



The Samson Heuristic
A novel set in the Middle East

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Computers are not intelligent. They only think they are.

– Epigrams in Programming, ACM SIGPLAN Sep 1993

New Mexico

“Everything looks way overexposed out here,” Barrett grumbled as he drove into the studio parking lot. The direct sun, treeless streets, and cloudless skies make for a brightness that caused people to say his photos were harsh and software could take something off. “But that’s what New Mexico looks like,” he’d shoot back. “Overexposed. Way overexposed.” He found a place to park in the visitors section and walked toward the television studio that did contract work for international news stations.

“At least it’s easy to park. Even in downtown Albuquerque.”

Barrett stiffened and looked warily as a young man exited the building and came toward him. The man walked past him, got into a car, and drove off. Barrett continued to watch him a few moments before entering the building.

“Someday I’ll stop doing that.”

“Barrett Parker,” he announced to the receptionist. “I’m scheduled for an interview on Al Jazeera at two.” She made a quick look on her screen and replied, “Studio 4, just down the hall to the left.” He nodded and walked down the hallway, stopping to check his longish hair and short beard for the proper amount of dishevelment, which he thought conveyed distance from convention. No security badge or sign-in book. New Mexico isn’t like that. Los Alamos and

Sandia Labs are like that. The rest of the state is low-key. It was like that in Billy the Kid's day.

New Mexico received a fresh infusion of offbeat people when hippies flocked there in the sixties, more to Placitas and Taos than to Albuquerque. Some of them lived in buses converted into houses of sorts or in dwellings built to resemble flying saucers. Most of them weren't his crowd, though he shared their eccentric spirit. Most mistrusted him because of his expertise in military matters. No decent person should know what a Raptor or a Misagh-2 was. Not in their estimation.

Barrett thought that was part of the problem with the country. Most people who oppose involvement around the world know nothing about world affairs and simply repeat old rallying cries from the sixties, whether they know it or not. In the absence of thoughtful criticism, national security institutions roll on and foreign policy gets messier and deadlier.

He sat in the black leather chair in a ten-by-ten studio and looked into the camera just in front of him. Behind an LCD screen showed a Jpeg of the towering Sandia Mountains to the city's east. It provided an attractive backdrop to his head and shoulders atop a six-two frame whose athleticism was still recognizable, despite his being forty-ish. A technician adjusted the camera and handed him an earpiece and lapel mike.

"Hi, Barrett," came the mellifluous voice of Khadija, the Al Jazeera producer in Qatar, the principality in the Persian Gulf that funds the network and seeks to become a force in world affairs.

"Another tweed jacket, I see. I presume you're wearing jeans and Tony Lamas."

"These are Luccheses, my mysterious Qatari friend," Barrett said as he raised a boot up for the camera.

"I was right about the jeans though. I thought everyone wears Tony Lamas in New Mexico and Texas."

"That's like saying everyone where you live wears burkahs."

“Aagh! Sound check, please!”

Barrett counted to ten as the studio got the volume and compression right. “We’ll go live in two minutes,” she said.

The anchor gave an intro on the increasing tensions with Iran then launched into the interview.

Anchor: We’re pleased to have Barrett Parker with us to look more deeply into the situation. Despite the nuclear agreement of 2015, tensions between the US and Iran have come back and are increasing. Barrett, is a war coming?

Barrett: I don’t think one’s on the horizon. We could see skirmishes in the Gulf, even in the Strait of Hormuz. We’ll see increased US and Israeli support to Kurdish and Baloch guerrillas, assassinations of scientists and military figures, but out-and-out war is highly unlikely.

Anchor: But the talk out of Israel is very ominous.

Barrett: The prime minister doesn’t have sufficient support for war. Only 32% of Israelis support unilateral attacks, and major figures in Mossad – that’s the Israeli equivalent of the CIA – and the military are expressing skepticism about the judiciousness of an attack. A former Mossad chief called it the stupidest thing he’d ever heard of. His words, not mine.

Anchor: Of course. Both Israeli and American sources claim that Iran is restarting its enrichment program with the help of North Korea and China?

Barrett: There’s no evidence of that. Only talk that North Korea has shipped centrifuges into Iran across the Silk Road – the ancient land route that connected China with Europe. Presumably, the centrifuges would be on a truck convoy and not on a camel caravan.

Anchor: I see! Didn’t a delegation of North Korean nuclear scientists visit Tehran last week?

Barrett: A delegation of North Koreans indeed visited Tehran last week. The story was on Fars and Press TV – Iranian state media outlets. It's not clear they were nuclear scientists though.

Anchor: And where are these centrifuges reported to be? Natanz? Fordo?

Barrett: Those places are inspected regularly and thoroughly by the IAEA. The North Korean centrifuges are rumored to be at Parchin, not far from Tehran. It's an IRGC base that's off limits to inspections. There might also be research on a triggering mechanism and warhead being done there.

Anchor: Much of Parchin blew sky high in the fall of 2014. Was that CIA and Mossad?

Barrett: Probably Mossad. I doubt CIA could have pulled it off. Parchin is being rebuilt and everyone wants to know for what purpose.

Anchor: Isn't the US president eager to go along with the Israeli prime minister on a war policy?

Barrett: Yes, the president has promised to restore respect for American military might around the world. However, his national security advisors know, even if he does not, that war with Iran would unleash a wave of bombings and assassinations around the region and oil prices would skyrocket. Rising oil prices will weaken world economies and focus blame on Washington. They might even hurt the president's reelection chances.

Anchor: So you see nothing imminent.

Barrett: Correct. Watch the number of aircraft carriers the US has in the waters around Iran. Also, watch oil prices on world exchanges. They've been flat during the recent sound and fury. Just a small bump here and there. In other words, people with billions of dollars at stake aren't greatly concerned.

Anchor: Anything going on behind the scenes you can tell us about?

Barrett: Well, I imagine the US and Israel are very eager to find out if Iran does indeed have North Korean centrifuges at Parchin, or if it's just a rumor that feeds upon itself and grows rapidly and dangerously. That happens in security bureaus.

Anchor: We've seen a lot of so-called fake news lately. Some of it's fake, some of it isn't. How would the US and Israel find out about the centrifuges?

Barrett: Satellite imagery and eavesdropping can provide some information, but my guess is that they're trying to get to people inside Parchin. That will be difficult and risky.

Anchor: And where is the Iranian Revolutionary Guard Corps on all this?

Barrett: The IRGC wants nuclear weapons, regardless of the mullahs' opposition. Many people think the IRGC has political ambitions. They'd like to wrest control of the country from the religious figures.

Anchor: Do you think the IRGC has such ambitions?

Barrett: Absolutely. Generals have been getting into politics since Julius Caesar marched his legions across the Rubicon. It's gone on quite a bit ever since. IRGC generals are no different.

Anchor: Indeed. How might the IRGC wrest political power from the mullahs?

Barrett: Historically, wars have shifted power and prestige to militaries, and the present crisis will give the IRGC the opportunity to expand its influence. Wars are run by military experts, not religious ones.

Anchor: Thanks for your insights, Barrett.

Barrett: Thanks for having me.

Khadija added her thanks as Barrett relaxed for a moment to enjoy the exhilaration of finishing a crisp interview.

“Khadija, how is it that I’ve never had the chance to see you, not even on a monitor.”

“We all wear burkahs here, Barrett. I thought you knew that. Seriously though, you should live here in the Gulf and become a regular. You’d know the region even better than you do. You might look less intense and perhaps smile a bit more, even if it’s just for the camera.”

Barrett looked into camera and rolled his eyes playfully.

“Not much to smile about in the Middle East these days, Khadija. Besides, I spent some time in the region, as you will recall from my CV.”

“Yes, but Qatar is quite different from Iraq, especially when you were there.”

“I love New Mexico. This is where I belong. But you will say hello to Farrah Esmail in your sports department for me,” Barrett said as he loosened his tie and leaned back.

“I’ll tell her you were thinking of her. Hey, I saw a slight smile come across your face! I’m sure of it. Maybe now you’ll come here.”

“I must remain here with my wolf. Remember him?”

“Yes, you sent me the photo of him with a hat on his enormous head. What did the hat say on it?”

