slip, and she completely played me,” he says helplessly.

“Did you have sex with her?” Antonia looks directly at his face as she speaks. Hugh sighs. What could he say that was going to make this better?

“Antonia. I’m so sorry. No, I didn’t, but for a few moments I did want to. I don’t know what to say to make this be okay. I can’t believe it happened and I’ll understand if you can’t forgive me.”

“Do you want me to forgive you?” Antonia has sprung out of her chair as though she can’t bear to sit on it for another second.

“Of course. It made me realise that what we have is important to me.” His voice breaks for a second as the strain of the last few days catches up with him. She paces around the kitchen.

“Keep telling me about the trip.” She returns to her chair and sits heavily. He tells her about the arrest in London, about the surprise of finding out about Marcus Simmer’s financial connection with Mindwave, the shock of the hillside attack and the fight in the Graz

Armoury. He notes that Antonia becomes white as he recounts the story and it encourages him to describe the fight scene in detail. He had hoped to forget the whole thing, but in retelling the story, the full horror is brought home to him.

“Hugh, I knew this was going to be bad, and it is, in so many ways. What are we going to lose? I saw you had to do it and I support you, you know I do.”

“Does this mean I’m forgiven?” Hugh says hopefully.

“Possibly,” replies Antonia crisply. “It sounds as though you were a complete moron, but given that she’s a professional manipulator, well...I guess.”

“Good,” says Hugh. “Toss me the bread and explain to me what a caramel laser highlight is.”

He ducks neatly as the bread, encased in its plastic wrapper, flies past his head and bounces off the wall behind him. He feels as though he hasn’t laughed in days, maybe weeks. She produces a small smile in response. He moves over to Antonia and puts his arm around her shoulder, and she leans her head against him. She is silent for a moment, and then, clearly having decided to move on, she starts talking in her usual tone. Tonight, she tells Hugh, they’re going to a twenty-first birthday party of one of their friends. It is going to be a theme party, at the parents’ house, and the theme is *Midnight in the Bazaar*. Antonia heads off to construct her platter of food for the party: tabouleh, fetta cheese, dried figs, dates, olives, pitta bread—after that she runs clean out of middle eastern food ideas. She sets about assembling her outfit and Hugh’s for the evening. A friend has lent her a purple headpiece with small round coins hanging off it that she will tie around her head, and matching earrings and bracelet. Soon she is wearing her gold stilettos, and a pair of flowing

turquoise beach pants with a length of purple silk around the hips, and a black evening top. She catches Hugh in the kitchen and arranges a tablecloth on his head, with a blue cotton belt of her own wound around it to keep it on.

“We look ridiculous,” he mutters. “And there is something buzzing in my headdress. You must have trapped a bug in there.”

“No I didn’t,” replies Antonia. “You keep it on, no excuses. You look fine and we don’t want to be late.” She carefully picks up the platter of food and walks out the door. Soon, they find the house where the party is being held. About eighty people are crammed into the house, the rooms are festooned with colourful cloths, candles are burning, and pictures of Egypt are being projected on to the walls. A woman in a full burkha walks past with a muffled sneeze.

“Who on earth is that?” says Hugh.

“It sounds like Amy,” guesses Antonia. She rushes up to the friend who is having the party and hugs her. Hugh initially believes the friend is Cleopatra, but can now see past the black wig, makeup, spangles and large amount of lush figure on display, to see a distant resemblance to a normally retiring science student. He spots Leonard at the other end of the room, draped in bandages. He has either had an accident or is an Egyptian mummy. He carefully works his way through a gaggle of women wearing scraps of silks, tassels and dangling medallions, a harem’s worth at least, as he joins Leo, who is holding a beer in one hand and a glass of red wine in the other as he talks to Richard, barely recognisable under a checked headdress and flowing white garment.

“There’s a buzzing noise under this tablecloth. Be a mate and have a look and see if there’s some sort of bug

in there, would you?" he says to Richard. "And why have you got all that booze?" he asks Leonard.

"My ex is here, and I'm scared she's going to talk to Amy," says Leonard.

"Oh. Okay," says Hugh. "But I honestly don't think anyone's going to recognise her in that thing she's got on. I think you should let her out a bit more. Have you found something?" he asks Richard.

"Yeah, it's a fly, and here it is," says Richard, throwing Hugh's tablecloth back over his shoulder.

"Oh gross," an attractive belly dancer says to Richard.

"So," says Richard, turning his back on his friends immediately, "do you take belly dancing classes, or are you just a natural?"

The girl giggles, adjusting one of her veils as the light glances off her sequined bra top. Well after midnight the dancing slows down, and Hugh and Antonia head off from the party, collecting Leo and Amy, who has long since thrown off her burkha to reveal a fetching dress with heavy jewels lining the bodice. Richard is in deep conversation in the corner with his belly dancer, who is sipping from a glass of Coke and nodding thoughtfully. Antonia thinks she might be third year molecular biology.

"That was so much fun," she says. "I loved your bandages Leonard. You should have taken up medicine, Amy."

"Well, I just didn't get the marks for it," says Amy sadly.

"Oh dear," says Antonia, for once lost for words.

"You can get a top undergraduate degree and have another go. I have full confidence in you," Leonard says, hugging Amy affectionately.

“They’re perfect, really,” yawns Antonia, after Hugh has dropped Leonard and then Amy off at their homes. “When is that meeting that Marcus called tomorrow?”

“Early. I hope there’s something to report,” says Peter.

One of the first items on the agenda at the meeting in the downtown offices of SR Inc is the identity of the men who attacked Hugh. Jessica, Antonia and Hugh, Richard and Leonard are sitting in a glass walled section of the SR offices where Hugh works, discussing the situation with Marcus and his wife Maria, who Hugh and Antonia have just met. Hugh’s co-workers are intrigued as to what has brought about the big meeting with the firm’s bosses, but he isn’t telling them anything.

“Juergen has been on to the situation in Graz, and he found that the armoury swordsman was an illegal immigrant on fake papers, and he’s not talking. But the police have managed to track down his real identity, and he is actually Lebanese. He’s had contacts in the past with this organization,” says Maria. “Take a look at this.”

She motions to the big screen behind her. On it is a website for IBS, International Business Security, a firm that provides, for unspecified fees, security for personnel, business operations and the like. It details privacy policies and has posted an ethical Code of Conduct.

“It looks okay,” ventures Richard.

“I’ve been looking into it for the past couple of days,” says Maria, “and of course, being in the business we’re in of advanced search and rescue technology, there’s some overlap with security services, and I have a background interest anyway. I’ve been aware of these

sorts of companies for a while. They're basically mercenaries, but they have a great selling point."

She hesitates for effect. "Let's go back a step. Simone Levoisier wrote a book a year or so back, 'The Deniability Disease.' It looked into the new epidemic of denial of responsibility at a political, commercial, and even personal level. It is really the science of putting up enough barriers between your actions so that no one can pin responsibility on you when things turn out badly. So, for example, you create a product that has some of the qualities of say asbestos, and after a while it turns out people are getting mesothelioma and dying. Well, you had better be damn sure that your company framed the testing programme so that it didn't show negative results, that your ethically sensitive shareholders didn't see any data critical of the product, and most importantly, that you yourself never knew there was a problem until it was brought to your attention by an outside agency. Then you show enthusiasm for due process, the afflicted people are compensated, and you're rich—and clean.

"The truth is, you really didn't know what was going on. You could stand up in court and swear you never read or heard that there was anything wrong. In the case of politicians, even in the most respectable democracies, Simone suggests that they frame these elaborate deniability scenarios, and then actually kid themselves that this is merely standard political practice of the day. They have delegated responsibility to achieve a certain outcome and then they don't ask questions."

"I think I see where this is going, and you're saying these guys might as well have used this book, in a bad way, as a guide when they set up IBS," says Marcus.

“Yes, I think it’s likely that they did, incredible as it may seem,” replies Maria. “The guarantee that IBS makes to its clients is not only confidentiality, but a very high level of deniability. On the face of it, IBS is a reputable security firm, and it does carry out routine security assignments. But it also carries out black assignments to create certain outcomes on the basis that the clients don’t know who is going to carry out the job, or how it is going to be done. Assurances of ethical practices are made for paid services of a legal nature. No mud sticks to the client if the operation comes unstuck because there is no documentation. The scale of the firm makes it ideal for governments to use when they have an issue so sensitive even their own black ops secret services—and nearly everyone has them—can’t risk exposure.”

“Wow,” says Leonard. “Is that legal?”

“It’s a half-lit world,” says Maria. “It might seem to be legal, until someone gets caught, but it certainly isn’t decent. I’d say it’s the case that Hugh and Marcus were tracked and attacked by a professional hit man from IBS, working for a client who wanted to shut down people with direct knowledge of Mindwave.”

“What about the attack in London,” says Antonia. “Do you think that IBS and their client were after the armband?”

“Of course,” says Marcus. “We need to look at Dr Wen Peiyan of course, but let’s keep an open mind when we try to work out who would want the code so badly, and why. And we need to get on the Net and use our contacts to find out everything we can about past IBS operations. There is bound to be a clue somewhere, and then it just comes down to logic. We’ll find them.”

“Someone is worried about the changes made by Mindwave,” says Jessica thoughtfully. “Maybe a large corporation, say the oil companies, or a government, or even a faction of a Government.”

“Everyone watches the oil companies,” objects Maria.

Marcus stretches and gets out of his seat. “Let’s go to work on this. Everyone have a go, and we’ll meet tomorrow and see what we’ve got.”

Hugh, Richard and Leonard sit down together and start work at the SR inc workstations. Jessica can tell their networked ipods are simultaneously blasting their theme song, ‘Blaze of Glory,’ because every so often their fists punch the air simultaneously. The rituals of men these days are so weird, Jessica thinks. Antonia has left for her part-time job.

Jessica starts by trying to work out who would have a destructive interest in Mindwave. She’s assuming that the interest isn’t good because of the nature of the attacks on Hugh and, later, Marcus. Soon she is taking a look at the recent history of the emergent economic superpower, China. Could it be China responding to a perceived threat? China has spent the past few years developing its nuclear arsenal, the star turn being a few years ago when the Premier had rather shyly let slip that the new generation ‘Cherry Blossom Spray’ long range missile released a cluster of nuclear weapons miles above the target’s airspace. This meant that missile shields such as the USA’s program was instantly overloaded and doomed to partial failure in stopping the incoming missiles. In nuclear weapon terms, partial failure was total failure. China was putting the US on notice to behave. Certainly, China has been provoked by Mindwave’s efforts to create understanding and support of democratic practice there...but she finds it

hard to believe that the Chinese Government would hire armed thugs to do its dirty work.

The group has spent the best part of the second day working on the problem and Marcus calls another meeting in the SR boardroom to put all the parts of the investigation together.

“There seems to be a thread that keeps emerging. Let’s see what we’ve got, and we’ll start with a general political view. Jessica, away you go.”

Jessica strolls around the table. “Since 2004 China has had a policy called macroeconomic recontrol, in which the Government basically takes over economic development, regulates where industry and commerce are going to go, and decides what sort of developments can be encouraged—and they’ve been spectacularly successful with the high-tech industry side of things. Of course, you could say the Mindwave development is a type of macro-economic recontrol system itself, except it is developed to work on a system of global welfare and fairness.”

Jessica looks around the table. “The Chinese system, of course, works from the viewpoint of the Chinese state, and aims to make China, the state, a winner. However since about the time of the 2008 Beijing Olympic Games, there’s been increasing pressure on the state for an easing of this restrictive policy on commerce, and Beijing particularly could be now described as restive, with demonstrations held on a regular basis. The Government, in short, is finding it hard to keep the lid on things. As a result, in the past few years we’ve seen the rise of an ultra-conservative high-tech watchdog body, based in Beijing. China’s economic rise has been backed by massive coal consumption to produce power, with resulting global costs in terms of greenhouse emissions. I can see how

the watchdog group, which is led by a Shanghai-based academic, none other than Dr Wen Peiyan, could view Mindwave as a direct threat to the Chinese macroeconomic reconrol policy.”

Jessica sits. Marcus gestures to Leonard.

“I took a close look at IBS, the hit man organization. It’s a huge outfit, and runs what amounts to a small international army. Your guy,” Leonard turns to Hugh, “is a freelance they use for high priority political hits.” Hugh shifts in his chair.

“I did manage to get—and yeah it wasn’t easy—a list of current clients. I’m just running the name Wen Peiyan, and yes, there’s a match; a data security check about the time you were in London and Graz.”

There is a collective murmur of excitement around the table.

Maria chips in. “I can add something to that. At SR Inc we work closely with the New Zealand Government because we have highly advanced search and rescue capabilities that make us extremely valuable in crisis situations. I’ve called in my markers on this one and have been given some access to what the intelligence community has on the London robbery attempt.”

She stands, puts her hands on her hips and nods at Hugh as she speaks. “It seems that the report of the lost Mindwave code armband really got someone going in the British Government. We don’t know who it is, but someone high up put out an unofficial major reward offer in order to retrieve it. This seems to have alerted a second group, who got in first, sourced the computer and put in a higher bid. The British were extremely miffed that they missed out.”

“Who got it?” asks Hugh, shocked that his scheme had broken down so completely.

“Well,” says Maria. “That’s the interesting bit. The computer was picked up by a middleman who delivered it to the Chinese embassy. The guy who took the reward was apparently pretty keen to find out the identity of the big spender.”

“I don’t like the sound of this,” says Antonia, “I’ve always maintained the code could be subverted in the wrong hands. From what Jessica has said, this extreme conservative Chinese group could have plans to extend the Chinese macro-economic recontrol system throughout the world...”

She looks around the group, which has suddenly become still. “Can you see the extent of the risk here? If this group of Wen Peiyan’s are to put their very significant resources into redesigning the Mindwave code, they could spoof the operation and start making it carry out the macroeconomic policies that have already made China the best performing economy in the world. We’d all be working for a faction of the Chinese Government and we wouldn’t even know it until it was too late.” Antonia looks around the group with cold eyes.

Richard speaks up. “Well, I know the research facility in Beijing where they work on advanced knowledge system programming. If it is going to be analysed, corrupted, whatever, it would be done there. Somehow, we need to get a lead on whether they’ve got the armband there and if so, what they’re doing with it. Hugh and I will get on to it.”

“Whatever they’re up to, they were prepared to kill myself and Hugh to cover their tracks and stop questions. I don’t think this is any innocent investigation that they’re making either Antonia; I agree with you that it looks sinister,” says Marcus. “And it’s all under the official radar, so we can’t cause

any kind of diplomatic fuss about it. Richard, Peter, see what you can find out.” Marcus sighs. “We’ve got a big problem, folks.”

Jessica hurries out of the SR Inc offices. She’s got a ton of work to do and she feels stressed by the news she’s just heard. She has a Pilates class in half an hour she can just make if she gets going. She drives to the class and puts out her mat at the back of the class. She feels too tired to do the last exercises on her abs and collapses in an ignominious heap. The blonde instructor in her sky blue exercise pants smiles on and ignores her lapse.

“And breathe out and curl, uncurl right down the spine, that’s right... and relax.”

Jessica knows the exercise is good for her and the other women who are slaving away to keep their figures firm. She spends too much time sitting in front of the computer, and she and John should take up tennis again. As she heaves her leg up in the air and waves in it a little circle, she marvels at her own ability to put the new problems of Mindwave out of her head so quickly, and get to get back into more familiar preoccupations, such as the size of her rear end. At the end of the class she is discussing this very topic with a couple of the other women as they walk back to their cars. Suddenly, the subject matter changes.

“I’m just beside myself about this problem with my company, and it’s all my fault because I authorised Mindwave to access nearly all my files and use my resources. You know how it works, don’t you?” the dark-haired woman with a body like a whippet looks around at her companions. Jessica nods, knowing that these women have no idea who she is.

The dark-haired woman, clearly agitated, continues to vent her frustrations. “So I let it in and the next thing,

it has found financial irregularities. We're a small company and it is saying that Nick, who is my accountant, has been systematically cheating me for the last four years. Mindwave has sent the information on to the police."

"Oh my gosh, what are you going to do?" A woman with streaked blonde hair and heavy eye make-up, who claims she's lost five kilos since taking up two Pilates classes per week, touches the dark-haired woman on the arm.

"Well that's the thing. I'm not saying that I didn't want to know that Nick has been on the take, and for four years! But I don't know...I didn't sign up for this when I took on Mindwave. Somehow I feel my privacy has been invaded."

Her voice drops and she looks at the blonde woman and Jessica meaningfully. "I've heard of a firm in town where it found paedophile material on someone's server, really serious stuff, sent in a report to the police, and the guy's been arrested. Can you believe it? We've all assumed Mindwave will use our stuff to do good works and such, and then it's gone all moralistic on us and is causing a heap of trouble. I wonder if people are going to decide it's just not worth it."