“It said, ‘Dysfunctional Veteran – Leave Me Alone.’ He lets me wear it sometimes. Speaking of Jesse, the old boy needs to be fed. Otherwise, he’ll start looking at the neighbor’s cattle as jumbo burgers. Rare. No fries.”

“Give him a hug from me, if you dare! But why do you wear that hat, Barrett?”

“I’m a man of mystery.”

“You are that, Barrett Parker. You are that.”

Barrett removed his earpiece and mike and headed for lunch at Kelly's on Rt 66, a landmark watering hole in Nob Hill built out of a Texaco station from the forties.

The sports bar section wasn't crowded and the regulars sat about watching a rerun of a college football game from the nineties. Barrett settled in a booth that allowed him to see anyone walking in.

"Still solving the problems of the world?" the lithe blonde waitress jibed as she brought a Guinness and menu. Barrett was an enigma to her too. Handsome but standoffish. Witty but reserved.

"I'm sure trying, Dee Dee. Yet things get worse everyday."

"Not wearing your veteran cap today, I see," she said holding back a laugh. "It makes a lot of people here wonder!"

"It makes me wonder too, dear."

Barrett smiled slightly as he watched her walk back to the bar.

Kurdistan

The Erbil airport in northern Iraq grew impressively after Saddam's ouster in 2003. Once chiefly a base for suppressing the Kurds and ensuring Baghdad's control of the oil, Erbil now served the hundreds of engineers, construction crews, politicians, and diplomats who came and went on.

More than a few intelligence people also came and went. Kurdistan was still reasonably free of Baghdad's control and held a critical strategic position in the region. Anthony Sabatini had been in northern Iraq before and felt a measure of pride in its growth. His special forces team had trained local militias in explosives and sniper tactics and tried to get them to coordinate operations. The latter mission wasn't entirely successful with the factious tribes. Nonetheless, when the US invaded Iraq in 2003, Saddam was pushed out in surprisingly short order and Kurdish troops, including Anthony's people, played an important role in tying down an entire Iraqi mechanized infantry division. Most of the troops fled, abandoning tons of equipment.

Along the way, Anthony learned some Kurdish to mix into the Farsi he studied in army schools. Skills like that proved useful over the years as the special forces and the CIA worked hand in hand. The two organizations were the backbone of American foreign policy in the Middle East. No longer in the military, Anthony was back in Kurdistan.

Walking through the airport, he felt sure he could spot others in the intelligence field. They had a certain look, especially the American ones. “Too big, too athletic,” he’d complain to others. They looked like Big Ten running backs. The faces of the diplomats they claimed to be were less determined and conveyed acceptance of doubt – an unwelcome characteristic in the army and CIA. He recalled the CIA employee nabbed in Pakistan. The instant Anthony saw his photo he knew that he wasn’t with the State Department and that Pakistani intelligence likely knew that for a long time. It was as plain as his broad shoulders and stout neck. Anthony was no running back. He was six feet tall and just under 200. A safety at best. Undersized, but a hard hitter.

Many countries had intelligence people in Kurdistan. India and Britain each had them there seeking ways to increase their influence in the area. The US and Israel used Kurdistan to conduct operations inside Iran. So did the Saudis, though they were there chiefly to write checks and listen to briefings. That’s what they did best.

Iran undoubtedly had Revolutionary Guard officers there in Erbil. They were all over the rest of Iraq, primarily in the Shia south. IRGC officers were welcome down there, though less so in the Kurdish north. Some Kurds saw the IRGC as oppressors of their kin across the border, and Tehran saw Iraqi Kurds as intent on acquiring the Kurdish areas of Iran. Through word of mouth in Langley and short conversations with friends, Anthony knew things were picking up along the Iran border.

Anthony was escorted to the military section of the airport where he met with the CIA station chief and a local colonel. A Black Hawk with Kurdish army markings awaited him. The Kurds of Iraq had their own army, constitution, and flag and wanted to be a separate country. Turkish and Iranian pressure blocked a formal declaration of independence, but every Kurd in Iraq, Turkey, Syria, and Iran prayed for independence.

As the Black Hawk lifted up noisily and executed a gut-churning pitch to the east, Anthony saw construction cranes rising up from the ground throughout Erbil. Off to the north, endless pipelines glistened in the late afternoon sun.

They stretched north into Turkey and fed into the pipelines that took oil out of the Tenghiz field in Kazakhstan. The pipelines brought energy to Europe and hope to the Kurds – hope that empires and statesmen and secret agreements had long crushed.

Anthony carried no elaborate communication gear or transponder. They would be giveaways if found at the border and get him into worse trouble than what the Big Ten running in Pakistan had faced. No pistol either. For now, he had a worn iPhone. There was nothing out of the ordinary on it except hidden encryption programs for the camera and Skype app. There was some Kurdish music loaded from an iTunes account under the name of Agrin Saleh – the name on his passport and other papers.

The phone would automatically erase the encryption programs and recent data if he didn't enter a code every twelve hours. A security measure in case of capture. A transponder and pistol awaited him in Tehran.

Santa Clara

Silicon Valley was waking up. Unlike San Francisco which stayed overcast until late morning, Santa Clara was accustomed to clear mornings that promised bold new things ahead. It had a palpable eagerness only rarely found elsewhere. People wanted to get to their workplaces and discover things, create things – things that changed how people communicated with each other and how they lived.

The forecast said it would hit the low nineties and the prospect of an unpleasant afternoon made some head for work early, before their energy and creativity wilted. The Valley took on this defining energy in the late 1970s when a handful of young people built empires from their passion for technology. The best of them weren't motivated by money, though there was a great deal of that as housing costs ably indicated. The best were driven by imagination and will. A few were motivated by ideas that were vanishing fast – a desire to do good and appreciation of beauty.

Ethan Alon began his mornings by letting the sun creep up through the open curtains and idly listening to his cuckoo clock rap out its rhythms.

“Switzerland's peaceful gift to the world and a souvenir from my CERN days. Breakfast shall be . . . oh, cantaloupe and pomegranate juice. I'll stop for coffee on the way in.”

After a bracing cold shower, he donned putty chinos and a blue-white Aztec-design shirt, then headed into the uncrowded streets. It was six-fifteen and other early risers were driving or biking down the roads to the glass office buildings along El Camino Real. A few trucks were on their way to the supermarkets or heading back to warehouses in Oakland. Ethan pulled his Prius into the Boudin Bakery – part of a small chain that made coffee, breads, and pastries. It originated in San Francisco and expanded throughout the Bay Area and as far south as San Diego.

“Good morning, Paul. How goes it this promising morn?” Ethan spoke in a distinct accent with only occasional mastery of American idioms.

“Everything’s copacetic, my brilliant Israeli friend. From your chipper voice I trust all is well with you,” replied the cherubic manager, his apron dusted with a flour from the morning’s work.

“I take it ‘copacetic’ means good. Just two coffees. Large. Decaf. Maybe Ethiopian?”

“Harar it shall be – decaf. A croissant with that? On me, of course.”

It was a familiar enough routine. Paul offered a small bite and Ethan politely declined.

“If I ate them, I’d start to look like a Boudin baker and I wouldn’t be able to run up the stairs to my office.”

“Then you’d be a little plump but very happy!” Paul laughed and handed him the coffee in a cardboard tray.

“I’ll remain trim and at least somewhat happy – at least until my company goes public and I become as rich as Monsieur Boudin.”

A baking tin clanged on the floor behind Paul, startled Ethan. A memory flashed through his mind, one that once held devastating power over him but was almost harmless now. He reflected briefly, then smiled faintly.

“Ethan, you *will* let me know when your company goes public, won’t you?” Paul sheepishly asked as he picked up the tin. “And maybe get me a slice of the IPO? You know, for your plump baker friend. That would *sooo* make him even happier.”

There was jest in his request but perhaps a hidden need as well.

“I’ll see what I can do, Paul. When you go public though, you lose control of your business to the suits of Wall Street and hedge funds. You lose your soul as well. You become part of a soulless machine, with no freedom of action.”

“No house in Napa Valley then. And no Maserati.”

“For now, I shall have to get by with just my soul and Prius. They’ve both served me well, though each needs a little maintenance now and then.” Ethan turned around in the doorway. “Oh, I also need your coffee. Have a great day!”

Paul bowed operatically and said, “You know, Ethan, some say the word ‘copacetic’ comes from Hebrew!”

Ethan returned the bow and headed for his car.

“Copacetic is Hebrew?”

Another reason not to go public occurred to Ethan. Even fleeting conversations like those with Paul would have to be guarded, lest he give away information on the company’s health to a passerby or someone worse. The restaurants and bars of Santa Clara had more than a few stringers who sold information to the suits. And woe betide the employee who left a smartphone prototype in a coffee shop.

Freelancing for big microchip corporations, ones that had gone public long ago, had taken him places. Those companies earned niches for their products in the first generation of PCs and network devices and were now in most computers, servers, and cell phones around the world. He even helped design the chip that ran the US air defense system and the software architecture that secured Israeli military systems. He couldn’t put those deeds on his resumé and didn’t want to anymore.

After fifteen years with the big shots, he looked for his own way – in large part owing to the rising presence of dry corporate cultures. He was developing a software system that analyzed microchip designs and identified faults well before production began at the fabrication plant, or “fab.” It saved time and money. He patented it and formed Micrologic Design Automation, Inc.

The morning air was brisk, the skies azure, the Ethiopian coffee strong. “What new worlds await me today?” he thought as he pulled into the office parking lot. “A morning in the eBeam room looking at old chips and getting the product ready to ship. Sounds wonderful.”

Ethan parked behind the white, five-story building that housed Micrologic Design and raced up the stairs to the top floor. Panting considerably, he unlocked the door, switched on the overhead lighting, and walked down the hall lined with enlargements of chips he’d studied and in some cases worked on. It was to him a gallery of artwork. He sometimes stopped and looked into the detail of one such masterpiece and felt humble appreciation for the hand that made it. Certain units on a chip were like the distinctive brushstrokes of a Goya or Matisse or Brueghel, recognizable only to initiates. He saw the works of the masters and occasionally an area where a master had allowed a promising student to add touches. He’d look at some units and faces would come to him – a speaker at a convention, a colleague at Chicago, or a venerable guru at PARC or DARPA.

Rina Hardin, his partner, had a different opinion of the wall decor. Though she appreciated the craftsmanship in the chips, she wanted to replace the hall of silicon fame with images of Yosemite and the Mojave where they camped on increasingly infrequent weekend getaways. Rina said that he looked to be in a different world when in the hills and ravines. “Indeed, I am,” he thought while musing over a fleeting memory. They agreed, however, that chips were living creations at work in the world – mostly for the good, they liked to think. The decor was in debate, though not in transition.

Donning a NASA lab coat, Ethan entered the eBeam machine room. He picked up the smock at a flea market in San Mateo. The NASA logo recalled boyhood

dreams of becoming the first Israeli on the moon, and after a little haggling it was his for twenty bucks. He'd hope to get him down to fifteen but his interest was obvious and the dealer dug in. Since then, the coat was part of his eBeam ritual. He thought it made him look masterful. Rina had a different view on that too.

"Time for another cup?" he thought, but decided against it. "Enough for the day. Off to the machine."

The eBeam room was the most intricate chamber in the small company. Silicon, the key material of chips, is sensitive to the finest dust and dirt, so the air in the room is purified by elaborate filters and the floor is surfaced with honed ceramic tiles. It's crucial to exercise great caution to prevent contaminants coming to rest on open silicon. The eBeam machine, the size of an SUV, was set up against the far wall. Its center resembles a large microscope with a sealed chamber in which the opened chip is carefully placed where it can be examined in astonishing detail. The device fires a concentrated beam of electrons onto a chip, creating an image of the surface on a computer screen. The instrument gives a wondrous tour of intricacies, including silicon layers and metal-oxide wires whose dimensions are measured in microns and make strands of hair look like felled sequoias.

Ethan switched on the eBeam. A low, droning hum built up, announcing that the electron-beam cannon was revving up. Green lines on the monitor read out the preparation sequence. A microchip, the renowned and ubiquitous PAMD microprocessor, lay in the sampling tray, stripped of its plastic housing. The tiny piece of silicon was ready.

"I'm about to perform open surgery on an aging microchip. Old enough for Medicare - almost. No anesthesia for you, my silicon patient. Say 'aaah.' Now turn your head and cough. Don't worry, you won't feel a thing."

The opened PAMD microprocessor under the eBeam that morning was from the early nineties. It was a breakthrough in its day owing to innovative subsystems, including one for communicating with other systems. It became the standard

microprocessor for almost all personal computers and workstations and servers around the world. Parts of its architecture remained in generational descendants, like the DNA of parents and grandparents and great-grandparents. The internal structures of a chip, even a venerable one, held possibilities for exploration that Micrologic Design could learn from. Ethan was about to run a “reliability analysis” on the chip to search for problem areas that might have developed since manufacture.

The communication circuitry was his main interest, especially its error detection protocol. It enabled more reliable delivery of data over communication channels, both within a computer’s system and throughout networks it was plugged into. Communication channels are subject to channel noise or intentional communication disruption such as sabotage and hacking. Error detection finds problems; error correction fixes them. The circuitry contained highly advanced encryption and decryption units. All this on a tiny part of the PAMD chip, visible only under an eBeam.

Ethan navigated the eBeam inside the chip, down various segments until he neared the communication circuitry.

“Down a little more . . . a little more. . . yes. Hmmmmm. I must have made a wrong turn back at the intersection of Flash and ALU. Let’s put her in reverse and go back a block or two. Sorry, officer, it won’t happen again.”

He retraced his steps and soon determined he hadn’t taken a wrong turn after all. He was nonetheless in an unfamiliar neighborhood. He increased the zoom.

“Weird. I don’t see any identification on these blocks.”

He looked for the neighborhood in the microchip’s documentation – the PAMD guide that describes circuits and their functions in great detail for purposes of patenting and for the benefit of engineers on the next generation of microprocessors. The most important documentation is the electronic schematics which are a full representation of the chip’s circuitry.

“This neighborhood isn’t on the map, even though it was built years ago.”

He navigated through the undocumented section more intently and found a maze of circuits – most of them of astonishing sophistication. He ran through the basics of chip design: density, package terminations, heat dissipation, logic units, control sections, bit size, caches, and the like.

“I don’t know who did this, but my heavens, they did it very well.”

On the chip’s lower side, he expected a blank area and indeed there was one, but there were a few specks on the silicon. Usually such things turn out to be anomalous silicon fragments, but these had discernibly sharp corners and slivers. He amped up the zoom and the specks became minute circuit structures – not in the same nanometer scale as the rest of the chip. Only one fabrication process is normally used to make a microchip, yet this chip’s undocumented parts were much smaller than the rest of it.

“Very weird.”

He navigated further, activated the Ultra Zoom, and an entirely new circuit appeared.

“This isn’t copacetic.”

Two hands gently rested on his shoulders.

“Turn your head and cough, then kiss me.”

Rina – grad student, intern, girlfriend – had entered the room, a Stanford sweatshirt beneath her surgical gown. She gently caressed his shoulders as he sat before his screen.

“Have I ever told you that you look ridiculous in that NASA coat?”

“Many times. Just not this week.”

“I’m sorry I let you buy it. You shelled out forty bucks for something that makes you look like a middle-schooler playing Halo in his parents’ basement.”

“It was only twenty bucks – and people tell me I look like a strapping Neil Armstrong.”

Rina rolled her eyes.

“More like a napping Ed Sheeran.”

Ethan’s eyes never left the screen.

“I don’t know him. Is he in a band you like? Anyway, there’s something more interesting here than a band.”

Rina imagined a head-slap emoticon. She was in a doctoral program at Stanford, preparing a thesis on backprop algorithms. She was slender with long, straight brown hair and wore brown horn-rimmed glasses with round lenses. Her green eyes often enough had a mischievous sparkle that made her irresistible to many, though off-putting to others. Her boldness and wit attracted Ethan the day she arrived from grad school. Even the most analytic of tekkies have human impulses running through their circuitry and in time, no more than a couple of months, the two became quite close.