Jessica smiles weakly and withdraws to her car with a mumbled, "See you next week." As she gets into it, she finds her hands are shaking. She buys time by combing her hair and reapplying her lipstick, giving a small wave and a smile as the two other women drive off. She is preoccupied as she buys salad vegetables for dinner, squeezing an avocado tenderly for some time before deciding to buy it, hesitant over the salad leaves, and then staring blindly into the butcher's window. Damn, she's forgotten the lemons for the vinaigrette dressing. As she walks along the street she's

anticipating the extent of the problem. Mindwave's moral parameters are evidently set to pick up crimes that everyone agrees are repugnant, such as stealing and paedophilia. But the programme evidently doesn't do trade-offs for political reasons, and hasn't calculated the extent of the backlash these actions are likely to cause. But then, why would it? It's not programmed to do double-dealing.

Jessica plods up the steps to the house. When she sits at her computer the extent of the furore becomes obvious. A group of investigation minded Internet habitués, who've formed themselves into a group called Mindwavers, have documented the extent of the problem, which is as widespread as her worst fears, and are up in arms. The early consensus is that Mindwave is biting the hand that feeds it by dobbing in illegal activities carried out by the very people who have donated resources to make it work, and Mindwavers are making their observations in very colourful language. Jessica is relieved to see Mindwave's moral parameters evidently don't extend to reporting tax evasion on the servers it has access to.

She leans back. The Internet community has a notorious affinity to pornography, and Mindwave has just made a frontal assault on the worst of the pornographers, the paedophiles. While the early reaction is people threatening to pull their support, she suspects that once they've started to calm down, they'll see that the process is inevitable, and in fact necessary. Only criminals are being dobbed in, but from the angry responses on the lists, the problem is that anybody who has hidden a collection of sexual images or anyone who has carried out a slightly sharp business transaction is now terrified files released to Mindwave are going to trip them up. From the amount of fury being expressed

through the blogs and newsgroups, she wonders if anyone out there has a clear conscience. She can't repress a giggle. As she assesses the response, it becomes clear that all over the world, small business owners have released their general transaction files to Mindwave only to discover they are being ripped off in droves by their own trusted employees in straightforward cases of fraudulent dealings. Police offices everywhere are being swamped with hundreds of reports. It seems the activities being carried out within larger commercial companies are better hidden or more complex, because Mindwave doesn't seem to be picking them up in the same way.

She checks out a favourite blogger, Zee, who has been posting, in his own words, 'a naive blog since 2010.'

"Its time to decide whether you're ignorant and prejudiced without an honest bone in your body, or wether you want to clean out the house," writes Zee. "Mindwave is now creating the biggest digital divide since the PC haves and have nots of the first decade of the century.

"If you're smart and can see past the prospect of US hegemony and its end game of everyone dead because somebody set off a nuclear weapon, then you want to know about Mindwave and the fact that it recognises a future for the human race. You're the top half. If right now, you're raving because you got nicked by Mindwave for being a thief, well, you should have known that your life as a hypocrite was over the minute the boss let Mindwave into your system. Most people should be pleased to know that the company they work for isn't being ripped off by its trusted employees.

"You have to choose what's it going to be. The ignorant ultraconservatives who think Mindwave

should be banned because it's making people rethink their game? Or are you going to be part of the intelligent half who understands that this has to be?"

In response, Jess observes, Zee has received several replies. One of them is abusive and uses large numbers of expletives in its critique. Others wonder if Mindwave is going to be able to avoid polarising public opinion as its reforms start to bite. They're not sure if Zee's black and white interpretation is going to sit well with people who understand a need for change, and they wonder if Mindwave is working too fast and too 'deep' for many ordinary people to understand.

"Good people understand what's good," replies Zee.

"Thanks for your sanity, Zee," Jess types rapidly.

She starts to scan the headlines and breaking news. She freezes. Oh no, not a Mindwave generated scandal within the US official network. Bribes and border security, of all things—what a political disaster. She goes into the kitchen and starts clanging her cooking pots. She starts to think about Mindwave's operating system and whether moral parameter tweaking is a feature that should have been built in. After all, if Mindwave annoys the Internet community so much the people pull their support, its interventions can hardly be called a success.

There are so many positives, she tells herself. It is early days yet.

8. Sea of Japan

May, 2012

The young guard plods through the night, feeling the weight of the automatic weapon slung over his shoulder. He is certain he is getting a cold. Soldiers in North Korea these days aren't even getting proper rations. His uniform is thin. He is just a foot soldier, but if he'd known the reality of military service he wouldn't have enlisted. In the past year or so the economy has all but collapsed, and he hasn't been paid for weeks. The officers maintain that the North Korean Army needs to be on top form at all times to defend against outside threats, but here he is, hungry and guarding a group of scientists at the Sogam'ri Chemical Facility. A quieter group of men and women could not be imagined. He paces the familiar path through the trees, and past the dispensary and the food warehouse. The 18th Nuclear Chemical Defence Battalion is never going to be part of frontline action, he thinks.

The ordinance warehouse is on the perimeter, and he heads behind it for a smoke. He notes unusual activity; the doors are open. Inside, lit by the lights of a truck, he sees a forklift in action loading boxes of ordinance. He throws aside his cigarette and strides into the meagre pool of light. His arrival causes a minor commotion. A couple of uniformed soldiers run round the side of the truck to confront him. The guard suspects he's just stumbled on one of the black market rings that other soldiers have whispered about. As the supply of official money has dried up, some of the officers have created a few sidelines to keep themselves and the troops in their confidence well supplied with food, cigarettes, and other luxuries such as the new hand held

communications and entertainment units. It is rumoured the weapons stock is declining by the month. He wishes he hadn't come around the back here for a cigarette. What is he to do now? His hand starts to move uncertainly toward the bulky old comms unit at his belt.

"Stop that!" An officer throws himself off the forklift and runs toward him. The soldier salutes nervously. As the officer starts an explanation about routine ops and the need for secrecy, the soldier glances at a movement behind his superior, and spots the forklift moving off on its own—it appears the transmission is faulty or the officer has failed to disengage the gears.

The young soldier shouts. He lunges forward and the soldiers, jumpy about the obviously shady nature of their activities and failing to understand the warning, tackle him and pin him on the ground.

"The forklift! The forklift," he raises his head and screams loudly. The soldiers finally scramble to their feet and turn. The forklift has gathered speed and is now heading for a stack of large boxes. With a loud crunch the raised tines bite into a box and the whole pile slowly topples. Crates fall in a fan pattern, and with wide eyes the soldier sees wooden tops splinter and mortar shells fall out, striking sparks on the concrete. The forklift is still driving on, toppling boxes to left and right. He scrambles to his feet and runs for it, leaving his gun behind him. As he stumbles through the dark to raise the alarm he soon knows his job has been done for him; an explosion rocks the compound and he turns to see a whoosh of flame light up the night. That is the first explosion; the next massive explosion takes out the chemical storage warehouse next door.

An officer at a South Korean listening post hears the few garbled transmissions before the last and final

silence falls. In his panic he's not sure what he heard, except that the North Koreans on the site were scared and referring to 'fallout' from explosions. Fearing the worst—the nightmare of a nuclear detonation in the North, a scenario that South Korea has feared for years, he calls in the information to his superiors. They are slow to respond and wish to confirm the explosion report. The officer knows what he has been told is real—there has been a massive explosion, either an accident or a terrorist hit. In few seconds, he accesses Mindwave's Predictor on his screen. Knowing that there are no standing orders forbidding contact with Mindwave, he keys in his official status code, and types the words nuclear explosion, Sogam'ri, South Pyong'an Province, North Korea. Instantly the doubts set in. But the Mindwave satellite link confirms a massive explosion and a huge cloud mushrooming from the site, which is part of the 18th Nuclear Chemical Defence Battalion's operations and a suspected nuclear weapon base. In seconds Predictor's incomplete early warning programme has collated the information and registered that North Korea is not a contributor to the co-ordinated early warning alert system. The system was installed following the Tsunami disaster of 2004, and involves multi-tiered solutions ranging from low-tech sirens on beaches to multi-function crisis sensors capable of monitoring atmospheric pressure, air temperature, chemicals or other contaminants in the air, as well as watching for earthquakes and explosions. It is backed up with complex multi-nation aid response scenarios.

Having established that there are no crisis sensors installed near the area to confirm the report, Mindwave instantly puts out a search for information that finds many sources confirming that the nuclear scenario is possible. It is a one-scan system, and much of the

information is not in the official or authenticated category. Though there is an interactive function that consults as many as several thousand experts in a high level alert such as this, there is low availability of experts in the North Korean nuclear explosion category. The authenticated status of the South Korean officer who called in the report overrides all other considerations; with no contradictory information coming through on the scan and the time factor on the highest urgency status, Mindwave sends a preliminary level one nuclear accident alert to screens across the world.

As North Korea's antiquated communications system starts to register the disaster, officials in Osaka and Kyoto are already activating their virtual disaster scenario programmes. They don't have sufficient data from North Korea to establish what is happening on the ground there, but they are well able to calculate that the prevailing winds across the Sea of Japan are about to bring a deadly radioactive cloud down on a sleeping population. Nuclear explosion universal communications protocols are used to wake the people and warn them to stay put, shut themselves indoors, in basements, or any other safe spaces available. All the crisis agencies are alerted and start to carry out their instructions. In the first hour, the North Koreans are themselves confused. All the Government will do is to confirm that a very large-scale explosion has taken place, and that many hundreds are dead. Satellite pictures confirm that many are dead in the streets around the site of the explosion. Further pictures show that vehicles are fleeing South Pyong'an Province in the night.

Chief of staff LeRoy Callon is in the situation room assessing the disaster within twenty minutes. NASA

analyses are starting to come in and Callon starts to feel cold chills as his generals put forward information. There is an extreme call he has to make in the next hour: Mindwave Predictor's massive knowledge base has called the explosion as nuclear, but the NASA evidence just in has been collated by very experienced scientists: the explosion is massive, but is not nuclear. It is a combination of conventional munitions and biological weapons from a stockpile that may include deadly sarin gas and anthrax. Pyongyang have either not yet analysed the huge cloud, or are withholding the information they have. The cloud has not yet activated sensors in South Korea, but there is very little time.

A general walks briskly into the room.

"We have a transmission from the North Korean provincial headquarters to central command. They're confirming there are no nuclear weapons stored at Sogam'ri, I repeat, there are no nuclear weapons stored at Sogam'ri. They're also denying the presence of sarin nerve agents. We're almost certainly dealing with an accidental explosion that has blown up a storage facility holding older-style chemical and biological weapons."

A bewildered Bob Taft rushes into the room. A senior officer takes him aside and briefs him on the situation.

Callon runs his hand over his face. Why has Predictor put out a warning for a nuclear accident before all the evidence is in? What if the computer programme has access to information that he doesn't have? On the other hand, if the nuclear scenario is wrong, hundreds of thousands of Japanese and South Koreans, not to mention vast numbers of people in North Korea, may potentially be exposed to biological agents designed specifically to maim and kill humans. The response in both situations is different—for a

nuclear explosion, the protocol is one that could almost have been designed to render people helpless in the case of a biological attack. Airborne particles tend to filter down into basements and could infect many in crowded refuges. The proper response to chemical or biological agents, Callon knows, is to get people out of there.

“We have no time left, Bob,” says Callon.

“Firstly, the Mindwave complex could easily have been given incorrect data and has issued a warning on that basis. There is no indication that there is any other data that we need to be concerned about. I recommend that the data you have compiled be released to Mindwave, and I believe the program will adjust the warning accordingly. There’s one other thing,” says Bob. “I seem to recall that the North Koreans may have acquired anthrax capsules, designed to be fired in a missile and then to rupture at a certain altitude. This means that the anthrax molecules may not have been burned up in the explosion...” His voice trails off.

Callon turns calmly to the table of senior staff.

“Alert the Japanese, plus South and North Korean Governments to our findings. State that our official recommendation is to proceed to emergency evacuation of all people in line of the projected progress of the chemical cloud.

“Inform them that the explosion is confirmed non-nuclear, but anthrax may have been released. Immediate evacuation is essential. Four to six hours is all we have now, and less for South Korea. The Predictor early warning is incorrect.”

Tokyo confirms that its top scientists concur with the US findings; the army and US bases are mobilised to move the population out. Aeroplanes are in the air to capture air samples so the threat can be quantified; the

prevailing wind is taking the cloud on a narrow path across land and out to the Sea of Japan and the hope is that the winds will lower the chemical concentrations in the cloud enough so that the threat to people on the Japanese mainland is minimised. The problem, Tokyo reports, is that many people have a firm belief in the initial Predictor warning. Callon orders his experts to release their top level confidential report to Mindwave immediately; within seconds of receiving the data Predictor revises its warning to a biological weapons explosion alert, but the change doesn't prevent confusion. As the computer generated evacuation scenario starts to swing into action, it becomes apparent to central army command that a new variable will have to be inserted: resistance to evacuation by a small number of people who are convinced that the first Predictor warning was accurate and are refusing to leave their home-made bunkers. Instead of an orderly and swift evacuation, the army has to go house to house and remove some occupants by force.

Callon monitors progress over the next four hours. The President is involved in direct negotiations with the heads of state of South Korea and Japan, and is urging restraint until Pyongyang responds with an apology and explanation. Cloud samples come in. The presence of anthrax in the cloud is confirmed, and the masked and suited soldiers continue to search in the areas under the threat of the cloud. There may be civilian casualties because of the limited time frame, but the number of resources that have been transferred to the operation and the excellent strategic deployment of them, army and civilian, all communicating through Predictor-enabled Internet communications is impressive, he thinks with some satisfaction.

On the big screen, hand-held digital cameras are streaming images of frightened Japanese children packed in moving buses, and people wearing gas masks in every Japanese city. It looks chaotic but is all purposeful; children being ferried to schools in other areas, hospital patients being airlifted to other facilities or, in the case of less seriously ill people, to army mobile hospital facilities outside the area under threat. Later, ominous images from North Korea of sick people lying all over hospital corridors tell a different story. North Korea is refusing assistance from the American military based in Japan and its specialised mobile isolation facilities and full terrorist biological attack medical protocols. The United Nations is attempting to intervene with offers of help; however, the North Koreans have moved to isolate the province and the intention appears to be, Callon tells his assembled staff, to leave the anthrax epidemic to burn itself out with minimal outside help.

Jessica is watching the progress of the disaster hour after hour at home. She caught the first nuclear explosion warning from Predictor and seen the first news stories come out with a panicked and confused international response. She felt sick as under two hours later the Mindwave alert changed without explanation to a biological weapons explosion alert. What had gone wrong? She sits and watches as the crisis unfolds and the recalcitrant North Koreans issue a 'full inventory' of the biological weapons involved in the accident. The inventory lists chemicals that may dissipate harmlessly in the winds, but finally divulges the presence of deadly anthrax in the mix. Jessica feels for the people being scooped out of the path of the cloud. She can imagine their terror and disorientation, and feels increasing contempt at the North Korean Government as the hours

go past and it proudly refuses assistance from the rest of the world. Japan is already calling for severe reprisals.

The response from the United States is muted. It is obvious that there is relief that the accident is not nuclear. Jessica knows that the USA effectively started the nuclear stoush when it threatened to use nuclear weapons to end the Korean War on terms favourable to the United States. Nuclear weapons were deployed to South Korea for the first time in 1958, and they weren't withdrawn until 1991. By then the paranoia of North Korea was deeply embedded. Besides being convinced that nuclear weapons remained in South Korea, the regime set out to acquire nuclear weapons itself. In the last decade, the dangerous game of trying to bribe, cajole, and starve North Korea into finally disclosing and disabling its suspected nuclear devices continued without successful conclusion. This most recent disaster could further destabilise an already very difficult situation.

Jessica calls Hugh, who she knows is monitoring the situation from the university with Leonard, who is extremely concerned about his family in Seoul.

At the sound of his unusually friendly "Hey sis, what's up?" she wails.

"It's awful, there's going to be hell to pay. The Predictor early warning system completely stuffed up, and people are never going to trust it again. I don't know why everything is going so wrong, and all those poor people in North Korea who have died...and Leo must be going through hell waiting..."

"He's fine, he's going to fly back to visit his family as soon as the airlines are up again. And come on, Predictor had the information out globally that there had been an explosion in minutes, and then everyone was working on the problem. It was only a matter of

time then before they straightened the whole story out. I agree that it's bad news that the mistake was made. I think there must have been some bad input, and there are no sensors in North Korea. Even the best computerised system is going to fall over with that set-up. Any computer scientist could tell you that."

"Yes, but what worries me is are all the people who aren't computer scientists going to understand? I don't think so." Jessica is refusing reassurance.

"It'll be interesting to find out what went wrong. Anyway, it looks as though the North Koreans have just accepted Mindwave mediated help, as they aren't too keen on the United Nations and their weapons inspectors. So there's another big challenge for the crisis intervention protocols, and myself, Antonia, and Richard are going to keep a close eye on what happens there. It looks as though there needs to be some sort of authorized way to intervene if there's been some sort of input breakdown with Mindwave."

"But we don't even know that bad input was the problem."

"It must have been. And we are going to find out what it was. I may have something for tomorrow, you know. Marcus wants to take his yacht out for the day, and he doesn't see that the incident has given us any particular reason to cancel it. We all need a bit of a break after this."