“I’ve found extra layout on a PAMD microprocessor – something not in the schematics, something with a smaller design process than the rest of the chip. I’ve never seen anything like this. It makes the manufacture of the chip more difficult and more expensive. And I assure you that PAMD suits watch costs.”

“Maybe it’s just proprietary information. Something the company doesn’t want the world to know about yet,” Rina offered before exhaling audibly. “This must be important if he doesn’t even look at me,” she thought in disappointment.

She delighted in his attention, originally only for professional reasons. Still no words from the NASA reject now though.

“So what’s the big deal?” she asked as she looked at the screen. “It’s something for PAMD’s internal usage. Maybe some kind of signature, manufacturing data, or the like. We saw that in a Korean flash memory chip last year. It turned out to be an interface for smart TVs.”

“He’ll acknowledge my presence now – he has to,” she thought.

She stood above him, activating all her feminine vibes, lowering her head to just above his. He remained in eBeam Land.

“Ground Control to Major Alon!”

“It’s an old chip. Look at these specks,” he said pointing them out on the screen with a cursor. “Now let’s go to Ultra Zoom. *Pow!* See all that circuitry? Bizarre.”

She looked over the anomalous circuitry with interest but not astonishment.

“Note the layout, Rina. It has flash memory, logic arithmetic sections, mathematical parts, and more. Someone went to a great deal of effort to design and manufacture this. Furthermore, someone made sure there was no schematic correlation, no documentation – at least not published and available to the industry.”

“Very nice. You're not thinking of making a blowup for the hallway, are you?”

Ethan muttered but remained fixed on the eBeam image.

“It’s so tiny. Why would someone hide the circuitry? Why would they hide an entire *chip inside a chip?*”

He could smell her perfume and for a second he was distracted, as he was her first day. She smiled as she realized she had finally made contact with the lost astronaut. She gently shook her head, letting her hair roll along her shoulders. But in an instant, he was drawn back into eBeam Land.

“I can clearly make out complex circuits. They hold and process data. I just know it.” He gave her a quizzical look which Rina saw as a small sign of progress. “They can hold a vast amount of information. They can calculate and make logical decisions. Who knows, maybe even execute them in some way.”

“So what do we do with this discovery? Plant the flag and send in missionaries? It’s an old chip, Ethan. Who cares about old chips?”

“I do! I’m intrigued and want to learn more. We’ve invested a princely sum in this eBeam device. I can look into it and determine the section’s function.” He

continued staring at the screen until his excitement burst forth again. “Rina, just look at this stuff! It’s...*beautiful!*”

“I might have thought we had more pressing matters,” Rina said as she turned to leave the room. “Like running Micrologic Design – you know, the company here? No, no, you have all day. Really. I’ll handle the release of our software. We have customers waiting, but exploring an antique chip is far more important.”

He lifted his head to her and smiled to her.

“The business can wait a few hours. I want to reverse engineer this thing. Can you join me? *Maybe?*”

She turned back to him.

“Why, Major Alon! How very kind of you to think of me,” she said in a sultry voice, eyelashes batting rapidly.

“Can you call over to Boudin’s for sandwiches?” The batting of eyelashes stopped instantly, alarming Ethan and making him grasp for an escape. “And then we can work on this chip inside a chip – you know . . . together. Like a team. Like a couple.”

“Much better, Ethan. Much, much better. Things may work out here yet.”

“I know they will. By the way, Rina, I was only a lieutenant.”

“Yes, Lieutenant Alon of the Israel Defense Forces. I *love* guys in uniforms,” she teased. “Actually, you’re the only person I’ve ever known who’s been in the military. *Any* military.”

They saluted each other then pressed their lips together in a manner undefined in any army manual, Israeli or American. Other manuals depict it as a timeless preliminary.

The coast of Lebanon

The Israeli frigate *Moledet* made soughing rhythms as it plied the eastern Mediterranean on picket duty near Sidon. It was almost dawn and a light mist hovered just above the surface. According to the navy's meteorologists in Tel Aviv, the fog would lift within the hour and yield to a clear day.

Lt Yossi Sagy sat near the helm, tired, occasionally training his binoculars through the haze to search for small craft headed down the coast. There had been more than a few terrorist raids over the years and dozens of civilians had been killed. None had happened on his watch and he was determined that it would remain that way. He knew, however, that there were people and organizations as determined to get through as he was to stop them.

The ship was outfitted with a slew of electronic devices that could detect small craft a hundred kilometers away. It had missiles that could devastate a light cruiser and knock a Sukhoi-57 out of the sky. There was a complement of multi-barreled machine guns that could fire a hundred rounds a second. Rather than giving off the staccato of regular machine-gun fire, they emitted an eerie whirring noise and their tracers resembled angry, short-lived sparks from metal pressed hard against a giant grindstone. The crew was proud their little ship packed so much firepower.

Yossi waited for his relief after which he'd head for his bunk in the bow. Not so much *his* bunk as *a* bunk. There weren't enough beds for all the crew. They used the "warm-bed" system – one sailor slept while another stood watch. Such were the privations on a small patrol ship and all knew it was necessary. It was part of military service, part of everyone's duty.

Yossi's eyes looked up from the water to the orange sphere rising above the hills of southern Lebanon. The sun was starting its ascent and the sea and land welcomed it by fusing into a seemingly living entity. It was a glorious view that ended his watch by filling him with a sense of wonder and beauty.

Military life could drain such appreciation from a young man and war could do it faster and more completely, perhaps even irreversibly. Yossi thought of the great poets of the First World War who clung to humanity through appreciation of life's beauty, even there in the dank trenches of Flanders. They looked for a cloud passing silently across the moon, or a small bird perching unexpectedly on a sandbag. Yossi looked again at the sunrise over the Levant and breathed it in.

A blue window suddenly opened on the combat intelligence center's computer screen. "What's this?" he thought aloud. "It shouldn't be doing this." An urgent message from the command center in Haifa looked similar to the odd window now in front of him, but this window was blank and Haifa's messages had the navy logo and jargon-laced text. The cursor blinked a few seconds in the upper left corner then letters and numbers appeared. The pace of the letters and numbers increased to a dizzying speed. Yossi saw a few words here and there but the rest was an incomprehensible barrage of incomprehensible characters.

"What the hell? Stop!"

Yossi hit a few keys to try to regain control but the maniacal scrolling would not relent. As best he could figure, the system was performing routine checks, internal ones and systemwide ones with other ships, with Haifa, and with who knows what. However, no such maintenance was scheduled nor would one be done while on patrol.

The lines disappeared as quickly and inexplicably as they appeared. Only an empty window and a blinking cursor could be seen. Then a single line appeared.

Records check complete – S. is logging off.

The window disappeared and the computer became responsive again. Yossi immediately ran a program that checked the system's operational level, then he turned attention back to the clearing seas on the starboard. Still nothing along the coast except a dozen or so fishing boats. The program ran its tests and in time determined nothing amiss. But the episode didn't sit well. He checked for messages from Haifa or from another ship or from the Iron Dome and Arrow antimissile sites in Galilee. Nothing. He checked for records of external access to the ship's computer. Nothing.

"Morning, Yossi. Went the night well?" Lt Ronen Tal, his relief, arrived at the bridge with a cup in hand and Zeiss binoculars around his neck. "Here's some herbal tea for the outgoing watch. Just don't spill it on the bunk – again."

Ronen saw Yossi was busily looking at the screen and knew something was up. He shifted into duty.

"Someone heading south?"

"No, nothing. The fishing fleets are gathering in port. They should sail west toward the shoals off Cyprus. We'll track them. An odd thing happened with the computer though. A window popped up a few minutes ago and ran a procedure."

"What procedure?"

"I don't know. A procedural procedure! There's no record of it though. Something was done on our system – or *to* our system. There's no indication of a firewall breach or a message from Haifa. There's no evidence that any data was stolen or altered or damaged. Something certainly happened. I know what I saw."

"Let me have a look for this procedural procedure."