Jessica had forgotten that Marcus has decided to take his large yacht *Exhilaration* out on Auckland Harbour for the day to freshen up the team.

"Company expense," says Marcus grandly, ushering Maria, Jessica and her husband John, Hugh, and Antonia down the wooden gangway at Westhaven Marina. The marina is a forest of masts. Antonia and

Peter are enjoying looking at all the other yachts and motor cruisers. They decide they prefer a beautifully maintained classic timber yacht that has sleek lines and almost breathes stories of romance on the high seas. Some of the yachts have markings indicating that they have sailed from Europe and America. The cool bins of food are stowed on board and Marcus and Maria perform a complicated dance of casting off ropes and calling instructions as Marcus stands at the large wheel and slowly backs the yacht out of its berth. Once the yacht has motored out of the marina and into the harbour, Marcus relaxes. Antonia enjoys standing on the deck, sniffing the salty air and enjoying the view of the giant tank farm and the container wharf of Auckland's busy harbour, where huge container ships are lining up to be loaded and unloaded by giant cranes. She feels her long violet cotton skirt flapping against her legs. She sits down, hugs her knees and looks back at Hugh and Marcus.

"Isn't this great! What a terrific idea."

"Well, I have another idea," Marcus says. "The North Korean explosion has been a shock and a setback to Mindwave. Leonard has left Auckland this morning, Hugh here has been working on trying to find out what went wrong, and Richard has refused to come out today because he's on to something. He's logging North Korean communications. It's a long tough job for everyone. I want to suggest that we spend today away from this pressure, and that just for today, we forget the Mindwave project. Otherwise, it's an obsession, and we just won't last over the long haul."

Everyone nods. There is not a word of dissent. With a sense of relief, Jessica pulls her hat over her eyes and relaxes for a moment, feeling her stress wash away with the bubbling wake following the yacht steadily

motoring down the harbour. Then she heads down the steps into the yacht to help Maria unpack the food supplies. When both women return to the deck, the yacht is passing Devonport and Marcus is ready to put the sail up. Following a brief flurry of activity, the huge white sail catches the wind and the yacht is surging down the harbour, Antonia giving a friendly wave to yachts heading in the opposite direction. Mugs of hot tea appear but Marcus, Jessica and John choose cold beer. The atmosphere is convivial. A few clouds chase across the sky, and the sea changes colors every few minutes, from a deep mysterious green to a sparkling white-capped blue. Antonia muses that she could just sit and watch it for hours.

“Go right ahead,” says Maria. “The great thing about being out here is that you can leave all your cares behind.”

The yacht passes Rangitoto, the perfectly formed extinct volcano that rises out of the harbour in an awe-inspiring natural sculpture.

“We could climb that if you like,” suggests Marcus.

The women look at each other.

“Why not?” says Antonia. Soon the yacht is secure at its anchor, and the women decide to swim in to shore while the men take the small dinghy that is towed behind the yacht. Hugh strips to his surf shorts and performs an inelegant somersault off the stern that results in a fountain of spray.

“Wet sandwich!” Antonia protests. In seconds she has dumped her food, stripped down to her bikini and dived neatly off the stern. She admires the elegant lines of the white hull resting serenely in the water. After much time wasting, the team is assembled at the start of the track, hats and shoes on, water bottles at the ready.

It is a steady, hot climb up the rough red volcanic gravel, with native bush and the occasional birdsong.

“John,” says Maria, puffing slightly, “I understand from Jessica you are a cardiologist?”

“Yes,” says John, “and I also like to keep up my involvement in research.”

“So, what is new in the field?” says Maria.

“I have an interesting case at the moment where we are doing myocardial regeneration—that’s gene therapy of the myocardium, using the patient’s own stem cells taken from his bone marrow.”

“How is that done?” says Marcus.

“We culture the stem cells for about three days—the technique has been around for about a decade, but after the initial promise it was apparent that the cells didn’t align to contract and improve the function of that part of the heart. However, with the advent of nanotechnology it’s become possible to insert molecules into the cells, once the molecules have been treated to respond slightly to a magnetic field.”

“How does that help?” says Marcus.

“Well, soon after the treated stem cells are inserted into the patient, a machine similar to a magnetic resonance imaging scanner is used to align the cells sitting on the wall of the heart, so that they are sitting parallel to the plane of muscle fibres. As they mature they then contract along with the heart muscle, and healthy heart muscle replaces scarring, improving heart function. The process takes a month or two.”

John takes a drink from his bottle.

“It is therapy for heart failure after a heart attack, which can affect, say, twenty percent of patients.”

“That’s interesting,” says Maria. “The technology in the medical area is so advanced, and yet, in other areas

of life we're just starting to realise some of the possibilities."

Ahead, Antonia and Hugh have found a lookout spot and are leaning on the railing looking out over the dreamy seascape with its sun-washed blue tones.

"We could go sailing together around the Pacific for a year, and visit all the islands," Hugh is suggesting. "It would be so good."

"Yes, but you don't know how to sail," objects Antonia.

"It can't be that hard," Hugh argues. "Marcus can do it."

"Gosh, thanks," says Marcus, as the other group joins them at the railing.

"Look, Marcus knows what he's doing. And no offence, Marcus, but we're in the harbour and the sea is practically dead calm. It isn't exactly the Sydney to Hobart race, is it?" says Antonia, referring to the ocean race in which over one hundred very expensive yachts and their crews head out to take a fearful battering in the summer gales. And that's in a good year.

Hugh thinks of the last race, which was a bad year, with a couple of yachts sunk, a ditched rescue helicopter and a few dismastings.

"Well, how about we take up diving, then?" he suggests.

"I've always wanted to learn how to dive," says Antonia, turning to smile at Hugh.

"Come on you two, let's get to the top," says Jessica, catching her breath and mentally vowing to improve her fitness.

As the yacht heads back and the evening sun glitters on the waves, everyone agrees it has been a good day. Sometimes they feel like nannies watching over Mindwave operation, Maria comments, but after a day

like this it is easy to believe that it is all going to work out.

9. Images.

May, 2012

Jessica has a good night's sleep after the outing on the yacht. Today she has a distributed television interview in which she is to feature along with other guests, primarily from America. Her identity and involvement with Mindwave is now a very poorly kept secret, and she is in demand to make public statements. She lies awake listening to the rain pounding on the roof as John hurries off to work. She pulls the bedroom curtains and looks out. The trees in her street seem to be stretching themselves, their green limbs spread wide to the wind. The harbour will be full of big waves today. She tucks herself back into bed with a cup of tea and starts to make notes out of her copy of the Bible. She has done some research on the other guests and knows that Mindwave is going to come under heavy fire from the Rev Dan Billings, a fundamentalist Christian who represents the American Family Values lobby, and from N. Edgerton Bygraves, a Yale academic who is lording it over his colleagues with his public stand against Mindwave and all it represents. Vint Cerf, the internationally respected Internet advocate, is also on the program. She intends to give Mindwave her best effort.

Jessica puts on her best black jacket over her jeans and white top and sits behind her desk. The interview is early for her time zone, but CNN has been heavily promoting it for a prime slot in the US.

The interviewer smiles, showing both upper and lower sets of very white teeth in the audience screen shot as she introduces her guests.

“Today we’re going to discuss the amazing rise of Mindwave, the Internet-based system using a new approach to artificial intelligence that has gained the support of hundreds of millions of computer users around the world. Now, they’re donating their computing resources and data to Mindwave because they think that this system of distributed intelligent agents and moral analysis modules is going to solve the world’s problems. But are they right to trust it?”

The Reverend Billings does not waste any time. “Quite apart from the massive failure we’ve just seen with the North Korean incident,” he begins.

Jessica ruthlessly interrupts him. “We believe the initial wrong report was caused by a data input error, and no computing system is immune from those. However, the early warning system worked and the coordinated response shows that Mindwave is in fact extremely effective in crisis situations.”

“I believe the real problem with Mindwave, that people like yourself are selling as a futuristic development tool, is that it offends basic biblical values, that it substitutes computer-generated moral guidelines for biblical guidance,” Dan Billings retorts.

“People have their sacred things, and Mindwave doesn’t challenge those beliefs, or any religion,” says Jessica. “Try to see it, as so many Christians, Muslims and people from everywhere do, as a kind of moral extension, a response to a global possibility of redemption, if you like,” she says.

“I certainly don’t see that,” the Rev Billings replies. “It is profane to put up a computer to run things that are rightly the domain of the governments of Christian countries. We of the American Family Values organization prize the family, and anything that doesn’t further the economic interests of those families,

anything that takes away the influence of parents over their children, or takes away their God-given dominion over land and beast, is wrong.”

Bygrave’s sonorous voice flows smoothly over the lighter tones of the interviewer, who is attempting to ask a question. “The fact is, Mindwave has failed in its operation as demonstrated by the North Korean incident, and it thus represents a physical danger to us all. But I want to call attention to the political dangers. Its use is not authorised by any global body except that of the organization ICANN, and we now need to bring that operation under control of governments. Indeed, it is time the political authority of Governments is restored by publicly explaining exactly what Mindwave represents: a powerful, anonymous operation that is almost certainly illegal. I am certain it will soon be outlawed by the International Court of Justice.”

“I cannot believe that any country would be so irresponsible as to try to challenge the peaceful, collaborative organization overseeing the running of the Internet that is ICANN, the Internet Corporation for Assigned Names and Numbers,” says Jessica. “That would just be a cheap, destructive shot at Mindwave. I can’t believe anyone would use such an underhand tactic.”

“Let’s move on, Jessica,” says the interviewer hastily. “The Reverend Billings has earlier raised the issue of Mindwave alienating children from parents. How can this possibly be justified?”

“It can’t,” interjects Billings.

“I think the answer here is formal moral education for children that takes in the modern global landscape. Children are adept with the Internet and pick up many of its values as they use it. They then have to reconcile these values with those taught at home and in the

schools. It's too much to ask of kids to have to do this without assistance," Jessica replies.

"I would argue that digital information has created a dangerous or at least slippery moral landscape for everyone, not just children," comments Vint Cerf.

"There is a problem in that there is a lot of controversy based around theory and philosophy of learning styles and moral education approaches, and then there are the concerns of organizations such as the Reverend Billing's," says Jessica, looking at Billings. He nods. "However, it isn't hard to see that if children aren't provided with a framework for making moral decisions in regard to their on-line life, mistakes they make may not only cause damage to their own lives, maybe by them viewing and dissembling pornography, contacting stalkers, cheating, stealing software and other digital content." Jessica stops to take a breath. "But they may cause damage to others."

"Yes indeed, there's bullying online, 'notify wars,' hacking and disseminating malicious codes, identity theft, misinformation and hype, and privacy intrusions to consider also," says Vint.

"These also create a risk to on-line commerce and civic life, as well as to the individual, and the cost to society is increasing all the time, as security measures against hacking and malicious viruses and worms just gather pace every year, and costs enormous amounts of money," Jessica says.

I have long felt that there are three ways to deal with computer 'crime,' says Vint. "The first is technical prevention, the second is the post-hoc use of detection and prosecution, and the third is moral persuasion. Unless it is included within the third category, awareness and self-defence must be added so that people can avoid becoming victims of crime and abuse,

thereby solving a major of the problem. The third method, moral persuasion, may sound weak, but like gravity, it can be the most powerful force in the universe.”

“Oh without question,” agrees Jessica. “So it’s not just that Mindwave is here and changing the way we live, it has long been the case that people all around the world have been aware that there is a special group of Internet values based around freedom of communication, privacy, human rights, access, open infrastructure, and so on. We now need to formally educate ourselves about the moral values underlying the Internet and Mindwave, and to use the opportunities offered by them to improve our lives and give our kids a good future. The best way to do this is by moral education of children, a process that involves a lot more than giving them a set of ‘Netiquette’ rules and telling them what they may or may not do. The Internet, after all, is the first communications technology with the potential to create a democratic global political environment.”

“We may part ways here if only because I am somewhat sceptical of the ability of the Internet alone, to foster any form of global politics,” replies Vint. “At least, not in the Greek sense of pure democracy. It might be a basis for a representative democracy, but hierarchy is needed to deal with scale. Pure democracies don’t scale very well for the same reason that mailing lists don’t scale—too much communication!”

“Well that is the strength of Mindwave, surely?” argues Jessica. “It can deal with the billions of conversations as input data, and shape it into actionable scenarios and choices. Ultimately, it should be able to scale pure democracy to a global level. The North

Korean incident demonstrates that Mindwave is not infallible; it is a set of programs that needs good input by intelligent, thoughtful people. It can only reach its potential if everyone gets behind it and contributes, despite all the double-checking it does itself.”

The interviewer’s head suddenly twitches. Jessica frowns. The woman’s eyes widen. She’s getting told about something, something important, Jess thinks. She feels a twinge of anxiety.

The interviewer straightens her back and faces the camera. “According to news that’s just come in, there’s been a bomb explosion in a shopping mall in Los Angeles, I repeat, there has just been an explosion in a shopping mall in Los Angeles. We’ll go live to the scene as soon as we’re able and give you an update on that.”

Jessica guesses that this is another terrorist attack against the USA by Muslim extremists. Ever since Israel’s ruthless bombing of Iran last year, the situation has been fragile. Israel claimed Iran had developed nuclear capacity, and it wasn’t about to allow such an aggressive enemy to assemble a stockpile of nuclear weapons to rival its own. The attack destroyed a number of military installations in Iran and stray bombs caused civilian casualties, as the alleged nuclear installations had been hidden in high-density suburbs. The world was shocked at the raid, particularly since Iran had denied trying to create nuclear weapons, and because evidence released by the outraged Iranians showed that one of the bombed plants had been a factory for medical supplies.

As the interviewer endlessly repeats the little information she has, reports the rumors of casualties, then cuts to the familiar but still shocking aerial view of a large crater spouting smoke and dust where a stylish

mall in Orange County used to be, Jessica reviews the point where things started to go badly for the US. The Qatar television station Al Jazeera gave Clarrie Jones, an outspoken Southerner and the US ambassador of the day, a gruelling interview. In an attempt to mend the fences with the Arab nations and improve the propaganda blizzard that inevitably erupted whenever there was an incident, the US decided to give access to key officials. On this occasion the US Ambassador had expressed regret that the incident had occurred, but emphasized that ownership of nuclear weapon manufacturing plants was certain to inflame tensions in any area of the world; she stopped short of condemning Israel for its attack, and refused to comment on reports of a high civilian death toll on the grounds that reports were still sketchy. The interview ended, and the cameras followed the Ambassador on her way out of the station, panning across the huge security detail and the crowd of aides surrounding her. The ambassador evidently forgot the power and reach of the new audio equipment that was trained on her, or thought that the cameras had been left behind.

“It seems like the Israelis cleaned out every last nuke in Iran. Frankly, Iran has been asking for it,” she remarked to one of her team. The uproar was immediate. Al Jazeera seemed to find a reason to replay the comments every day before breakfast, and the Middle East was rife with rumours of threats against the USA. While the Israelis decided to lay low, failing to deny allegations that they’d been given the green light to bomb Iran by the US President, the terrorist threats of reprisals against the USA increased. This is it, Jessica thinks, the answer to the insult.

The bombsite view is replaced by a familiar image, a Californian guy wearing an object on his head that

Jessica recognizes: a tiny webcam worn between and just above the eyes and hooked up to Mindwave using a wireless connection. The interactive component is facilitated by an earpiece and miniaturized microphone. The transparent strap around the head means that all an observer sees is a small black mark on the forehead, similar to a tribal insignia. Some people just didn't recognize what the device was. The Californian digerati wore their badge with pride, and the craze was starting to sweep across the world. Huge computer capacity was taken up by Mindwave analysis of all the data that was received, but California was the home of spare computing capacity, so that didn't matter. The data donors had discovered that unfortunately the data analysis module had no sense of humour, and so people in Silicon Valley busied themselves writing an open source back-up module for their own data streams that assembled a sort of 'greatest hits' compilation of scenes often recorded in error, when the wearer forgot to disconnect his or her webcam. Thus domestic disputes and romantic declarations that were better than anything at the movies, accidents and bashings, unintentionally hilarious incidents and wacky Californian stuff of all sorts, were recoded for posterity. The networks were starting to buy the better, and cleaner, stuff and most people were delighted to be a Mindwave star.

The young guy, maybe sixteen or seventeen, is jumping in and out of the shot and waving his hands. "I was just walking through the mall with a friend and we were lined up to get a coffee, and I'm a friendly guy, you know? So I start talking to this dude in the line-up, and he's carrying a big bag. I say, 'Hey bro, you must have a lot of work to do with a bag that big,' and he started up on this explanation about how he was a

liquor salesman trying to get some new accounts. Anyway, we got our coffee and everything seemed okay and we saw someone from our favourite TV show and we were just talking about the last episode, and then I suddenly get these instructions from Mindwave in this electronic speech. It was weird."

"What did it say?" says the interviewer in a soothing tone.