Ronen knew the system and indeed knew most other systems too. He knew how to get into just about any system and had helped get into the Syrian air defense net in 2007. Syria was temporarily blinded and Israeli fighters devastated the nuclear site near Deir ez-Zor. Such knowledge required great discretion and character as it had potential for mischief, crime, and cyberwarfare.

Ronen took over the keyboard and deftly entered access codes while his eyes fixed on the screen. Yossi had only recently gone from two-finger typing to five or six. Ronen pursed his lips as he skimmed through the records. A fellow officer's concern could not be taken lightly. Ronen ruled out Haifa and other Israeli military sources and thought of hackers. Hisbollah, Iran, Russia, China, the US – it didn't matter. It could even be some kids in a basement in Tel Aviv or Des Moines.

"Nothing," he mumbled as he continued typing away and searching other locations. Yossi was tired but determined to stay inside combat control until his colleague found an answer. "Or maybe just for another twenty minutes," he soon said to himself.

"There you are," Ronen exclaimed. "I am a true computer savant and you are fortunate to have me aboard the mighty *MoleDET!*" he said with irksome self-satisfaction. "That was a tough one though."

Yossi was pleased the problem was solved and prepared to absorb a cyber-lesson, exhausted and ill-disposed to a lecture though he was.

"It was the work of a subprogram written in machine language – a program embedded within a microprocessor or a micro-controller. It's permanently burned into the microchip and performs routines, like checking the system's motherboard and other key components."

"*Burned* into a chip?"

"Yes. Permanently embedded there, like the fondness in your brain for poetry. It's done in the simplest computer language so it's only for local checks – battery life, chip temperature, and so on. It woke up this morning, ran checks, and

verified functionality and correctness. Nothing to worry about. Think of it as something like an antivirus program that wakes up and runs a system scan.”

“I see,” Yossi said, though he only barely did. “I was worried. You know, with all these things like Stuxnet and Fire going about.”

“It’s Stuxnet and *Flame*, Yossi. Stuxnet and *Flame*. They only hit Iranian systems. Everybody thinks the US did it or we did it, but from what colleagues in Mossad say,” Ronen turned a perplexed face to his friend, “no one really knows.”

“I thought you did it, Ronen – when you were on leave last year.”

“Not me. I was with Stella on an Eilat beach. I tell you, no one really knows where those viruses came from. I’m glad they struck though. A nuclear Iran would be a disaster for us.”

“We have nuclear weapons. You’ve seen the cruise missiles with the odd warheads loaded into our subs at night. You know about those fighters in the air 24/7. A nuclear Iran wouldn’t dare attack us,” Yossi replied wearily. “We’d respond instantly and devastatingly. We know it, they know it, everybody knows it.”

“Maybe. I can’t really say. I can say that all is well on the *MoleDET* this morning.” Ronen patted himself on the back. “But there is one problem.”

“What?”

“Your tea’s cold – and so’s your bunk.”

Yossi smiled. “Well, someday you’ll write a ‘rewarm’ program for the world. I’m going straight to the sack, cold or not.”

As he was halfway to his bunk he remembered the message that flashed on that blue window – “S. Logging Off.” He wondered who or what “S.” was.

The *MoleDET* continued its patrol along the coast of Lebanon and the ship swayed gently with the morning waves. Yossi relished the motion as would a young child

in his mother's arms. He rolled over and was asleep in minutes. He dreamed of trenches and birds.

Iran

Penjwin was an intel hub long before Anthony Sabatini was even born. It lay just to the south of a protrusion into Iranian territory that CIA people called the Parrot's Beak in honor of a storied stretch of the Cambodian border where North Vietnamese troops infiltrated into the South.

In the sixties and seventies, American and Israeli intelligence routinely passed through the small town on the Iranian side of the border. Iraq was a Soviet ally – someone to harass and attrit. Iran and Israel saw Iraq as a common enemy and part of a coalition of Sunni states hostile to Shias and Jews. It was best to stir up Kurdish trouble for Iraq and tie down a few divisions that might otherwise be used against Iran and Israel.

The CIA station chief introduced Anthony to a colonel in Kurdistan intelligence and a few men in civilian garb. They gathered in an untidy stone house on the edge of Penjwin. No colorful local dress. Dockers and sport coats.

Anthony was what his father called “FBI” – full blooded Italian. His dark, angular Mediterranean features were not dissimilar to those of the Kurds, who in turn didn't look Persian or Arab or Turkmen, though they were an indeterminate blend of all three and not the mysteriously distinct people they claimed to be. He had posed with Afghan fighters in local garb and thought he

blended in, especially if he wore the woolen Pakol cap of the mujahideen warriors. No Pashtun would have agreed.

Tehran was a cosmopolitan city with international firms and embassies. He wouldn't stand out too much. Tehran also had many spies. A number of assassins too, but that wasn't Anthony's mission this day.

Idris and Barham, Anthony was informed, were rug dealers. Real ones. They smiled engagingly and shook his hand gently, which contrasted with the show of strength and determination when meeting new people in the rangers or the Agency. They would escort him across the border and into Tehran where he'd meet members of an intelligence cell.

"Whose cell is it?" Anthony asked.

"The cell is well placed and highly reliable. This comes from reliable people," replied the station chief after a slight pause, which instantly alerted Anthony. It meant that the cell wasn't an American asset and that it was impolitic to inquire further. Anthony wondered if they're so reliable, why was he being sent.

"Any questions, Anthony?"

"None."

Idris, Barham, and Anthony walked out of the house and over to a black Safari Storme, an Indian SUV popular on both sides of the border. His associates warmly embraced the colonel in a manner that suggested to Anthony they were relatives. He suppressed any sign of surprise or annoyance and climbed into the backseat.

The old-timers in the Company told Anthony they used to hie across the frontier on smuggler trails. There'd be a skirmish arranged a few miles away. A few mortar rounds would thump and a few thousand tracer rounds would lash from a machine gun. The excitement would cause a distraction and a few men would scurry across the line. The Pakistani army still does it for the Taliban and Kashmiri guerrillas.

That afternoon, the three would drive down Rt 46 to the border crossing east of Penjwin and cross into Iran. The border was tense, even unfriendly, but trade was trade and with new US sanctions coming down, Iran needed as much trade as possible.

The wait at the crossing was only an hour and when they reached the border guards, Idris greeted them as he had in previous times with fulsome praise for Persian artisanry and a surreptitious gratuity in the form of silver coins much appreciated by underpaid guards.

“Last month we found many splendid carpets in the Sewan villages along the Caspian. On this day we are bound for Tehran’s bazaars.”

Anthony kept quiet of course. He could likely pass a border guard’s queries but why take the chance. It was the Revolutionary Guard that concerned him. They were mostly ethnic Persians and wary of non-Persians, even if they were one of the dozens of other peoples who made up Iran.

“Why not Qom?” the guard asked, more as conversation than as a challenge to their authenticity. The question was undoubtedly leading somewhere.

“Qom rugs are indeed magnificent, as all in our trade know. Alas, the wealthy people in Kirkuk and Mosul want tribal pieces for their homes this year and I must buy what they buy. Do you come from the holy city?”

“No. My wife is from there. She wants a Qom rug.”

“With dome medallion?” Barham asked.

“Yes, with dome medallion – and signed!”

“We shall search all Tehran, my friend,” replied Barham. He sensed an implication in the guard’s words that a silver coin or two didn’t get all it once did. “And we shall bring back only the finest for you to give to your fortunate and virtuous wife.”

The guard knocked abruptly on the car door and motioned for the three to be on their way.

“Signed!” he shouted gruffly as they drove off.

In a few minutes they were up to highway speed and headed down Rt 46 on the way to the Iranian capital.

“If you, ever plan to motor east,” Anthony sang in a low voice.

Idris and Barham stared ahead and talked about the business ahead in Tehran. Anthony thought about his business in Parchin.

The Persian Gulf

A Yellow Shirt guided the F/A-18 Super Hornet along the deck of USS *Abraham Lincoln* until it connected to the catapult system, causing a rough thump inside the cockpit. The young pilot lit the throaty afterburners, signaled the Cat Officer, and waited. He and his radar officer braced themselves. The Cat Officer gave the signal and the two men were propelled from motionlessness to 165 knots in three seconds.

“Take that, you surly bonds,” the pilot jeered as he quickly performed a score of instrument reads called for in the seconds after takeoff. They flew low above the Persian Gulf and headed for Bushehr on a reconnaissance mission – a “recce” as it was called.

“Tell me again why we need to do this?” the radar officer asked. “I don’t care what they told us in the briefing room. There’s nothing we’re going to film that can’t be seen from a satellite.”

“There’s nothing that can’t be seen from Google Earth,” came the pilot’s instant reply. “We’re just testing the air defenses and annoying the mullahs.”

“Then why don’t we fly over the Ayatollah’s house with the burners lit?”

“Stout yeoman! Say about three am?”

“Affirmative.”

“Alas, Tehran’s a little far away.”

“You’re no fun.”

“Affirmative. Maybe for your birthday.”

“I’ll be good.”

They neared the coast about two miles south of Bushehr about five hundred feet off the deck, avoiding the small fishing vessels below as much as possible. They’d shut down the burners shortly after launch but even regular exhaust at that altitude kicked up spectacular twenty-foot walls of seawater. The fishermen were in awe as the fighter thundered over them in a blink of the eye and the ensuing three-foot wake rocked their small wooden crafts. As they neared the coast, the F/A-18 climbed to three thousand feet.

“Skipper, Iranian OTH radar has us. They won’t fire SAMs at us, not yet, but there are two Iranian fighters to the north heading our way. A hundred and fifty miles out and closing.”

“What are they?”

“Not sure yet. MiG-29s maybe. Just a sec . . . nope. They’re F-14 Tomcats.”

“So maybe it’s Tom Cruise. Isn’t he a Shia?”

“He’s a Scientologist.”

“I get them confused. How far to the coast?”

“Three minutes. Will turn on cameras anon, good sir. Maybe Val Kilmer is a Shia.”

“You’re right. I read it on the internet.”

After taking photos for the navy and a few for themselves with personal cameras, they headed for a lake about ninety miles northeast of the nuclear

reactor. From there, they would gather more electronic data on the Iranian air defense system. They were being tracked. They headed back to the ship.

The images were downloaded and analyzed. The skipper and intel chief were called in for a look. They took their time and came to a quick agreement. The images were immediately sent to fleet headquarters in Qatar where more big shots were called in. Then they went up the food chain to the Pentagon and CIA. The skipper went back to his quarters, lay on his bunk, and stared at the steel overhead.

Santa Clara

Rina's dash to Boudin's came in handy. It was well into the night before the tedious reverse-engineering paid off. They translated intricate material on the eBeam screen into an equally intricate schematic drawn up, piece by piece, on a software program. Normally, it's the other way around, with layout designers given software schematics with which they then manufacture a physical chip.

As they toiled and moiled, Ethan told Rina of Russian tekkies reverse-engineering entire American microchips. When US corporations learned this, they were amused. Developing an entire chip from scratch would take less time. That was commentary on the state of hi-tech inside the Soviet Union and later Russia. Their best fighter jets then were still using vacuum tubes. The tubes were expertly made though and found loyal buyers with western audiophiles who loved the warm sounds they delivered.

As dawn neared, Ethan remained focused while Rina crashed on the couch in the next room. He eagerly fed the reverse-engineered schematics into a program that would simulate the data and reveal the circuit's purpose. Scores of graphs and symbols popped up on the screen. Numbers came as well, then whole block diagrams. Ethan looked at the screen intently, trying to put it all together. His mind raced and looked for an answer to the puzzle, yet after a full hour he was

no closer to one. He thought of Rina next door in slumberland and pondered joining her for the rest of the night.

He looked back at the screen, yearning for the solution but willing to settle for a clue. Through the haze of a flagging caffeine buzz, ideas flashed through his head, albeit too fleetingly to fix on and analyze. It had PAMD hallmarks, mid-to-late eighties, but other parts of this odd chip section were out of time and place. It was like looking at a '57 Chevrolet, apparently stock and unmodified, that had 21st-century innovations under the hood. Who were the lead engineers at PAMD in the eighties? A few names and faces came to him.

“Whitt . . . Verma.”

His eyes ran across the screen over and over and he began to grasp the meaning of the chip-inside-the-chip. He recognized the level of sophistication and that was key to unraveling the mystery. He was in the presence of masters and had to think like one to understand them and their work.

“Rina, you’ve got to see this!” he called out into the hallway.

No answer came, which in a way was an answer. He heard her rouse briefly then roll over and with a snort and a sigh return to sleep. He turned the machine off and listened to the ticking sounds of the electron-beam cannon cycling down before coming to a stop, and then to the hum of the coolant as it ceased coursing through the machine’s insides. His brain wasn’t far behind the machinery as he walked over to the chair next to the couch and plopped down.

He closed his eyes but the colorful patterns of the layout had become all but embedded into his neurons and synapses. He felt as though he made a great discovery, something the world needed to know about. But he only discovered someone else’s great work. He had to know who and why, and learning when the section had been first placed on the PAMD microprocessor would be a start. That investigation had to wait till tomorrow.

The names “Whitt” and “Verma” flitted repeatedly through his mind, mixing randomly with recollections of military chips he’d worked on in Israel and the US and how he hoped his work would help the cause of peace.

Washington, DC

Just west of the White House stands an old structure in the Empire style called the Executive Office Building. Opinions vary on its beauty but not on the power inside. Joe Burkett clicked on his machine to read the morning intel briefings. Since becoming head of the Middle Eastern desk of the National Security Council he wondered if a handful of colleagues outside government weren't more useful than the intelligence community. There was one who lived out in the desert who was especially insightful and Joe kept in touch with him, even though their controlling grad-school mentor forbade contact with him.

The whole Middle East was aflame with revolution, turmoil, war and rumors thereof. The Iranians were boasting of their missiles and practicing small-boat strikes on shipping in the Strait of Hormuz. The fighting in Syria was still going on. The Turks were maintaining their pressure with artillery and the occasional angry denunciation. Assad was going to ride this thing out. Joe was sure of it. Some Syrian Kurds opposed Assad; others supported him because he'd defend them against the Turks.

Joe wondered why he didn't study a calmer part of the world in grad school but didn't know where that might be. Antarctica? No, they'll find oil there someday. Or rare earths. Then the rush would be on. National Intelligence Estimates on the strategic value of glaciers. There'll be an ice gap with the Chicoms. He was

becoming disenchanted with the national security world and had to hide it at meetings, lest he be judged unreliable and shown the door. It happened. The dubious figure simply claimed he was pursuing other opportunities and a younger person from Harvard or the armed forces eagerly took his office.

A white window appeared on his screen and the cursor jumped to the upper left corner.

“Hmmm, where did you come from?”

Joe tried to get rid of the window but without success. It was stuck there and had a mind of its own. The stubborn cyber-imp went about its incomprehensible business, even though Joe hit keys and muttered rude words.

“Cursing usually helps. At least it does in NSC meetings. I’ve seen it work countless times – goddammit!”

“Did you need something, Mr Burkett?” his personal assistant asked from the doorway.

“Sorry, Susan. I’m just briefing my computer on an urgent matter.”

Hundreds of lines of code started to scroll down and Joe could only watch them go by like the cars of a speedy freight train as he sat in his car at an intersection.

“Time to get IT up here.”

“There’s no need to worry, Dr Burkett,” Mark, the IT chief for the NSC, assured him. “It’s simply an internal system check. No security breach.”

“Are you sure? It’s never happened to me before and with all these viruses running about. . . .”

“I’m quite sure, sir. Such checks usually go on in the background, usually during updates of the operating system. Sometimes they try to grab screen time.”

“So they’re like congressmen? Wait, Mark, let’s keep that one confidential.”

“Hah! Yes, that’s an excellent analogy – one I’ll keep to myself. Anyway, the chip manufacturer knows about it and assures all of us in the IT world not to worry about it.”

“This is the first time my entire system hung like that.”

“Well, we’ll soon have the new microprocessors and new operating systems as well. I think our publicity-seeking cyber-congressmen will refrain from future screen appearances.”

“Welcome news. Who makes these chips, by the way?”

“PAMD. They’re based in California and have fabs around the world.”