The young man's dark brown eyes flicker around and then steady on the camera. His breathing is ragged and audible. "It said a known terrorist has been identified by voice screen from your webcam images, and although facial features are not a match, um, calibration analyses indicate the, like, ID is confirmed for plastic surgery variables? It said the guy's manner and the weight-size ratio of the bag looked like taking the terrorist incident likelihood to ninety-two percent. It told me to go around the corner and to initiate this alarm authorization sequence. Then it told me to get the hell out of there, except it was polite. It said the police had already been notified and given access to the images from my webcam."

"What did you do?" asks the interviewer.

"I ran like hell and did what I was told. When the codes were right and the whole building started to go crazy with sirens and instructions, I knew the whole thing was real. It wasn't some sort of hoax. I think they got everyone out and the police had their guns out searching the crowd for this terrorist. Then the place exploded—see, I've got dust in my hair."

"How long do you think it took you between getting the message and raising the alarm?"

"Probably a bit over a minute," replies the young guy modestly, looking down.

“We’ll cross to the police, leaving one young hero to get himself another coffee I guess,” says the interviewer. “Now, can you give us an update on possible casualties and damage?” She starts to discuss the situation with a uniformed policeman and Jessica leans back into her chair and puts her feet on the desk. Glancing at her screen she sees that she is still connected to the interview virtual room, and that Bygraves and Billings are in deep conversation. She switches to them.

“Mindwave is just encouraging these terrorists. I mean, people can make a statement in the world media and no one even gets hurt. The whole thing smacks of a set-up,” Bygraves says.

“I agree entirely,” says Billings. “It has all the hallmarks of a conspiracy. Here’s a kid saving a whole shopping mall of people, probably including a couple of movie stars. Mindwave has contacts everywhere and what could be easier than staging something like this?”

“What about the terrorist who may have just blown himself up?” Jessica breaks in, furious. “Don’t either of you have any regard for reality? There were real people in that mall who nearly died today, and they would have died if it weren’t for Mindwave’s network and data analysis capacity. Don’t you understand that this isn’t some sort of political entity that you can demonise? It’s a networked program that does a job, that’s all, not some thinking being. It’s like you’re saying your refrigerators are out to get you. You’re both basically uneducated,” she says, unwisely.

“Me, uneducated?” says Bygraves. “With seventeen books to my name, I don’t think so. As a leading academic I may say that your ideas are quite off the wall, Ms Shepherd. I have never read of them anywhere, and if I haven’t read them in the academic

literature, then they most certainly have no currency in the academic sphere.” Professor Bygraves rearranges the collar of his violet polo shirt, which sets off his white hair and bright blue eyes.

“That’s because my ideas are original,” hisses Jessica.

“Well that cuts no ice with me,” says Bygraves. “I think academia will be here long after you’ve disappeared back into the radical computing culture you came from, don’t you think, Dan?”

“Mindwave is a flash in the pan. Christianity has been around for over two thousand years, and it’s going to be around no matter how many computers get built.”

“That’s not the point,” begins Jessica, and then abruptly leans forward and hits the off button. “Dinosaurs,” she mutters, stomping off and hurling her best jacket carelessly onto a chair, where it slides off to form a puddle of fine black wool on the floor. She knows the cat will soon be curled up on it, but she doesn’t care.

It is a victory for Mindwave, one that was really needed following the loss of confidence engendered by the initial false warning given over the North Korean incident, she thinks. But for those people blinded by their own prejudices, nothing is ever going to be good enough.

“These men have set up their idols in their heart, and put the stumbling block of their iniquity before their face,” she says to herself, enjoying the invective of the biblical quote, one she found while researching the interview. She hopes the network doesn’t play the nasty row on air. But in her heart she knows it will.

Marcus has called a meeting and Jessica accepts the ribbing she receives about her outburst after the interview with good humour.

“Seriously guys, Bygraves was making some very odd threats about ICANN and the United Nations International Court.”

Maria frowns. “We have to hope that’s just a lot of hot air.”

Richard gives an account of his news. He’s made contact with a scientist working in the top-secret knowledge engineering lab in Beijing. The scientist has participated in several technical chat rooms that Richard keeps an eye on. Certain things he said have made Richard certain that he is one of the people the group is looking for. The group is now sprawled around the table. Hugh has his feet up. Jessica is trying to review a couple of papers as she listens. Marcus is a little impatient; he has a business to run and he always has to be mindful of his costs. He understands this process is going to take time, and finally, this piece of news may be the breakthrough he’s been waiting for.

“Do you think this is going to work for us?” he asks Richard.

“Could be. I started to chat with him—we’re both using other names obviously, and his is Snow Tiger. Now we’re exchanging e-mails through hotmail accounts and he’s probably using one of the Beijing Internet cafes. It’s all completely state monitored—he has to be extremely careful,” says Richard. “There is quite a protocol we have to go through, getting to know each other and our background interests, so I’ve had to take it slowly. I didn’t want to alert you guys too early because I just couldn’t rush this.”

“Are you using encrypted e-mail?” asks Jessica.

“No,” Richard laughs. “That would really set them off. We’re using a really antiquated letter substitution algorithm that’s so old and useless the state surveillance

system won't have it on file. Smart, huh? Took hours to set up, though."

"Hmm," says Hugh. "To take a risk like this, Snow Tiger is obviously serious."

"Well, he did a year's research at MIT. He's a senior and trusted researcher, but of course, at MIT he learned a few more things than the role of intelligent agents in knowledge networks. He got the whole picture; he now thinks that the Chinese Government has to adopt a more collaborative approach to create a successful global environment in the long term. He's been assigned to a project that sounds a lot like our worst suspicions: the adaptation of a very complex cluster of mystery code modules that use intelligent agents to reach certain targets."

"He understands exactly what he's been asked to do, and that is to modify the Mindwave code so that the system obeys Wen Peiyan's orders. He's to reset parameters, withhold certain information, and create positive scenarios for the Chinese economy at the expense of other economies, that sort of thing."

Hugh swears. "How did Juergen manage to create a system without the security to prevent substitutions, even in a case like this one where the access codes and authorisations are available? It could be a fatal weakness."

"He had the kill key as backup, I guess. So building the security modules looks like another job for us. But it's going to take some amount of time to put together security cover for the whole Mindwave operation," says Richard, slapping his hand on the table in exasperation.

"You're telling me," says Antonia. "It's a huge job, but it can't be put off. Anyway, at least we'll feel as though we're doing something. But the guards aren't

going to be in place in time—the Chinese have a huge lead on us.”

“What does Snow Tiger think about it?” asks Maria.

“He’s completely against the whole project, but the facility has been turned over to it. Snow Tiger isn’t in a position to sabotage the entire project, he’s just one of the team. However, he is prepared to work with an outside agency to destroy this project. He believes that Wen Peiyan’s oversight group are dangerous extremists and that the Chinese Government doesn’t understand what it is they’re actually up to.”

“This shows amazing courage,” says Jessica. “But it is also way out of our league. How are we going to destroy the project without implicating Snow Tiger, and how can we protect him? We’re amateurs at this game.”

Marcus looks around the group.

“Jess is right. We’ve got the information we need; now we’ve got to get on with it. Richard, you are doing a brilliant job. Tell Snow Tiger we are going to work up a plan.”

“And what is that?” says Hugh, raising his eyebrows.

“Time to call in the US cavalry I think,” says Marcus. Hugh nods slowly.

Marcus and Jessica have been invited to speak at a seminar in Wellington, the capital city of New Zealand. It is an annual telecommunications company sponsored industry get-together where issues of the day, many of them technical or regulatory, are thrashed out. A lot of informal networking usually takes place. Jessica has been dreading this, as industry people to this day are still male in the majority, and have considerable scepticism about the cyber-ethics she puts forward. However, if she is being honest, she accepts that many of these hard-edged individuals do have a pretty good

understanding of what she is talking about. They have to be open-minded and able to accept new concepts to survive in an area of such constant change. However, she thinks they'll give her a rough time when she talks about the moral foundation of Mindwave. They'll wonder how the development will affect their bottom line.

Marcus has decided that since the Prime Minister is going to open the seminar with a speech and will be attending the first day's talks, one of which will be Jessica's, this would be a good opportunity to ask for a quiet few minutes to warn her about the Chinese operation and ask for her co-operation in briefing the Americans. The softly-softly approach is the thing, says Marcus, so all official channels are avoided.

Jessica wants to keep her talk informal and to take questions. On the day, she is confident she can handle the large industry group. She is introduced and walks forward to start her talk. She starts by listing Mindwave's achievements so far, emphasising the fusion of the communications technologies and the stunning results of intelligence resource allocations.

"So the high profile incidents that Mindwave has been involved with recently have given us a very good picture of the strengths, and some of the weaknesses, of this program. But now let's pick up on another area where a huge amount of work is going on, but one that has always suffered from a lack of profile. I'm talking about international aid and the fight against hunger. As you know that has been a very complex problem because it has never been just a matter of getting food from one place and shipping it somewhere else."

She looks around the large auditorium. "Now in 2012 we can look back and see the signs have been

present for years that the real threats of global warming and climate change, and many other factors that I'm about to discuss, were going to impact poor people around the world the hardest. The era of cheap energy ended many years ago, water use has increased and the water tables have dropped so far that many wells in India and China are running dry. The failure of the global grain harvest in 2009 underlined the almost total loss of food reserves over most of the world in the past decade. Because the cupboard was bare, we had many deaths and we now have the legacy of nearly two billion malnourished children. While the aspiring and wealthy countries put more agricultural reserves toward growing meat, and the less wealthy countries devoted more and more resources to growing flowers, luxury fruit and all manner of other consumer items for the wealthy, less and less land and capital was provided to meet basic food needs." Jessica flicks through various tables on the screen behind her.

"All we needed then was catastrophic climate change, and as you know, we got it." She shows pictures of the aftermath of massive storms and the communities shredded by catastrophic drought. "Wars, small and destructive, have created the usual problems in distributing aid. Aid workers are seen as targets by terrorists educated to believe that their problems are caused by big agribusiness and banks taking their livelihoods on one hand, and throwing them a few grains of genetically modified wheat on the other. That's not to downplay the tremendous role the genetically modified grains are playing in trying to bridge the gap between available food supply and the steady increase of populations in the most vulnerable countries," she adds.

A CEO of one of the smaller private computing businesses, a woman Jessica knows slightly, puts up her hand. "What you are describing, Jessica, is a situation where there isn't enough food or the prospect of enough food, even if all of the problems you've outlined were somehow to be addressed. So isn't Mindwave creating a completely unrealistic hope in people that the technology simply can't meet? Surely you can understand that some of us are completely sceptical about this project?"

"Yes, I can understand that, Mere," Jessica replies. "However, there is potentially enough food to feed everyone, given good global management. Now that has always been the case, and it is still the case, despite the huge difficulties we now face. In the past, the problem has been too vast and too complex. What Mindwave has done is to document all food supplies and modelled shortfalls based on climate change predictions. The Japanese scientific community has done some brilliant work in the area of global modelling already, enabling a very accurate picture."

A man puts up his hand. "All the information in the world isn't going to make people part with their cash, is it?" he says bluntly, looking around for support. There is a muted murmur of agreement.

"It is if people can actually track where their donation is going, and if requests for financial or organisational support are properly targeted to a person's own areas of interest, or a company's own area of expertise," says Jessica. "In the first part of this century, more and more people have realised that chronic instability caused by hunger issues and world trade inequalities will continue to spill over into violence and chaos. Mindwave has created an interactive knowledge base throughout aid agencies,

which are now willing and able to establish priorities, use their specialist expertise and to collaborate very closely so that their resources are going to the areas of greatest need.”

“So, give us some good news about outcomes,” says a public relations executive abruptly. Jessica sets her teeth. She thinks this demand is plain rude.

She puts up more charts. “The obesity epidemic in the north peaked in about 2007, and that is when global fashions for meat consumption began to fall rapidly. Mass food consumption began to favour regional cuisine, so that people were being fed their unique regional foods by multinational restaurant chains. It was an audacious marketing scheme that has realised big profits, particularly since many people, particularly younger people, don’t know how to prepare their traditional foods anyway. Anyway, it has released more land previously used for cattle for the growing of grain crops.

“Mindwave has now turned its powerful ability to co-ordinate consumer boycott to create local action to restore some measure of local control to local agribusiness. Mindwave supports community farming by reclaiming rights to grow traditional and new genetically modified crops, and even to sell them to the large restaurant chains. The giant agribusiness and chemical companies are also now being punished by consumers in the developed world if they lean on poor farmers in the developing world by denying them access to the new super-grains, or by gouging costs and price fixing so that the farmers can’t make a decent living. This system is made possible by the huge global reach and number-crunching ability of Mindwave.”

“As you would know,” Jessica directs a fake smile at the public relations woman, who is now talking

animatedly to the man next to her and doesn't notice, "Even a drop of a few percentage points of profit is a major headache for these companies and could even put them out of business."

Jessica stops trying to satisfy the section of the audience that doesn't want to know. She puts both hands on the lectern and looks around at the people who have given up their time to hear what she has to say. Her words start to flow easily.

"The threat that Mindwave represents to these formerly untouchable corporations is real. The major global players are being forced into working within parameters that swiftly and surely will result in effective local food production to enable poorer countries to feed their own people, given good conditions. Where those conditions don't apply, United Nations policing interventions and highly targeted aid packages work synergistically to ameliorate the worst problems. In the long-range scenarios, health care provision is weighted toward children, with the first priority being the health of pregnant mothers, proceeding right through to global education initiatives and the ever-increasing drive to equip all regions with the new low-cost computers developed in the USA. These are being promoted by Mindwave in a global sponsorship drive.

"As always, communications and data sharing is the key, backed by some sophisticated moral coercive strategies. The world has never accepted the problem of hunger, but the balance has always swung in favour of short-term payoffs for the wealthy, a powerful portion of the world's population. Once this scenario is shown to be ultimately destructive to everyone, the only thing to do is to turn to a distributed intelligence to construct

solutions, ultimately backed by global contracts. I hope you will all give your full support to Mindwave.”

The audience applauds, and Jessica walks back to her seat, feeling good about the response. Many of these people are donating resources to Mindwave, and if hard-boiled business people like this crowd are supporting it, that’s a very hopeful sign. She has stipulated that her talk will go straight into the Mindwave archive, and Mindwave will alert interested parties around the globe that it is there, and dub it into as many languages as required by users.

By morning coffee time, Jessica is starving and is helping herself to an excellent cup of coffee and a large muffin, while chatting to the woman, Mere, who asked a question during her talk. Marcus walks up and touches her arm.

“Let’s catch up. Excuse me,” she says to the other woman, and walks away with Marcus.

“The Prime Minister can see us now,” he says. Jessica takes a giant bite of her muffin and washes it down with a gulp of coffee.

“I’m ready,” she says.

They are accompanied to a meeting room by an official, who shuts the door behind them firmly. The Prime Minister is sitting, looking businesslike behind the meeting room table. Jessica wonders if she doesn’t need morning tea like other people. She is feeling drained after her talk, but the Prime Minister shows no signs of tiredness.

Jessica and Marcus shake hands with the Prime Minister. After Marcus, who knows her well, has tossed around a few comments about her keynote speech, the Prime Minister gets down to business.

“What is the problem, Marcus?”

Marcus launches into an explanation about the suspect Chinese operation.

Initially, the PM expresses scepticism about the possibility that the Mindwave's vast operations could be compromised in a blatant power grab.

"Look at the work being done now," she says. "Everything from infrastructure development in the Sudan to consumer pressure on computing manufacturers to recycle components and create eco-friendly long-life electronics. The early warning cyclone monitoring and sea level change response programmes are already creating enormous reassurance in the Pacific regions. The Chinese, on the other hand, have been rattling their nuclear arsenal, and the droughts have caused huge instability in their provinces. I suppose Mindwave mediated sanctions against their profligate burning of coal could have created a huge amount of ill-feeling, particularly in view of the fact that Chinese energy resources are increasingly inadequate and now impacting on their economic performance.

"I guess it is possible, even probable, though personally, I find it hard to believe the Chinese Government would be so reckless as to get involved in anything like this. And of course, if we engage in some sort of unfriendly intrusion into their territory, even their cyberspace, the Chinese are going to take a very dim view of it indeed. Economic sanctions from China could severely destabilise our economy."

"Well Prime Minister, I would suggest that, all things considered, this is possibly something that could be passed on to the Americans. We could demand full involvement in any proposed actions."

“Hmmm,” says the PM, “If we passed the operations responsibilities to the USA, they’d have to take the rap if there was some sort of diplomatic fallout.”

She looks severely at Marcus. “With my office in an oversight role, SR Inc will liaise informally with the Americans, and I expect daily reports. I will set up the collaboration at State Department level so we can move on this quickly. I need to warn you that the New Zealand Government will not take responsibility for your actions if your operation is compromised, but you will be afforded the full personal protection of New Zealand citizenship if something does go wrong.”

“Thank you, Prime Minister. Every day counts here, and will be bringing the threat of a major disruption to the Mindwave operation closer. And if word got out that an extremist right-wing faction of the Chinese Government is planning to turn Mindwave into a Chinese agency, all the good work done so far will be destroyed.”