“Oh yeah. They’re one of the big movers of NASDAQ. A basketball friend suggested I invest in them back in the nineties.”

“Sound advice. I hope you got a slice or two. The stock’s done –”

Joseph’s annoyed glance ably conveyed that further discussion of the issue was unwelcome.

“Oh, Mark, one more thing. Do you guys in IT know anything about that Stuxnet virus that hit the Iranian nuclear sites?”

“I’ve seen some of the logarithms that were posted on the net. Wow! Whoever did it was absolutely brilliant.”

“Any idea who could have written it?”

“Dr Burkett, I was looking for a chance to ask you the same thing. We kinda thought you’d know.”

California

“Today we’re going to have fun,” Ethan said as they freshened up in the office washroom. “We’re going shopping!”

“Shopping? My hair’s a disaster!” Rina protested as she looked at her disheveled appearance in the mirror.

“Not to worry, Rina. We’re not going to Neiman’s.”

“I’m so not surprised. Where then?”

“You’ll see.”

Rina accepted the mystery, tucked her disastrous tresses inside her sweatshirt’s hood, and hopped into the car. Her hopes of fun vanished as they pulled into an aging strip mall with a payday loan store, tattoo parlor, and more than one closed-up shop. Ethan parked in front of a thrift shop.

“You really know how to charm a girl. I was hoping for a “Born To Write Code” tattoo next door. Harrumph!”

“Harrumph yourself! This place is a treasure trove of old computer gear.”

Ethan gallantly opened her door and gestured her toward the shop.

“Okay, what’s the deal here, Ethan? You know the hard drives and memory are gone the first day. There’s nothing here but retroware.”

“Today, we want retroware.”

Ethan led her to the electronics section, past some old TVs, clock radios, clunky phones, and CRT monitors the size of small microwaves.

“Dear, could you please find me a few old computers – machines from the eighties and nineties? Kaypros and Leading Edges will do. Actually, we just want the microprocessors . . . and it doesn’t matter if they work or not.”

“What’s a Kaypro?”

“An old PC. Mid-to-late eighties. Much admired, at least for a while. Same with Leading Edge. Quite popular, especially with students on tight budgets.”

She looked at him with greater puzzlement.

“Why do we want medieval CPUs?”

“Because history tells us something about the past and present – and maybe a bit about the future. That’s what an old friend tells me.”

“Those words would make a good tattoo.”

“Where do you want it?”

Ethan’s eyes looked down Rina’s frame until coming to a promising place.

“Oh! But that’s where my ‘Micrologic Design’ tattoo is!”

“Ahh. You’ll make employee of the month someday.”

* * *

Krish Mukherjee’s weekend with his kids hadn’t gone well. The bickering and complaining took a toll and the following Monday he was not on task, as the managers and consultants liked to say. He worked at the PAMD design center

in Sacramento along with a thousand electrical and software engineers where the microprocessors that ran the world were created. Caffeine and office chatter couldn't put a disappointing weekend behind him but he had work to do and he was determined to get through it that day. More importantly, PAMD was determined that he got through it that day. Working on an upgrade for the microprocessor was initially daunting and exciting but the later stages were tedious and annoying.

He'd arrived to work at eight-thirty. It was now almost ten.

"On task. Get on task, young man."

He sat at his desk and stared at the screen for a while, hoping something would inspire him. He felt he was starring in a Dilbert cartoon. This upgrade would be an appreciable improvement in the line – greater speeds, larger caches, and less power consumption. Krish was in charge of an Arithmetic Logic Unit. Its main task was to perform calculations and logical operations – the building blocks of microprocessors. Even the simplest ones contain ALUs for numerous purposes such as maintaining timers. Newer microprocessors have several incredibly powerful and highly complex ALUs.

The ALU design was almost finished. Almost. There was a glitch somewhere. It was a small one, almost insignificant. Almost. In time it would cause errors and complaints. Krish discovered it during simulation runs. External circuitry was influencing his unit – "crosstalk" in chip-design jargon. Crosstalk takes place when a signal transmitted on one circuit or channel creates an undesired effect in another circuit or channel. It's usually caused by unwelcome capacitive, inductive, or conductive coupling between circuits. More jargon. The exasperating thing for Krish was that there was no other circuitry near his ALU.

Ten-thirty.

He decided to start digging into the design again but then looked through the news. He saw a few items about upcoming elections and strife in the Middle East and how world markets were responding. A desk utility told him that

PAMD opened up a full dollar per share on NASDAQ based on Wall Street's expectations of higher revenue from the new chip – the one Keith was working on, or thinking about working on.

“They're counting on you, young man.”

Krish sighed and typed his user name and password into the PAMD site. Nothing had changed since Friday. He looked over a piece of design that he'd taken whole cloth from the previous generation. It had been approved by a venerable PAMD master – Peter Whitt. It had the same functionality, so why try to reinvent a silicon wheel? It was common practice in chip design and his manager had approved it, just as previous managers had for earlier versions of the microprocessor. It would save time and money.

“Isn't that what management wants? Isn't that what shareholders want? I know it's what Wall Street wants.”

Another two hours of scrutiny failed to uncover the flaw. He could not delay things any longer. There were schedules to meet, announcements to be made, and orders to fill. A fab was waiting in Scotland – Silicon Glen, as it was called. Wall Street analysts were calling the chief information officer everyday and being told everything was on schedule. No worries!

“I'm worried.”

Three o'clock.

“The flaw appears only once in a great while. A truly great while. Billions of operations go by without a problem. I can declare this unit complete. Worst case, every once in a great while the computer will hang and have to reboot or run some checks. It happens with the present chip. It'll continue to happen with the new one.”

He looked at his screen and debated running one more simulation. He went back and forth on it and then clicked “Run.” It dived into the heart of the circuit, assigning zeros and ones as necessary to perform millions of Boolean functions. The circuit became alive. Logical components quietly received input and

produced output in picoseconds. Critical paths operated faster, reminding Krish of Porsches with the tires and lubricants warmed up. The paths calculated, analyzed, and executed until a set of operations driven by a series of decisions approached, unbeknownst even to Keith, a critical intersection. One path led into a basic routine, the other into a risky one. This routine mimicked human behavior and hence had the potential for error. It was an heuristic – a hi-tech rule of thumb and early form of artificial intelligence, or AI as it's now called. The outcome was not entirely predictable, even to the most gifted engineers.

The signal raced to the intersection. Millions of instructions pushed it forward, overcoming practical transistor propagation delays. More jargon. But it was all calculated, it was all known. Everything went well with over a million instructions. Then another instruction arrived and was routed away from the heuristic. It skipped the rule of thumb and executed its function perfectly. A green light came on Krish's screen.

“Yes!” he exclaimed, as though he'd just gotten the checkered flag and could coast into the winner's circle.

He entered the ALU into the database and signed off. The ALU, minute heuristic glitch and all, would be passed on to the next generation of PAMD microprocessors, like a recessive trait in a gene pool. The flawed heuristic was there awaiting a signal to take the risky path. The heuristic had been on all PAMD microprocessors since it was placed there, in updated versions, by a team of secretive engineers in 1986. He was carrying on an old tradition at PAMD. He just didn't know it.

Krish relaxed and looked at the news.

“Man! The world is filled with trouble these days. Sure glad it has nothing to do with us in Sacramento.”

* * *

Ethan focused the eBeam on the layout of an older microprocessor from a Compaq they'd cannibalized from the thrift store. The image was blurry.

“This will take some doing,” Ethan mumbled. “The section we’re looking for isn’t in the same place on every generation of chip.”

For the next several hours he went through the CPUs of a half dozen old PCs – Dell, Acer, IBM, Gateway, Leading Edge, Hewlett-Packard, Packard Bell, Kaypro, Wang, and Everex. They even found some Wellfleet, Banyan, Ascend, and Cascade servers in the storage areas of friends’ businesses and garages, all sporting vintage PAMD chips.