“I agree,” says the PM. “There is already a large amount of negative publicity following the initial mistake about the terrible accident in North Korea. I’ll get onto this today, and I’ll put you in direct touch with the US State Department once I’ve assessed the response.”

10. The Meeting.

May, 2012

Taxi drivers are leaning against their vehicles in the line-up outside the hotel and flick cold looks at Hugh as he walks into the Washington hotel lobby. He passes through the tall doors. Inside, rows of coloured lights simulate dappled light reminiscent of a sunny morning. Rows of wooden palings cover the walls and low, minimalist sofas cover the vast space. A long reception desk is presided over by staff whose air of chilly indifference sends travellers scrabbling for their credit cards as insurance against being spurned. Hugh is reaching for his own wallet on the way past a wooden cube table when Leonie appears from behind an arrangement of metallic twigs set in riverstones. Hugh stops in his tracks. As he waits for her to join him he becomes aware that his still stance, slightly averted head and fixed look is the same pose he adopted while confronting the swordsman in Graz. Is she that much of a threat? He deliberately relaxes his body and closes his hands.

“Hello, what a surprise.” There is no inflection in his voice.

“Look Hugh, about what happened in London—” she begins.

“This is a refugee camp?” he doesn’t want to be friendly, and he wants to remind her of just how complicated her lies became on the flight to London when she gained his confidence with her refugee worker story. He looks around with exaggerated surprise. “Hungry mothers? Pitiful kids? Oh, there’s one!”

He points to a rounded toddler in an elaborate peaked cap, jacket and patch-pocketed pants with gangsta chains, being led along by his mother. Behind his tiny trainers a Kevlar tarantula's many legs covered by plastic hairs twitch in a rapid walk across the stone floor. He knows the toy was originally developed from a mine clearing device. As Hugh is momentarily transfixed by the tarantula's tiny robot head swivelling, the child catches his eye. Caught pointing, Hugh makes a fear-filled grimace and then smiles. The kid smiles in response, glancing proudly back at his expensive toy. He walks on, his little chest expanded and his large brown eyes content.

Leonie follows Hugh's gaze and sighs. "They're all innocents, aren't they?"

Hugh's eyebrows rise and he regards her with an unpleasant smile. A silence develops.

Leonie breaks it and shakes her head, resigned. "There's a briefing at eleven at HQ. A driver will call for you half an hour early."

She walks away. Hugh gathers that she is the CIA's liaison officer for this job. It couldn't be worse. He walks over to the nearest receptionist, and when she curls her lip at his downunder accent, he gives her such a surly look she appears reluctantly impressed. Underlying hostility is a good protection, he thinks. He's suddenly acutely aware of being a somewhat naive twenty-one year old about to be part of a covert CIA operation. He's on a major learning curve, for sure.

He dumps his bag in a small timber floored, off-white room laid out in three spaces: the living space, a partly walled bed section, and a grey tiled and marble bathroom with a glass walled shower and impressive minimal tapware. He strolls back to the white plastic armchair and puts his feet on the lemon-lime coloured

glass and steel coffee table. He wants to get up and play with the electric aluminium louvres covering the large windows but he can't be bothered. He'd like a place just like this, one day when all of this is over. Maybe he and Antonia could set up together in an apartment. He could imagine all his messy stuff in a nice minimalist environment, and Antonia wanting everything to look right and telling him to put all his stuff away...He hopes agreeing to be the liaison for the New Zealand side of the operation hasn't been a mistake. In the end he felt it came down to the fact that Marcus is married and has children and Hugh is more expendable if the operation in China is unsuccessful. Also, Hugh feels responsible for the loss of the armband to the Chinese. If he hadn't dumped the armband in London, none of this would have happened. Antonia was great about it, he thought. She understood that he wanted to go to try and put things right. But she maintained that it wasn't his fault. He'd been put under pressure in a situation he wasn't trained to handle, he'd done his best, and no one could have expected that the Chinese extremists would attempt such a cynical exploitation of the technology.

Worst of all, Hugh reflects, making himself a coffee, the Chinese haven't actually broken any international laws yet by developing the Mindwave source code for their own uses. They were just doing something similar to what his group had done, but with far worse intent. As a result, the US and New Zealand Governments agreed that this operation was to be a black op; that is, no country was going to take official responsibility for protecting the group if something went wrong. Hugh hadn't hesitated before accepting the role. The threat to Mindwave presented by the Chinese operation is huge and he is not going to allow it to be brought down by something as simple as human greed. In addition,

Richard's communications with Snow Tiger are going to be crucial to the success of the operation, and he wants to be the one ensuring there are no garbled messages.

Hugh is now more than ready for the meeting. Leonie introduces him to an older man and two younger people, a man and a woman, who are wearing casual clothes and a friendly air. After commenting on his accent—"sort of English, but cute"—the meeting, held informally in the older man's office, becomes businesslike. Mike, who is the team leader, runs through the history of the situation and then moves on to the plan. The team will fly to Beijing and play tourist for a few days, while getting acquainted with the set-up. They will then insert themselves into the facility and neutralise the code the Chinese are working on. Hugh's job is to be purely an observer; he will identify the code beyond any doubt, and copy it.

Hugh interrupts. "The informant, Snow Tiger, claims there are no backups of the code outside the physical facility because the project is top secret, and of course, the Chinese got the code from the armband."

Mike nods. "It's a secure facility. Intercepted communications also confirm there are no external collaborators. The question is how best to deal with the code once we've taken the copy of the Chinese work."

Hugh replies, "According to Snow Tiger, internal security is state of the art. Many of the computers being used for the project aren't linked to the network in order to avoid cyber attack scenarios from outside or even inside. There is full intrusion detection cover installed, and he believes it will be impossible for any virus code to be effective in destroying it. The safeguards are just too well designed."

“Hmmm,” says Mike. “Can Snow Tiger provide us with locations within the building for each computer? With that information, we can simply go around and destroy each one.”

“That’s a macho solution.” Leonie grimaces.

“Its an effective solution,” replies Mike. “Let’s not try and fool ourselves. They are going to know they’ve been attacked just as surely as if we sent a bomber over Chinese airspace with US markings. If we’re going to go in there, we’ve got to do the job effectively. With Snow Tiger’s collaboration, we can destroy the code and send a strong message to Wen Peiyan’s group that they’ve made a highly aggressive attempt to attack the international community and that it won’t be tolerated.”

One of the other young CIA operatives, Michele, looks up from her notes. “Actually, that could be very effective in political terms. If we used a networked computer virus attack at the facility, Wen Peiyan could simply cover up the intrusion. This way, we inflict major embarrassment and he has to not only explain what he’s been up to, but deal with the loss of face of admitting that the project has been destroyed. At that point it would be politically expedient for him to deny that there was an intrusion, and that would avoid an ugly diplomatic incident. However it is very unlikely that he’ll be given the resources to have another go, even if there is another copy of the Mindwave source code hidden there somewhere.”

“That makes a lot of sense,” says Hugh. “It is that possibility of another copy being off-site that worries me.”

“We’ll take out the computers in the facility once you’ve confirmed this is the source of the project and copied the code for our analysis. You’ll work at night when the scientists aren’t there. The aim is a low

impact, low visibility operation. You'll be on a plane home within hours of the hit."

"None of us are Chinese," objects Hugh. "I don't see how the low visibility part works."

"True," contributes the younger man, Rico. He smiles, displaying sharp looking teeth. "The big thing is the cover story. The CIA isn't about looking like the CIA you know; it's really a circus out there and we have to know how to go out and play."

"We're the acrobats, we have to entertain our audience," says Leonie, glancing at Hugh.

Mike steepled his fingers. "I like that. There's something about it that works here—the Chinese are some of the best circus performers in the world."

"And we could be a troupe of acrobats," says Michele.

"We could be," she speaks slowly. "Acrobats in need of refreshment, a few shows, a few new ideas."

The others laugh.

"Back flips and flick-flacks? Human pyramids? I'm way past it," says Rico.

Mike slaps him on his well-muscled shoulder. "Come on, the training will do you good."

There are nods around the table. Hugh sees that these CIA people are supremely fit. They've probably been highly trained in martial arts, and passing as acrobats probably won't be too much of a stretch. He has to admit that it is a great scheme.

After the meeting Mike asks Hugh to stay back. There's someone he wants Hugh to meet. An open-faced, smiling man walks briskly into the room and shakes Hugh's hand warmly.

"Hi, I'm Bob Taft. I've heard a lot about you and your work on Mindwave. It's a pleasure to meet you at last."

Hugh murmurs a greeting. Mike looks from one to other and evidently realises Hugh has no idea who Bob is. "Bob is the head of the President's Mindwave taskforce. He's a busy guy but he said he had to meet with you. I suggest that you catch a car down to the river and go for a stroll. You can catch up there without being bothered by anyone."

Soon Bob and Hugh are strolling along the riverbank. Hugh is stunned by the depth of knowledge Bob has about the origins of the Mindwave project.

"Well, yeah," Bob confesses, "The NSA did make a point of keeping an eye on things. But I was aware from the start that the project had enormous potential. We've made it through the first phase but now that the thing is starting to mature we're seeing a few problems."

"I'd say the Chinese project is a pretty major problem," says Hugh. "If they succeed in modifying the code and inserting it into the project, it will subvert the whole operation. We didn't foresee any of this happening when we released the AI, otherwise we could have looked at including a security module that would detect intrusions or additions."

Bob nods. "It could have been a fatal flaw, yes. It is essential that the CIA insertion into the Beijing facility is successful. If that threat is removed, we doubt that anyone else has the expertise to conduct another such project, even if they had access to the source code."

"You seem very confident about that," says Hugh.

"Well, we do know a few things about what's going on out there," says Bob with a smile.

The two men sit down on a park bench.

"Tell me what your task force does," says Hugh. He is enjoying the frank exchange with someone who has a lot of knowledge about Mindwave's operations. He is fascinated by Bob's assessment of Mindwave Money,

the global remittance bank, and the way it is coordinating aid to the targeted countries.

“We’re making a lot of positive changes, but there are a few other problems,” warns Bob. “As you might expect, certain multinational corporations are now starting to gear up for a challenge, and they’re looking around for the weak points. They traditionally use their spin-doctors to turn public opinion to their own interests, but in this case public opinion is well on the side of Mindwave, except for certain conservative groups and individualists.

“They’re now starting to examine the project for legal weak points, and they’re coming up with some unlikely partners.”

“Who?” says Hugh. He realises Bob’s information is much more detailed than his own. But then it would be with the NSA on the job.

“Well, there’s quite a story there. Would you like a coffee?” says Bob.

The two men get off the bench and continue their leisurely stroll along the paths, heading off to a small café. Soon they are sipping appreciatively at excellent coffee. As they exchange light conversation Hugh wonders if there is a further international conspiracy against Mindwave building up. It is on the cards; the big international corporations were never going to give up without a fight. He looks across the small table at Bob.

“You want to know what’s going on,” Bob replies to the unspoken question. “Well, let’s back up a bit. As you’ll know, France hasn’t taken kindly to Mindwave’s campaign against the force-feeding of geese in order to produce the traditional speciality *pate de fois gras*.”

“Sounds disgusting,” says Hugh.

“I wouldn’t know, but apparently they force-feed the birds until their livers are enlarged, and then they kill them and create the speciality from the liver. All the gourmets think it’s delicious, and of course they’re a bit short of a luxury since the caviar sturgeons got fished out. A Spanish food importer says the practice is barbaric and has taken it upon herself to campaign against it, and she’s being supported in a pretty major European boycott of French food. French farmers are marching on Paris and complaining about Spanish bullfighting by way of revenge, and the whole situation is getting heated. The French arms manufacturers have also been squeezed of course. And on top of that, there’s the pressure coming from Mindwave supporters for France to give up its colonial claim on the island of French Caledonia. Other colonial powers gave up their claims on Pacific Islands many years ago, and those islands became independent, but France has hung on.”

“I know,” says Hugh. “I’d be pleased to see the back of them. They carried out nuclear bomb tests on Pacific atolls, and then went and blew up the Greenpeace protest vessel Rainbow Warrior when it was at rest in Auckland Harbour.”

“Well okay. These are the issues the French Government is publicly raising to take a position against Mindwave. But my information indicates that this is a sideshow. The posturing and the arguments, the trucks blocking roads and the loud demonstrations are really just a cover to keep everyone entertained while the real agenda is put forward. This is something much more ambitious, and more sinister, but just doesn’t have the appeal of the public catfights. I’m afraid we might be about to see an unholy alliance emerge that could be quite threatening.”

Hugh feels his shoulders tightening up. "I'd appreciate being told what we're up for," he says, rolling his right shoulder.

"As you know, Internet governance has traditionally been left to the private sector; commerce has developed and maintained the infrastructure, and the governance of certain essential protocols has been in the hands of ICANN, the Internet Corporation for Assigned Names and Numbers. This organization was an independent organization originally set up by the Internet community that ran under a Memorandum of Understanding between the US and ICANN until 2005. At that point, a review of Internet governance was undertaken by the United Nations, which decided to put its weight behind ICANN, but put it under the jurisdiction of the principal judicial organ of the United Nations—namely, the International Court of Justice, operated from the Hague in the Netherlands."

Hugh nods. He remembers that when the decision was taken to leave basic Internet governance in the hands of ICANN, the competing organization, the ITU, or International Telecommunications Union, which had hoped to take over control on behalf of member countries, swiftly pronounced doom and gloom.

"Apparently the French have developed the view, not dissimilar to the Chinese actually, that the Mindwave phenomenon can be turned to their advantage. They believe they can launch a legal action against ICANN in the International Criminal Court for assigning legitimacy to Mindwave protocols that, France will allege, has resulted in severe economic damage to it. It will be a test case, as ICANN is not another country, and the dispute involves cyberspace. But France will argue that because of an attack on its material and virtual interests, control of some root

servers, protocols, and the main reference bibles for the Internet should be returned to the International Telecommunications Union and then parcelled out on a regional basis.

“Their aim will be to have Internet governance for the European Union split off from the rest of the world. They then believe they can misuse governance protocols to favour European markets, prevent imports and generally skew the operation of the global Internet and e-commerce in general.”

“So the attack on the Metamind is a smokescreen for their real objective: to attack ICANN and then gain dominance over the workings of the Internet and e-commerce for their region, and of course, the ability to disrupt everyone else as a by-product,” suggests Hugh.

“Exactly,” replies Bob. “The EU is terrified of the huge Chinese and US economies; China is already beginning to overtake the US. The other European countries are likely to stand by without taking action while all this is going on, with the exception of the German Greens who of course are very supportive of the Mindwave project.”

“France isn’t above the quick and sleazy solution, as we know,” says Hugh. “And in their way, they’re protecting the interests of their region—at the expense of the rest of the world and the future of the Internet, of course.” He shakes his head, finding the story hard to believe. “Who else is involved in this coalition?”

“They’re cultivating several loud commentators here—talkback hosts, and the big media corporations are starting to run op-ed pieces from the likes of the academic N. Edgerton Bygraves, all highly critical of Mindwave. Quite a few of these guys in the US went to Yale together, so while they’re in different areas of public life, they’re all on the same page. As long as

corporate profits are preserved, they don't seem too worried about what France is really up to."

"Don't these people see what they'll destroy if a legal challenge like this is successful? Who would be so immoral as to take on ICANN like that?" says Hugh.

"Politics is a dirty business, trust me. Since I've taken on this job I've had a few nasty surprises," says Bob drily. "But of course, the US would never do anything like that."

"Are you sure Henry Kissinger would be happy about you saying that?" says Hugh.

"Pardon me, what has Kissinger got to do with this?" Bob looks confused.

"I'm sorry. I was joking," says Hugh, sorry that he's made a flippant reference to the power politics of the former American strategist. The fact is, he thinks, if America had never given up the guardianship of ICANN and left most of the root servers in the US as they originally were, this current disaster would not be happening. Bob is clearly sincere about America's intention in respect to Mindwave.

"When do you think they're going to make their legal moves?"

Bob considers, and then looks up, frowning. "I'd say, very soon. And the chances are they're going to have a case under the current rules. But look, at the moment you've got an essential job to do. We're very grateful for the cooperation of your Government and I want to wish you all the best in the task you've got to carry out. Put this discussion out of your mind for now. Remember, we're working on it and the President is right behind the Mindwave project."

The two men get up from the table and walk together out of the café. They shake hands and Bob pats Hugh on the shoulder.

“Stay in touch,” calls Bob as Hugh heads off. “We can do this.”

11. Beijing

May, 2012

The Beijing air is thick and warm, and the unfamiliar taste of it hits Hugh as he steps onto the street. Rico and Michele have decreed that the three of them should be tourists for the day, and Hugh is happy to oblige. He looks around him at the stream of traffic across four lanes, a separate lane full of cyclists still rushing off to work.

“The traffic looks insane,” he remarks to Rico as they stroll along to a bus stop. Rico nods, taking it all in but strolling along as though he lives there. They’ve decided to use the excellent Beijing public transport system to have a look around; first stop, a garden teahouse. Hugh is bemused by the noise, the horns of the drivers, the calling of the street vendors, the conversations of the people as they pass. They catch their bus and Hugh stands staring at the busy city streets as they scroll by. He is aware that as a tall European he is being watched discreetly by the Chinese people on the bus, who are all neatly dressed in Western clothes. Michele, who had fair hair in Washington, now has hair of a dark brown shade that doesn’t do a lot for her skin tone. She declares they have arrived at their destination, and they leave the bus and walk into a peaceful, highly ornamented oriental garden with a pond. Goldfish flick tranquilly in their domain.

Michele, who seems to have taken over the role of tour guide, negotiates a formal tea ceremony. The three sit around the table as their hostess, formally dressed in Chinese silk of a sharp green with gold embroidery, handles the tiny cups with rapid, skilled movements. She teaches the group how to hold their cups, and how

to enjoy the aroma of their tea. Her smiling efforts, the taste of the three different teas that they are served and the beautiful surroundings create a peaceful ambience. The four people start to relax and to chat easily about what they're seeing. Hugh wants to see Tiananmen Square, and the others are happy to fall in with the plan. They pay for their tea and head to the subway, easily identified by the masses of bicycles parked all around it. The subway station is huge, with signs in Chinese and English. They make the crowded trip to Tiananmen Square station and Hugh feels a sense of excitement as they walk up the stairs. Tiananmen Square is the biggest public square in the world, Michele says. The trio stroll into the giant space, with its elaborate set of gates to the Forbidden City. The vast scale of the public buildings, particularly the Memorial Hall of Chairman Mao Zedong, is a serious statement about the power of the Chinese state, Hugh remarks to Rico. The trio stroll through the square chatting to each other about snippets of its history. Tiananmen was the front gate of the imperial palace during the Ming and Qing dynasties, and Ming and Qing emperors issued decrees from there, says Michele. They wore the most fabulous blue and yellow silk garments embroidered with dragons with staring eyes, religious symbols and flowers, she says, glancing upwards into the hazy, polluted sky for inspiration, bright as if the whole idea of yellow had just been born on an ancient sunlit day. The hems were painstakingly embroidered with stylised rushing waves that filled the viewer with vivid emotion. The population must have been stunned by the colour and ritual. It was the result of thousands of years of culture left to develop without outside influences.

Caught up in her commentary, she gestures around the Square. The future caught up with the Chinese

Government in Tiananmen Square in 1989, when thousands of students who had gathered for a pro-democracy rally were set upon by the army with tanks and guns. Those outsiders who argued that the students were just expressing rebellion and discontent were wrong, Michelle continues. The agony of these young students combined with the spiritual importance of the Square to Chinese people had laid the foundations for a longing for political freedom that isn't going to go away. And that's despite the cautious supposed reforms that the current Government has proposed.

Hugh knows the Government has increasingly tried to advance the Chinese economy while keeping a lid on political freedoms. He thinks that the Mindwave replication exercise taking place not too far from here is just a manifestation of the huge machine of the Chinese state attempting to control not only its own domain, but the global environment. He believes the CIA team's operation here represents no threat to the Chinese people, but seeing the sheer size of Beijing has brought home to him the scary nature of this exercise. He becomes aware of two armed uniformed soldiers walking through the crowds. He catches the eye of a Chinese man in a white shirt, and in under a minute he is posing for a photo with a smiling family, probably from the country for the day. His copper hair and pale skin will make an interesting addition to their photo album. He provides his best grin. He notices that Michele and Rico don't seem keen on the photo session.

By the evening, Leonie has joined them for an evening meal at a packed restaurant in a lively boulevard by the river. The lights seem to flick and spin, creating myriads of pinpoints in the warm darkness. A soft wind plays persistently with the

clothes of people walking by and with Leonie's long hair. Above the sound of voices Hugh can hear the sound of a bamboo flute played with great feeling by a man with a lined face, accompanied by a woman producing cascades of crystalline notes from a traditional Chinese harp. Their hostess explains in careful English that the song is thousands of years old, a story about a young woman who has gone down to the river to dream of her lover and wish for his return. Hugh takes in the exotic scene and the compelling, mysterious face of Leonie. Their eyes meet briefly and Hugh looks away. He wonders if Antonia is missing him, or whether she too is sitting somewhere with a mysterious stranger. The music, with its unfamiliar forms, still goes straight to his heart with its emotional intensity and purity. He feels a stab of pain as he reminds himself that this interlude is not what it seems. It is a lie, and he is not a tourist, he is here with an important job to do. Under cover of the ever-present conversation of the people around him, he pushes away his empty bowl of won ton soup and leans toward Leonie.

"How are the plans shaping up?" His tone is businesslike. The group forms a huddle, and she speaks rapidly and quietly.

"This is as good a place as any, I guess. Tomorrow evening we have tickets booked to go to the circus, but we won't be attending. I've arranged for Americans of similar appearance to us to go to the performance. They have no idea why they're being asked to go there of course, but they know not to ask questions. They're our alibi.

"We will pick up an unmarked van and go out to the facility. Around the back is the staff entrance and Snow Tiger is going to open it for us at 9 pm. At this time on

the weekend we have the highest chance of there being no facility scientific personnel on site. We will possibly have to deal with security guards. We will copy the information and bring it out to Hugh to confirm that it is the Mindwave code. He will be waiting in the van. Then we will destroy the computers with small explosive charges, and extract Snow Tiger with us. We will go straight to the airport and he will leave on the same midnight flight as us. We will supply him with a passport. Any questions?"

The young people all lean back in their chairs and exchange looks. They shake their heads. They're ready.

Hugh is wearing black trousers and a dark green long-sleeved knit top. His companions are dressed in dark, conservative city clothes, and carrying various brown bags slung over their shoulders. They have a slightly disorganised, clueless look about them that must have taken a lot of thought to achieve. Inside, he feels he's metamorphosed into one of the thugs who chased him in London. Fighting fire with fire, he thinks. Soon the group is sitting silently in the back of a van. It takes some time and many turns as the van, driven by Leonie, lurches its way through heavy traffic, steadily moving out into the city outskirts. Hugh can see little through the tinted windows, and inside the warm interior his companions, Michele and Rico, stare straight ahead of them. Hugh wonders what they're thinking. The van stops and there is a sound—the gates swinging open. The van moves forward slowly, and then turns around to park.

Hugh's two companions step quietly out of the van and disappear. He sits in the dark wondering what is going on. The night seems to close in on him. He wants to get in there and see what has been going on in this sinister facility. It is his project at risk here, and he has

a right to be a participant, a right to go in there and defend Mindwave. Why is he sitting, tame as a cat in the back of a van when there is so much at stake? If he is caught here, he'll be trapped and won't have a chance to help the others or even a chance to defend himself. Hugh can't be bothered inventing any more reasons why he shouldn't be part of the action, and he eases the back door open and slides into the dark in an easy movement, his breathing even, his senses on high alert. He hesitates, looking around him. The van is parked under a cantilevered concrete platform in deep shadow. He sees a door in the light coloured concrete wall and moves toward it, past a tall clump of ornamental bamboo that rustles like the papery feathers of a flock of startled birds. After the constant din of Beijing life continuing around the clock, he is struck by this single sound breaking the silence. This place is solid and purposeful. The scientists here have begun to set up a monstrous confidence trick that will be stopped here tonight, Hugh thinks as he opens the door and steps into the corridor. Lights are on at the far end. He runs quietly toward the light, past offices on both sides with their doors open. He turns and follows a wide corridor toward double doors. Just outside, he pauses. Nothing. But Hugh feels the sense of threat he's felt twice before in London and Graz. He looks carefully around the door, which is opposite the bank of lifts. Curled up against the wall, Michele lies unconscious, her hands handcuffed in front of her. Shock hits him in the chest as he rushes to her. She's breathing and she stirs, eyes opening but glazed with pain. He sees a red bruise near her hairline.

“Shhh. Stay there, and stay quiet.”

Hugh leaves her and moves toward the sound of voices just inside a door next to Michele. The alarms

will start going off any second, and there is no point in sneaking around. He looks around the open door of a large open plan workspace humming with computers. Standing only metres away is a slender Chinese man in a white lab coat, earnestly conferring with two security guards. That's Snow Tiger. One of the guards, a tough, confident looking Chinese man in a crisply tailored military uniform, is holding a comms unit in his hand, and Hugh can hear the impatience in his voice as he interrogates Snow Tiger. Why hasn't the alarm been raised? What can Snow Tiger possibly be saying that is stopping them from shutting the place down and trapping the team inside?

Behind a desk, something moves cautiously. Leonie. The guard makes an impatient gesture at Snow Tiger. There's no time. Hugh makes an instant decision and slaps the swinging door open with a sound that knifes through the tense atmosphere.

"Hello," he calls, smiling pleasantly and advancing on Snow Tiger and the two guards. "You've got such an amazing facility, let's continue the tour. It's going to be a pleasure to work with such able colleagues here."

Hugh's open smile turns to the two guards, who seem to understand enough English to look momentarily uncertain. It probably helps that his accent is not American, Hugh thinks, as Snow Tiger's eyes widen and he struggles to reply. Hugh is looking straight at the two guards and he sees the eyes of one of them change. He's had enough. As the man's hand starts to move toward the gun attached to his belt, Hugh lunges at him. He hears the rapid beat of running footsteps as Leonie takes on the other guard. Hugh's guard steps back, takes Hugh's weight, pivots, and uses the impetus of his wild lunge to send him skating across

the floor and crashing into the legs of a desk in a welter of limbs. Hugh's head hurts. He shakes it and looks up.

It seems the few seconds the spectacular Kung Fu move has taken have been long enough for Leonie. The other guard is slumped on the floor and the first guard, Hugh's nemesis, is just raising both hands in a formal and economical gesture and moving swiftly toward Leonie. He has a gun but it seems he doesn't feel the need to use it, or maybe, given Leonie's speed, he doesn't have time. But then, Leonie also has a gun. In a lightning exchange the pair execute a sequence of slashing kicks and punches. Leonie dives at the floor, rolls away, and is on her feet instantly to renew the attack from another angle. She seems to be trying to drive the guard into a large desk behind him. Snow Tiger and Hugh observe helplessly as the savage but graceful battle proceeds just steps from them. The second guard starts to get up and Hugh crawls rapidly across the floor and clumsily slams him back to the floor. The guard collapses obediently. Leonie must have hit him hard. The smacking sound of a heavy body hitting the floor causes Hugh's head to snap up. Leonie is standing over the first guard, her hands still in a formal fighting position. She glances over to Hugh.

"Hold him down while I tie this one up. How's Michele?"

"She's been hit but she's okay. What's happened?"

Snow Tiger finds his voice. "I do not know what alerts them. I use my full access rights to send fake data to the cameras here and to open the gates and it seem to be all clear. I try to tell them they have attacked important visiting consultant to the project, and they are then afraid they will lose face and be punished, but I don't think they really believe me. Then you come."

“I knew it!” Hugh, charged with excitement at the fight, slams his right fist into his left hand.

Leonie turns to Snow Tiger, having finished a swift tie-up of the two guards. “You did well, Snow Tiger. But we need to move fast now. Show him,” she gestures at Hugh, “what you’ve got on these computers and I’ll set the charges while you’re doing it. One of our team is taking out the computers in the side offices one by one.”

She steps close to give Hugh a filthy look and speaks in an undertone. “You shut the fuck up and do as you’re told or I’ll hit you so hard your eyes will fall out.”

“Yes Sir!” Hugh thinks he would have enjoyed being in the army, even with a woman officer.

He and Snow Tiger set to work, falling into total concentration. It takes Hugh several minutes to back up the modified code he needs. It represents weeks of meticulous minor changes to the Mindwave source code designed to make it subtly favour China’s interests. There is no doubt the threat is serious.

Hugh is appalled by the scope of the project. “How long do you think it will have taken before the code would be ready for roll-out?”

“The bosses wanted it in two weeks. It is possible we would have had it up and running within a month,” replies Snow Tiger. “We must leave now. We cannot stay.”

A series of low thumps roll through the rooms as the tiny charges are let off. There is no visible damage to the computers, but the hum in the room suddenly stops, leaving an eerie silence. Hugh checks once more that he has the code secured in his pocket flash unit, as Rico checks the bound and gagged guards. The group run out of the exit, closing it behind them, and bundle Michele

into the van. Leonie drives quietly out of the facility and makes a steady run to the airport.

Again, there is silence on the trip, broken only by low-voiced instructions and replies as Michele's head wound is dressed and the bandage hidden with a hat. The handcuffs keep Rico busy for ten minutes before Michele is released. She looks a bit odd, lolling against the side of the van as the medications she is given by Rico take hold, the silk hat printed with beige and pink sprays of blossom sitting slightly askew on her head. She doesn't seem too well, but is certain she'll be able to walk onto the plane. Snow Tiger sits quietly in a white shirt and tie, his lab coat abandoned. Hugh wonders what the future holds for him. The powerful Wen Peiyan is not going to forgive this intrusion. The group walk into the airport, Leonie holding firmly onto Michele's arm and carrying on an animated one-sided conversation with her. Then there is a short but stressful wait. Hugh's excitement fades into a sense of impending doom. It seems a lot of uniformed soldiers are on guard at the airport, and they seem to keep walking past, their guns at the ready. The group, now split into odd couples, keep their heads down as they sit rigidly in the small row of airport armchairs, waiting to board their Air China flight. Snow Tiger sits next to Rico, his new set of papers safely in his pocket.

Hugh, in an attempt to act normally, leans over Michele and says in a low tone to Leonie, "We seem to have accomplished our goals quite well."

"Some of us did. You don't seem to know how to do as you're told, but then that's what you get when you're forced to take civilians on a op," Leonie says almost inaudibly, directing a beaming smile at Hugh.

"Oh I'm sorry I stood in your place to eat my sandwich," he murmurs in reply.

“Don’t you be flippant with me,” says Leonie, the smile disappearing instantly.

Hugh’s mouth seems to run away with him. “But then maybe you shouldn’t have invited me for a cup of tea in the first place. It’s not my fault if I got the wrong idea.”

Leonie’s eyes are narrowed. “What are you talking about? I may have requested your involvement but I certainly didn’t intend to bring you here.”

“I’m talking about the operation of course. Naturally I wanted to do my bit to make it a success, and whether you like it or not, Leonie, we had some pretty good teamwork going on in there.”

“You keep believing that,” says Leonie.

“I didn’t realise that you two have personal issues,” Michele says, rousing to life and looking owlishly from one to the other.

“We don’t,” snaps Hugh.

“There isn’t too much wrong with you, is there?” Leonie says meanly.

Michele subsides, her hat brim dropping slowly to hide her face. Hugh and Leonie look at each other angrily and turn away. Leonie starts to snort, and then starts laughing. Hugh can’t resist a small smile as he pats Michele gently on her shoulder and resumes staring at the list of arriving flights.

He starts humming to himself and then realises with surprise it’s an old song off his collection of battered vinyls that he plays on a state of the art turntable. As he waits at the airport and later as he sits quietly next to Michelle, feeling the bruise on his shin swelling without the benefits of an ice pack, and checking off the hours as the aircraft drones toward safety, he looks forward to sitting down and listening to the record complete with all its crackles and imperfections.

Bob Taft is at the airport for a low key welcome and to hear the details of how the mission went. Snow Tiger is embraced by a relative, and turns back briefly to receive the congratulations and thanks of Hugh, Leonie, and Rico. Michele is already on her way to hospital for a check-up. Leonie and Hugh both want to get out of there, and the team breaks up with the briefest of goodbyes. Bob offers to take Hugh back to his hotel. On the way, Hugh checks his messages. It has been strange being incommunicado for several days, and he needs to reassure himself that life is going on as usual at home. With a sense of foreboding he sees an urgent message to contact Jessica. Antonia's message is upbeat, and he will call her later. With an apology to Bob, Hugh goes to his room, drops on to the bed, and calls his sister.

"How did it go?" she asks anxiously.

"Good. I'll fill you in with the rest when I get home," he replies. "What's the trouble?"

Jessica sounds reluctant to talk. "Well, the thing is, I'm scared Juergen is going to use his kill key to disable Mindwave—Marcus said that he and Juergen have been discussing it."

"Well, as long as they're just discussing it, isn't that their business?" says Hugh, yawning. He can't get excited about this problem when it is just supposition. He drinks a glass of water.

"Yes, but we can't allow this to get past discussion. Juergen isn't entitled to use a kill key; Mindwave is a critical public asset, and he is taking far too much on himself to make these decisions. He should have the power to do it taken away from him," says Jessica.

Hugh realises that Jessica is deadly serious. "What have you done?" he demands. "I knew if I went away

for over five minutes you lot would be up to something.”

“I haven’t done anything,” she says. “I simply decided it was time to consult a lawyer about our rights, and my meeting with her was very interesting. She says that since Juergen in effect gave the original code of Mindwave to me in San Francisco unconditionally, then it has arguably become my property, despite the financial interest of Marcus and Maria that may not extend to outright ownership. Therefore, if he tries to destroy it, I’m entitled to stop him,” says Jessica.

“But he gave it to you under duress,” says Hugh.

“Well, he still did it,” says Jessica. “The main principle here is that Mindwave belongs to everybody, and he shouldn’t be wielding this kind of power.”

“Well if you claim ownership, then you’ll be wielding total power too,” says Hugh. “Look, we can work this out. Don’t let this lawyer do anything yet.”

“She says we need to act quickly and put an injunction on any moves Juergen may make to shut down Mindwave.”

Hugh groans and sits up. “Just don’t do anything until I get back, okay? I’m dog tired so give me a break.”

“I’ll hold everything until you get back, then,” says Jessica. “But don’t think that I’m going to give up Mindwave without a fight. Juergen had better think again.”

Hugh falls back on to the bed. The fight in the research facility is going to seem like a squabble compared to what will erupt back home if the group starts to split and disagree. He starts counting the hours to his flight out of Washington. He needs to call Marcus and tell him what Jessica is thinking, and find some way to sort this out. He kicks off his shoes. The aircon

hums gently and a grey fog of fatigue sways at the edges of his vision. He turns over and drags the duvet around his shoulders. Half an hour of rest should do it, he thinks, drifting off into a peaceful vision of himself and Antonia sitting by the green bank of a gentle clear river. Ferns dip into the water and a bell bird sings in the tall trees. The sunlight falls in dappled shapes on the mysterious pools and currents formed between the large grey rocks, which are covered with grey-green and dull orange lichen. He feels safe and warm, and he doesn't have to get up and do anything for hours, maybe days. Hugh falls asleep...

12. The Seachange.

May, 2012

Marcus is furious to hear from Hugh that Jessica has listened to what he had to say about Juergen's increasing conviction that the kill key will have to be used, and has then taken legal advice without discussing it with anyone first. Listening to him, Maria suspects he is mainly venting strong feelings now that Hugh has returned safely from China. Marcus wouldn't admit that he was worried, and repeatedly reassured everyone that Hugh would be fine, that it was a top-level professional operation, and that the US couldn't afford to let anything go wrong.

"The important thing is that Hugh is on his way home. Jessica has probably been worried sick about him, and started to look for where the next problem is going to come from. After all," says Maria, with some understatement, "there have been a few."

"She should have told me about this scheme to see a lawyer," fumes Marcus. "Who does she think paid for the development of Mindwave in the first place?"

"Well, I suppose she just wanted to know what her options are," says Maria. "I have an idea, anyway."

"Oh?" says Marcus.

"I think we need to have some time away together, all of us. I think we're all tired and overloaded, and that's when people start to make mistakes. I suggest that as soon as Hugh gets back we all go away somewhere and thrash out any issues that we may have. Jessica is obviously really concerned that Juergen might be going to do something with the kill key. We don't know what other problems other people might have,

because we just haven't had time to talk to each other," says Maria.

"Let's ask Juergen to come over for it," says Marcus. "It is true that unilateral action by anyone is the wrong thing. We're all in this together."

Marcus and Maria agree that Hugh should have a day to recover from his flight home before the trip away. They quickly secure approval from Juergen, who assures them he is on his way.

Hugh feels he barely has time to repack his bag before two cars whisk the group away. He sits in the back of Marcus's car with Antonia and swiftly becomes drowsy as the green slopes beside the Northern Motorway undulate past, monotonous against the few clouds lying still in the sky.

"Do you know the Hokianga at all?" Maria asks from the front seat. "We are going to Omapere, a small township opposite the heads of the Hokianga Harbour in Northland."

"Yeah, I've been there once," says Hugh sleepily.

"It is surprising how many Aucklanders don't know it. They tend to go on holiday to the tourist spots such as Russell and the Bay of Islands. This will be a peaceful place for us to stay; it was the first farmhouse built in the town and has a sea view. It is very simply furnished, just a beach house."

"Sounds great," says Antonia.

It is a nearly four-hour road trip and the group stop at Dargaville for a coffee at a café called 'Blah, Blah, Blah.' The irony is not lost on them. Sipping their coffee and eating lunch, the group finds conversation is muted. Most of them are usually talkers, but Juergen is jetlagged and the others have had too many worries lately to be on top form. After shaking Jessica's hand warmly in the morning, Juergen seems to be a little

wary of her during the trip. Jessica seems to have shut down, and Hugh notices that even Antonia's beautiful smile is not much in evidence.

Later, after passing through a large remnant of native forest with ferns and mature Kauri trees hugging the sides of a curving road, their car stops at a lookout point above the Harbour. Hugh gets out of the car and takes in the sinuous, massive shape of a golden sandhill set in a sea of a curiously dark blue. A breeze tosses the grasses at the top of the hill and Antonia breathes deeply standing beside him. Peter feels a lightening of his heart. This place has a feeling of timelessness. A jet trail in the sky overhead is the only sign that the world is pursuing its usual frenetic pursuits elsewhere.

Maria is smiling. "Let's toss our gear into the house and go straight down to the beach."

By early evening the group is sitting on the small outdoor verandah of the old colonial villa, which is made from the wood of trees that used to stand in the proud ancient forests. Maria explains that the settlers came nearly two hundred years ago, and they logged the area and also intermarried with the indigenous Maori people. Now most of the population around here is part Maori and usually related to others in the community. Her friend is one of a number of Aucklanders who have bought up seaside houses. Marcus and Maria are sitting side by side on a pair of old canvas folding chairs. Hugh sits on the top stair of the small set of stairs running down to the lawn, his arms loose around Antonia's shoulders as she perches on the step below his, playing with an old fashioned rose drooping from a bush in the small garden. Jessica and Juergen occupy two small cane chairs. Richard and Leonard and Leonard's girlfriend Amy will join them

tomorrow, once they've recovered from a big party somewhere in town.

Glasses of chilled sauvignon blanc, a wine from the Marlborough region of New Zealand's South Island, are passed around with water cracker biscuits and a blue double-cream brie cheese. The sun dips below the sea and out over the headland a flush of brilliant orange and tangerine reaches out into the sky, and the clear blue above deepens into mysterious space. The silence of the land and the expanse of the Pacific reaching out into thousands of kilometres of open ocean ease into the consciousness of the group who are now sitting in silence. As the light on the clouds fades into a silvery pink, Marcus starts to talk quietly about the many tall ships that were lost crossing the harbour sandbar in the early days until a lighthouse was built and a pilot began to bring the ships in safely to harbour.

Soon they decide to head inside and they flop cheerfully into the sofas in the small, wood-panelled parlour where Jessica is attempting to light a fire in the battered but ornate fireplace.

"Look at the bits of old china here," says Antonia, touching the old sea chest that is doubling as a coffee table. "The settlers must have brought everything with them, and really clung to it."

"Now they have high speed Internet here of course, and a whole lot of people wanting to come and live in a simpler time while still being, in a part-time sense, part of the modern world. It's a dream that is out of reach for most people in Europe now," says Juergen.

"Yes, people have created these huge cities and yet they still feel the need to feel that they're in some way connected to the land. I wonder if other people ever think that if we could take back the last one hundred and fifty years or so, we would do it all differently?"

“I think we’d have to look back considerably longer to make much difference in Austria,” says Juergen with a smile.

“It’s never too late to make changes,” says Jessica. She raises her eyebrows. “See the difference Mindwave is making—if it’s okay to mention the subject of our common obsession?”

Juergen’s chest rises and falls in the firelight. He looks at Jessica.

“I think we are going to have to. There’s no nice way to put this, but we have to look into killing Mindwave, Jessica.”

Every person in the room is transfixed, but Hugh is the first to respond. “To be honest, Juergen, this doesn’t really surprise me. Look at the state we’re in, Jess. Take a good hard look.”

She shakes her head. “Isn’t there a saying that there is nothing more powerful than an idea whose time has come?” Then she reluctantly motions Hugh to continue.

“People do support Mindwave, but they’re still on a learning curve. The public fallout from the North Korean explosion has been very damaging. For some reason people expected Predictor to be infallible because it is a computer program. Having got their expectations sky-high, they’ve now become extremely hostile at the first problem without regard for the technical facts.”

“It is lack of understanding,” Juergen says, “but there is also the co-ordinated spin campaign from the multinational corporations. They never were going to lie down and let Mindwave take over without a fight. It is now, of course, about to turn ugly. The French Government has launched a legal action against ICANN and Mindwave in the UN International Court

of Justice. They're escalating the problem to the point where the whole future of the Internet is threatened if we continue to fight for the existence of Mindwave."

"Why would France do such a thing?" says Maria.

"We think it is the anti pate de fois gras campaign and of course, the support for New Caledonia achieving independence hasn't gone down at all well," says Jessica.

"That's all?" says Maria.

"The French have a large arms manufacturing industry," replies Jessica. "They are not openly pushing this agenda, but it's pretty obvious they're behind it."

Hugh describes his meeting with Bob Taft, and passes on Bob's view that the French Government is playing for much higher stakes. It aims to do no less than disable Mindwave's operation while also gaining control over key governance functions of the Internet currently controlled by ICANN, thus giving its national economic interests, as well as those of other European Union members, primacy.

Juergen nods in agreement. "I think this view is right."

"The question is, how do we fight them?" says Marcus. "And frankly, the whole thing is starting to make me feel very uneasy. What if other nations around the world start to take sides against the European Union's high-handed dismantling of a system that is designed to be global? What if it turned into more than a war of words? The whole world would consider it had a direct interest. Then there is the argument that the change that Mindwave represents, the opportunities for the future, are too important to risk losing in an ugly escalating battle."

"This should never have happened," says Hugh. "The United Nations should have recognised the critical

nature of Internet infrastructure when it passed control to ICANN and took the responsibility of handling disputes upon itself. The root server system and the governance structure should have been made inalienable global assets and completely protected from any kind of attack, like international waters, for example.”

Juergen leans forward in his chair and places his hands on his knees. “Well, Hugh, that’s all seen with the benefit of retrospection. What I am proposing is that we deal with reality; we kill Mindwave now, before it takes further hits from opponents. They’re very powerful and we don’t know if we can prevail over them. On the positive and hopeful side, it seems to me that the months of operation have shown the whole world the power of this approach to artificial intelligence.”

Jessica says, “Yes, and I think we’ve shown that something akin to Mindwave will come at some stage; there is no other way to address the complexities of the future. Many of the projects that have already been set up are already being supported by non-government organizations. It is probable they would survive being cut off from Mindwave now. The remittance bank project would hold together with the US support that’s been pledged to it.

“But what we stand to lose is the grand plan. Without Mindwave, the world will simply be struggling along in its old course, getting closer and closer to disaster with high greenhouse emissions, global warming and all the rest. Do we have to let this happen?”

Hugh’s eyebrows crinkle into a frown. “It may be more reckless to let Mindwave carry on and be destroyed by its enemies, and you know I’m the first to

be reckless. What Juergen isn't saying is that we released this module package early. There has been a phenomenal uptake and Mindwave has been so successful the world is still reeling from the impacts. I'm afraid to say we've gone too far too fast, and we don't have safeguards in place. This train is ripping across the plain at its highest speed and the enemies are preparing to blow up the bridge on the other side. A lot of people could get hurt if there is a crash."

He drops his gaze and continues more quietly. "We came so close to having Mindwave taken over by the Chinese far right. They were weeks away from having their operation up and running, and I don't honestly believe there is anything effective we could have done about it. It would have been my fault too, since I made the initial code release. We can't ignore this, and we can't ignore the certainty that someone will make another attempt."

He turns to Juergen. "It is very hard for me to say this, but I'm with you."

"Tell us about what happened in China," Jessica says quietly.

Hugh starts to talk. He describes the whole operation, leaving nothing out except the tense verbal exchanges between himself and Leonie. When he mentions her name, however, Antonia busies herself flicking through a brochure on local Hokianga walks. Hugh can't tell what she is thinking, but Jessica looks quizzically at her bent head. He accepts the congratulations of the group. The whole operation has a sense of unreality—made more intense by his warning that the group is not to speak about this black op again. This will be the one and only telling of the tale. The group breaks up in sombre mood and heads off to bed. Hugh touches Antonia's arm as she tosses cushions off

the large sofa in preparation to laying out her sleeping bag and pillow.

“Come for a walk,” he murmurs. Without a word, she opens the old door with its stained glass insert and walks out into the cool night.

Silently Hugh and Antonia walk along the beach, tiny figures alone in the long expanse dimly lit by a crescent moon. The sea hisses in and out as they walk tirelessly on the strip of hard sand beside the water.

“Antonia,” Hugh begins, “I had no idea Leonie was going to be there.”

She glances at him, her eyes shadowed, her face silvered by the moonlight. “Oh forget it. I’m just pleased to have you back safely. You’ve been in the fireline for too long.” She looks tearful.

Hugh steps forward, and wraps his arms around her. He kisses her for a long time in the peaceful night. Eventually he raises his head. “I love you,” he says. They turn and start to stroll back to the house, arms around each other. Hugh looks at the dark sea stretching out past the headlands into the ocean, and feels his heart contract.

“What?” She looks at his face.

He talks to her and consigns his plans and dreams of the past months to the mysterious darkness. All the effort, all the risk, the mistakes, the lessons—he knows it is over for now.

The next morning the discussion continues with the arrival of Richard, Leonard, and Amy, who takes herself off for a walk. Once again the group is seated in the small parlour, the windows open and the country scents wafting into the room. The mood is meditative. Hugh and Antonia are sitting on the sofa, propped up

against each other like a pair of cards, and appear somewhat detached from the proceedings.

Juergen explains that if he uses his kill key, it will activate an imbedded programme designed to stop the different intelligent agent modules and utility function modules interacting with each other. The process will cut off the flow of information to the central analysis module. The artificial intelligence function that correlates all the data, makes analyses and produces recommended courses of action on both the highly detailed personal level and the macro-function level, will be disabled.

“It’s likely many modules will continue limited operation,” says Richard, echoing Jessica’s view of the previous evening. “Mindwave Money, which includes the global remittance bank, the Predictor module, environmental programmes and aid programmes (all of which are supported by non-governmental organizations who have integrated the systems into their process) will remain.”

“It’s a huge advance even in those areas alone, and the modules could be relinked in an activated system some time in the future,” muses Leonard.

“I’ve been thinking about that overnight,” says Hugh. “We could start building an add-on security module, now that we know the sort of threats that are being made. The real problem remains the legal threats and the amount of money and resources that the multi-national corporations are prepared to throw at stopping Mindwave.”

“The solution there is really to develop global public opinion so there is the shared political will to make the new Mindwave happen,” says Jessica. “It appears that we are not quite there yet.”

A technical discussion ensues about the possibilities of parameter changes to the second generation Metamind, and how necessary tweaking of the system, for example when a situation such as the North Korean explosion reveals vulnerabilities, could be authorised. The problems are major.

Suddenly everyone feels the need to walk away from the Mindwave problem for a while. It seems the decision is made, but no one wants to concede that it will be closed down.

“How about a swim? I know it is late in the season, but let’s take a break at the beach,” Antonia suggests. She and Hugh stroll in silence down the footpath by a road used by the occasional campervan or dusty car full of parents and kids on holiday. Hugh is preoccupied and Antonia takes out her computer and earpiece and selects the Florasound programme, the same one she gave to Hugh on his European trip. Shrubs at the side of the road whisper and hum as she passes, and then suddenly there is a scarlet bougainvillea that has been trained against the wall of a house. It is singing its heart out against an azure sky, and the intensity of colour and sound rouses Antonia out of the sense of slight depression she’s been feeling. She wonders how the loss of the Mindwave project is going to affect Hugh, and her relationship with him for that matter. But life will continue, and each year the white petals of the native ti-tree shrubs will drop with a ripple of sweet and distant notes.

All of the group, clad in swimsuits and beach towels, eventually straggle down to the Omapere wharf and walk down the many uneven planks to the end. The tide is high and the deep green water is surging slowly through the piles. A couple of Maori kids climb high onto the tops of the wooden piles and are silhouetted

briefly against the vista of sea, sky, and sandhill before they jump into the water, sending sun-bright spray into the air. Maria suddenly wants to feel that freedom, she wants to burst out of the sea like a seal and shake the water out of her hair.

“Come on, let’s do it,” she says, laughing.

Leonard is the first to jump, creating a vast splash and encouraging Amy, who is hesitating on the side of the wharf. With a scream, Antonia jumps and hits the cool water, sinking and then kicking to the surface, checking on the way up that her bikini top has survived the leap. Hugh splashes in beside her, followed by Juergen and Marcus and Maria, holding hands. Richard and Amy close their eyes and jump, to cheers from the rest bobbing in the water. The group takes a leisurely swim back to shore. Over a barbecue that night, a sense of resolve develops, and the group starts to make plans on timing the Mindwave shutdown. Hugh offers to make the call to inform Bob Taft, and then Marcus will inform the New Zealand Government. Jessica has a special request. She’d like the supportive Internet community to be the first to know, and she’d like to make the first release of the news to one of the Mindwave project’s most stalwart supporters, a young American blogger named Zee. The word will swiftly spread. After that, she says, she’ll give a full account to Bryce Mackay at Quantum Magazine. The world will have only days to adjust before the kill key is activated.

Juergen says it needs to happen swiftly because there is a risk that well-meaning Internet supporters may have him arrested, or pursue legal avenues to prevent the shutdown. This is a natural course of action to pursue given the circumstances, he says, glancing at Jessica. They were right about Juergen, he is charming, she thinks. Juergen helps himself to a well-browned

sausage off the barbecue, and fills his plate with potato salad and mixed salad leaves. He says he doesn't want to spend any more days languishing in custody while the world is re-shaped around him. He smiles wryly, reminiscing about the weeks he spent in custody in the US over the copyright and terrorism charges.

"We've come a long way since then," says Richard. "And we need to believe that this isn't going to be the end, just sort of an extended beginning."

Hugh explains to a shocked Bob Taft that Mindwave is about to be closed down.

Bob takes the news well. "I understand how the Chinese action could have caused enormous problems. I think that Mindwave's ethical override may well have disrupted much of its operation if the Chinese system had come online and the fake parameters started to disrupt all the grand plan calculations. They would have become sheer gibberish as the Chinese distortions of the market took hold."

"Interesting," says Hugh. "It seems you are agreeing that we are right to shut it down while it maintains credibility."

"Yeah, I have to say that's the case," says Bob, "I accept that the operation has been compromised and that the Chinese could try again at any time to do the same thing, and trying to put a quick security fix on the Mindwave operation to try and stop them could simply leave us reassured while they worked on a way to get around it."

Both men sit in silence for a moment.

Bob says, "Obviously, I'm personally sad that it has come to this. So many hopes have been riding on this development, but it was too much to hope that China

wouldn't flex its muscle. It now has thousands of nuclear missiles and is searching for a way to challenge the global dominance of the US, but without creating a Cold War style confrontation. The Chinese are too sophisticated for that."

"Of course, we can't explain the real reasons we're having to activate the shutdown. And once again, because of the circumstances of its release, one man, Juergen Leitner, has retained control of the kill key, which effectively has left the Mindwave operation as private property. My intention in releasing it was that it would become public property, but in the event that may have been a bit naive, too," says Hugh.

"Well, the open source add-ons that individuals and non-profit organizations have developed are all in the public domain," says Bob. "And it isn't as if Mindwave initially had an official mandate to operate."

"I'd say the tens of millions of people who have donated resources to Mindwave have taken part in the first global vote in history," replies Hugh. "I'm gutted that we have to let them down."

Bob says, "We won't let them down. I'm going to inform the President and to ask for funding to pursue the creation of an international trust that will 'own' the next generation Mindwave and set up an international research effort. If the Trust is well resourced and set up, it would be much better protected against legal attacks of the kind France is making. Your team will be part of that, I hope?"

"Of course, and I wish you all the best," says Hugh.

"Thanks, and I've gotta run. I've got a whole team to turn around to create this proposal in the next forty-eight hours—some deadline."

Zee can't believe the message he's just received. Unfortunately, there are many reasons to believe its authenticity. The Mindwave project is about to be suddenly shutdown for security reasons. He knows about some of the threats, and has been countering them as they come up. He and his friends have put a lot of time into working out the failure of the early warning system that had caused such bad publicity on the Internet and global media during the North Korean explosion. There was the row about paedophile porn and the people copped for stealing off their employers—that had all died down pretty quickly, fortunately. There was the legal challenge being issued by France, but that shouldn't be the final nail in the coffin. There is something else, Zee thinks, something his contact, Jessica, is not telling him. It must be something really bad, something Mindwave engineers don't want people to know about. Zee does what he has been asked to do, put the word out, and then he and his Internet confidants set to work to find out what is really going on.

The highly skilled group of hackers and computing experts take twenty-four hours to come up with the most likely scenario—that a group of Chinese imperialists have attempted to spoof the Mindwave operation and have forced its closure. Zee has hardly eaten or slept.

He sits at his computer while the hours tick toward the hour of the Mindwave shutdown. It seems the whole world waits with him. On time, his computer informs him of the demise of the AI with a terse message: 'Mindwave Terminated.'

Zee has been through the storm of emotion the shutdown has created, he's written about it and discussed it with people from all over the world. He

now believes the best thing he can do is get a life, get trained, and be in place when the second generation Mindwave is set up. He is free again from the huge demands of the project, and he wants to get a girlfriend and have some fun—a girlfriend, he thinks, like Allie. He started his blog as a kid with a longing to find out how the world worked. Well he found that out, and a lot of other stuff he didn't want to know, as well.

He knows now just how tough it will be to make this work again. It will mean putting in the hours and the effort. The glorious rushing wave of global enthusiasm isn't going to carry the next generation project along. Next time, it will be good engineering and good policy. Anyway, he wouldn't have missed being here, at this time, for anything.

He gets up stiffly from his chair and walks into the living room of his house where his parents are reading the paper. He heads to the fridge. "Hey Mom, hey Dad."

His parents' heads snap up at his amiable tone.

"I thought," says Zee, taking last night's meal out of the fridge, one that he's been too busy to eat, "we could have some family time this arvo. I can only take a couple of hours though, I've got tests next week that I need to study for."

"Let's get the kayaks out," says Zee's Dad, reaching over to hold his wife's hand.

"What's wrong with her?" Zee demands, looking up and noticing his Mom's face is crumpled and a tear is creeping down her cheek.

"Nothing, Zee," she replies in a muffled voice. "It's just that...it's just that you've been gone so long."

"Well, I'm back now," he says in a practical tone, not bothering to state the obvious fact that he's always

been just down the hall. In his mind, he knows he went so far away he risked forgetting ever to come back.

He sits down. How to explain? "I had things I had to do," he says finally. He looks at her.

"Of course," she dabs at her eyes and gives him a smile. Whatever his journey was, it lasted three months, and she was afraid her son was lost. Now here he is, and she doesn't doubt her miracle.

Bob sits disconsolately at the table, his head resting on his hands. He feels light-headed; he's been working constantly since he last spoke to Hugh, and he's been fending off the media and concerns from government departments about the significance of the loss of Mindwave. Allied to that has been the need for his team to come up with a new strategy so that the impetus toward a new paradigm in global planning processes isn't lost.

Claudia, chief staffer of John Fleetfoot and now very close personal friend, sits still with her coat buttoned up around her throat. Bob hasn't noticed she is wearing it, and she doesn't like to intrude on his space by making herself at home.

"There has been a lot of passion surrounding this project, and I don't want to let people down," says Bob. "To launch a second generation AI we need to have champions, big firms and others from all around the world supporting it. There needs to be consultation with stakeholders about structuring it, so that universal global involvement is possible. The first Mindwave was produced all set up with moral parameters. In this next one, we're going to have to secure agreements from the ground up."

"Bob, you need to sex it up a bit for the presentation tomorrow," Claudia says.

“That’s your department,” he says, throwing the challenge back at her.

She throws off her coat and starts pacing the floor in her jeans and jumper. “I’m very good, you know. I hope you remember all this.” She does a circuit of the room, her hair rippling with fire in the low light. “If you look at the human race as a big extended family, you are looking at a way of life that doesn’t exist anymore, because most families are small, and in time they split up and live in different cities and even different countries. So we need to find our way back, to a time when all the family had a place and everyone was supported. Creating Mindwave 2 is like a Stone Age community finding iron or making cooking pots, or creating wheels. Only this time the community isn’t a remote village from long ago, it is our whole world, and Mindwave is the technology that will secure our future and the future of our children. But the key is that everyone has to work together, to collaborate. We need to find the goodwill to make the technology work for us.” She pauses, and Bob takes up the thread.

“Ideally, we’d have an impossibly advanced supercomputer to run Mindwave 2 perfectly, or supercomputers of small size and limitless power. The system would handle huge amounts of data and there would be no breakdowns or errors. Lacking this, we need to engage the world in the next best thing: a laborious effort to construct the ideal, that is, global e-democracy and AI strategies fused into an effective plan. We need it now; we can’t wait for the perfect solution. So the world must invest in Mindwave again, and create a system that not only works, but is right.”

“That’s the kernel mission statement I guess,” says Claudia.

“It’s the challenge of this century.” Bob sees he is going to have to put it directly. “Do we sink, or do we use the technology and the global moral and political understanding we have to save ourselves?”

“It helps that we’re well past the McDemocracy of the Bush years,” muses Claudia. “Imposing a version of those values at the point of a gun backed up by corporations with more teeth than an Orc was never a good look. But I think it made the world community focus on what a pure democracy is. What we need now is the emergence of public intellectuals to pave the way for Mindwave 2.”

Bob looks up. “Your Masters degree is showing,” he cautions with a smile.

“I get slack when I’m tired,” returns Claudia, who likes to catch the opposition on the wrong foot. That’s easier when they think she’s not too smart.

She opens the week’s edition of Quantum magazine with a sigh. Janice Slickton of the NSA will be a major problem in the meeting called by the President in the Oval Office tomorrow, and she’ll be backed up by Secretary of State Dick Kippenburger, who is clearly hostile. Fleetfoot and possibly Callon will be on their side. After the meeting a public statement will be issued that may well set the agenda, one way or the other, for the next decade.

“Now I’ve got started, why stop? Where have the intellectuals gone? Look what Quantum magazine makes do with. Here’s what Bygraves says: Politics have defined us as human throughout the ages, from the legends of the Knights of the Round Table, to the dream of Martin Luther King. Mindwave threatened to take this choice, this humanity, away from us. The demise of this monolithic machine has saved the human

race from the loss of its glorious freedom to shape the world to our highest visions.”

“What is Mindwave, if not a human vision?” says Bob. “For everyone to share?”

Claudia closes the magazine.

“You’re going to be great in there tomorrow. Remember, it is just the start. Mindwave 2 is going to be a very long-term project, not a shooting star like Mindwave 1. In its early stages, it may even seem to be Mindwave by stealth, it may have to develop under the radar of nations with extreme positions. But you’ve got a chance to go in there tomorrow and be an advocate for the future.”

Bob walks briskly into the room and acknowledges some of the other people there. His white shirt and new red tie feel constricting, but he doesn’t bother to reach up and check that his tie is in place. He notices the stiff poses of the other men and women waiting outside the imposing double doors leading to the Oval Office, but personally he can’t wait to get in there and put the Mindwave 2 case to the President. Janice Slickton is standing close to LeRoy Callon and is murmuring quietly. She seems to feel Bob’s gaze and looks up, giving Bob a cold stare. Then the door to the Oval Office is opening and he is walking inside. He feels, at this moment, simply privileged to be here.

About the Author

Dr Jenny Shearer is a New Zealander who lives in Sydney, Australia. She is a former journalist with an interest in communications policy and cyber ethics, and has authored papers on Internet issues such as global citizenship, privacy, ethical infrastructure and e-democracy.

Information on Books in the XPERTS Collection

All books are available in German from Freya Pub.Co., see www.freya.at and can be ordered via all good bookstores, but most easily via www.iicm.edu/Xperts . All English versions can be ordered through www.booklocker.com . However, due to the high shipping costs, international customers outside the US and within the European Union can order “The Paradoppelganger” and “The Paranet” at lower cost through www.iicm.edu/Xperts . Within the US, booklocker is the best source. Outside the US readers are encouraged to buy more than one book at the time to reduce per book shipping costs or to buy the e-book versions from www.booklocker.com : No delay, no postage, lower price, and you just download the file, and print it out locally.

Here is a summary of the books in the Xperts Series currently or soon available. The series is growing rapidly. All books, where no author is mentioned I have written myself. For the others I have written a ‘script’ and edited the resulting book. If you have any questions, suggestions, or are interested in becoming one of the authors of a book in the Xperts Series, contact me at hmaurer@iicm.edu . If you want to find out more about me than you ever cared to read, consult www.iicm.edu/maurer . I will answer all emails (nothing worse than being ignored) except if I am really down ☺ .

Note that although there is a thread through the books (some persons appear in each book) the novels are completely self-contained and can be read independently of each other in any order. I have arranged the book in more or less chronological order (according when they take place), so this might be an obvious order to read them. But, feel free to start with anyone that tickles you!

“Xperts: The Telekinetic”: In a way, this is the first book in the collection. The student of physics, Marcus, discovers that he has telekinetic and time-warping powers, and uses them to seduce girls, to make money, and to help people. He is also very much aware how dangerous this ‘parability’ can be for him. He is eventually captured by a para-military group of the European Union with dubious motives, and manages to escape only with the help of his girl friend Maria, who will be his big love for life. They flee to New Zealand to start a new existence. Marcus and Maria (and other persons) are the thread that holds the Xperts Series together....

“Xperts: The Paradoppelganger”: This is another novel involving Marcus and Maria. Their daughter Lena discovers a strange para-gifted person. In the process of trying to make him join the group the reader visits Brazil and Europe, and is drawn into historic mysteries, extending back in history even to the Egyptian pyramids. This novel also gives a glance at what future PCs and the Net might look like... a tribute to the fact that the Editor (and author of this book) is a computer science professor. However, don’t get turned off: this is a novel not a scientific book!

“Xperts: The Paracomunicator” (by Jennifer Lennon): A Maori girl Aroha finds half of an ancient device in the hills near Auckland, New Zealand. Its function and the function of the “black balls” cannot be fully understood, yet it is clear that on a dangerous mission in Africa (Namibia) neither Aroha nor her friend Herbert with the other half of the device could survive without the help of the strange tools, and of the group of Marcus...

“Xperts: The Parashield” (by Sam Osborne): The West-Australian Ryan finds out, as he grows up, that he can shield himself and other persons nearby, by creating through mental powers an impenetrable shield of energy. If not for his girlfriend Hannah who has some awesome ‘parabilities’ his enemies would eliminate him before the team of Marcus can intervene. This novel is written with a South-Western Australian background and the suspense and complexity increases as it develops.

“Xperts: E-Smog!” (by Ann Backhaus): While on a consultancy project in Indonesia, Dr. Amanda ‘Mandi’ Webber, an Australian researcher, discovers an illegal production facility for e-Helpers. A patent breach, however, is only the start of her discoveries.... Mandi uncovers data that shows the hazardous, even deadly, impact of electromagnetic radiation (e-smog). With the help of Marcus Waller’s group of parapersons, Mandi plans to go public with the findings. A powerful, multinational consortium of corporations, however, has other plans, which includes keeping the findings away from the public at all costs.

“Xperts: Mindwave” (by Jenny Shearer): By accident, an early version of a set of computer programs called Mindwave is released on the WWW by a group of students in Auckland. Little do they know that Mindwave is a spin-off of the well-known Hyperwave system that was purchased by Marcus, head of SR Inc., years ago. Still less do they know that Mindwave has the power to transform the world. As it starts to do so, governments and powerful organisations try to kill Mindwave or modify for their purposes, putting everyone involved in mortal danger. As Mindwave is starting to get global support, some dangerous weaknesses are emerging...

“Xperts: The Parawarriors”: We are in the year 2019. A nuclear war between Pakistan and India seems to be unavoidable. Marcus and his team try to avoid the worst, at horrific costs. All efforts seem to be in vain. Yet, after interludes in India, Bali and La Reunion some form of normality returns, only to be disturbed (or helped?) by super-computers from an ancient civilization millions of years ago, and a strange intelligent animal “The They” that remains a mystery for a long time.

“Xperts: The Param@ils” (by Peter Lechner): This novel gives a different twist to the Xperts Series: the economy is all that matters! A story of intrigues, human emotion and some strange emails capture the attention of the readers, with Marcus’ group again playing a pivotal role in solving a complex scheme. (In preparation)

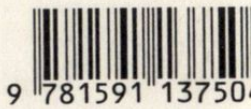
“Xperts: The Paranet”: In 2080 the then existing network of computers breaks down completely,

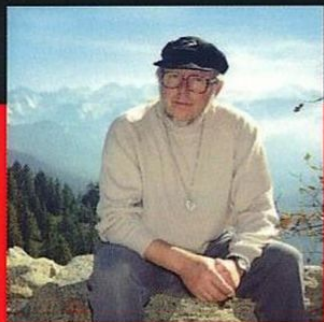
throwing the world into total chaos. This novel shows how dependent we are going to be on computers and computer networks, and how civilization will virtually cease to exist if such a total breakdown ever happens at a stage when mankind is 'Sufficiently networked'. Billions of people are about to die, is there any hope for them. Yes, by mounting a terrorist attack in the past!

"Xperts: Fighting Big Brother": Big brother with cameras, flying cameras, intelligent databanks and total security is catching up on us. This is a chilling novel, with a bright line of hope shown on the horizon, if we just decide to act NOW. (In preparation)

Check the Website www.iicm.edu/Xperts to stay up-to-date on all developments concerning books in the XPERTS Collection.

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*Hermann Maurer, Coordinator
of The XPERTS Collection*

J. A. Shearer



Will a new concept of artificial intelligence solve the world's biggest problems? Hugh and Jessica fight to preserve Professor Leitner's vision, in the process creating a fusion of artificial intelligence technology, the Internet, and worldwide participation: Mindwave. In this ultra realistic scenario Mindwave shows us the future, but the book's sweeping view also details the strategies of powerful enemies. Is the shared will to give the world environmental stability, peace, and quality of life for everyone enough? In this story the emergence of a new global politics is accompanied by risk-taking on many levels... and action from one side of the world to the other.

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