Someone saw Ethan and Rina unloading old hardware in the parking lot and word spread. Most colleagues were amused that anyone would find something of interest in such things. Others, though, suspected they must be onto something and spent hours trying to figure out what secrets the stuff held. They talked about it at the water cooler and at lunch, sent email inquiries, and asked on industry bulletin boards and chat rooms. Word of the investigation spread outside of Santa Clara into hi-tech centers in Korea, Taiwan, Japan, China, and Israel. No one had a clue, so they all went back to work. Yep, Ethan was an eccentric – a guy who wore a NASA lab coat at work. Downtime around the world.

A day and a half of eBeaming down memory lane brought a conclusion.

“The mystery chip-inside-a-chip isn’t on microprocessors prior to 1986 . . . but it’s on every one of them made from late 1986 to the present – with upgrades every few years of increasing sophistication.”

Rina nodded.

“And twenty-five years later, there’s still nothing in any industry journal or schematics or anything. I’ve searched them all. Most peculiar, Mr Alon. As peculiar as can be, as the song goes.”

“Indeed it is, Ms Hardin, though I don’t know the song. Ed Sheeran? I thought it might be some sort of industrial espionage – circuits to collect information from devices made by competitors that are on the same motherboard. But there’s

no valuable data to be collected from microchips that are working with this microprocessor. PAMD itself makes most the chipsets and the rest are dull-witted clones.”

“Maybe there’s a political angle?” Rina suggested. “International espionage? Or maybe our own government looking in on us?”

“Back then? I don’t think so. We don’t know what it does, only how it does it – very cleverly.” He sampled the Sumatran he’d made in a french press and grimaced when he found it only lukewarm. “These circuits do not function as part of the regular microchip operation.”

“Somebody’s using the section for something, Ethan.”

Rina poured more coffee. Ethan turned back to the eBeam machine.

Iran

Gamal Esmaili fidgeted as he prepared a presentation for the military and religious figures who'd flown in from Tehran. War was no longer an abstraction, something to think about for the future. Talk of war was flowing everyday out of think tanks and media around the world and Iran had to be ready. Esmaili and his missiles had to be ready.

Iraq was once his country's principal danger. That is, until the US defeated Saddam soundly in 1991, then ousted him in 2003. Iraq was now friendly toward Iran, thanks to the US. Esmaili pondered another irony: the Iranian missile program began with the help of Israel in the shah's days – Project Flower, it was dubbed. And now the missiles were trained on Israel.

As tensions built between Iran and Israel, especially with the recent assassinations of Iranian nuclear scientists, Tehran funded better computers, servers, and communication gear at the Sirjan base. The simulation programs though, were from the days of Project Flower. They were supposed to have been destroyed but there are always loose ends when partners have a falling out. The programs only needed updating to run on the new architecture. Esmaili worked on a simulated strike on Israel. That afternoon he would demonstrate it to a gathering of generals and mullahs.

Esmaili stood next to the base commander and greeted General Qasim Suleimani of the Revolutionary Guard Corps. With him were his coterie and a senior mullah with a few younger clerics. Postures, speech, and body language suggested that the general was the most important figure in the delegation. They chatted a while in the conference room, then took their seats. Esmaili began the briefing.

“Esteemed guests, through your wisdom and foresight, and with the blessed guidance of the Supreme Leader, we have created a potent missile system that is second to none and capable of striking targets within 2000 kilometers of Sirjan.”

“Would that include Haifa and Tel Aviv?” the mullah interrupted.

The military figures were annoyed by the question but knew it would be impolitic to show it. Everyone knew the Shabab-3s could hit all Israel. That’s the main reason they were built and that’s why they were positioned in western Iran. General Suleimani was practiced in dealing with clerics he deemed dilettantes on matters of war.

“I’m pleased you asked of that matter, esteemed guardian,” Esmaili replied obligingly, even solicitously. “Yes, our missiles are capable of reaching Haifa and Tel Aviv, as shall be seen in our simulation, to which we now turn. We shall begin with two feints. First, five MiG-29 squadrons will fly west over Iraq – with Baghdad’s approval, of course. Second, there will be ground and rocket attacks on Israel from Gaza and Lebanon. This will focus Israel’s defense systems on incoming planes and short-range missiles. Soon thereafter, we will fire volleys of Shabab-3 missiles, only a portion of which will have warheads. Thus, the Israeli defenses will be expending their missiles on unarmed missiles, making themselves vulnerable to ensuing volleys of armed ones. I humbly call your attention to the board.”

Eyes turned to a large screen, thirty feet by ten, showing a map of the region from Tunisia to Afghanistan, then zooming in on Iran and Israel. There were small arrows over central Iraq, representing Iranian MiGs streaking toward Israel and IDF fighters scrambled to intercept them. Simulated missile launches

began and the first wave was entirely destroyed by Israeli defenses. Other volleys, each more numerous than the previous one, followed in random intervals and all could see that with each new volley, more Shabab-3s got through, striking Haifa, Tel Aviv, and military bases where missiles and fighters were positioned. Two hit the Dimona nuclear site in the Negev desert. In less than an hour, the simulated attack was over and several Israeli population centers and military sites were devastated. Some of the men cheered.

Not so General Suleimani. Not so his retinue. Their countenances remained sober.

“So the war will all be over in forty-five minutes and we shall come out of it unscathed?”

The irony wasn't lost on anyone.

“Would we not be starting a long war much like the one we had with Iraq?” a colonel asked.

“Can we defend against their Jericho missiles which will surely launch in response?” another colonel posed.

The senior mullah looked confused but nodded.

These were not questions for a scientist and the officers knew that. The simulation was not intended to consider Israeli retaliation, only the destructiveness of a complex first strike. Nonetheless, Esmaili was put off by a perceived slight. The retinues of the general and the mullah were surprised that their superiors expressed their concerns about war so openly. None of them would have dared to.

“That is for our superiors in Tehran to judge,” Esmaili replied. “And of course their judgment will be wise and beneficial,” he quickly added.

A reception followed. Despite the critical questions, the feeling was positive, upbeat, even celebratory. After obligatory conversations with a handful of officers, Esmaili returned to his office for Turkish coffee. As much as he needed a lift after the stressful presentation, it would not be polite to imbibe caffeine in front of a mullah, let alone one who had the ear of the Supreme Leader. Besides, General Suleimani was uncomfortably intense and by all accounts, mercurial as well. Esmaili sat at his desk to check his mail and took noisy sips of the strong concoction, taking in as much air as coffee.

As he clicked on the mail program, a blue window opened instead and filled the screen. He hit a few keys, shoved the mouse back and forth, and hit ESC. No change. The cursor remained frozen in the upper left corner. Lines of alphanumeric data raced down the screen, far too fast for him to identify more than a handful of numbers and words. He hit more keys. Still no change. After a few minutes, the lines disappeared and ended with one line in the middle of the screen.

Records check complete – S. is logging off.

Back in control, he started to search the system for a security breach or malfunction. Nothing. He alerted the security expert who went through the system all the way to its roots.

“Another virus from the US and Israel?” Esmaili wondered.

After almost two hours, the security figure concluded there was nothing to worry about. The computer’s microprocessor was running a self-check routine which all computers did periodically, though usually in background. Esmaili breathed easier and was again grateful that the simulation went well.

“Thank the heavens that this didn’t happen during the simulation or I’d be sent off to Zahedan or some such place. Dreary work on the frontier with Afghanistan or Pakistan.”

Esmaili asked an assistant if Suleimani was still in the building. He obligingly went downstairs then returned with the unsettling affirmative response. Esmaili shuddered and thought again of Zahedan.

Kaliningrad, Russia

The old Soviet cities named after Lenin and Stalin were renamed Saint Petersburg and Volgograd, but Kaliningrad has retained its old name honoring a Bolshevik stalwart. This is because the former name, Königsberg, is German. So was the population until the Red Army vanquished it in 1945 and Stalin redrew the boundaries of Eastern Europe. Reverting to its German name might raise the question of why Russia was holding on to a city that had been German for eight centuries.

Kaliningrad was now a home of the Russian army and navy. Cut off from the rest of Russia by Poland, Lithuania, and Belarus, the Kaliningrad garrisons felt besieged. That was a sentiment that pervaded Russian culture, which was shaped by invasions from Mongol khans, Charles XII of Sweden, Napoleon, and Hitler. The twenty-seven million dead in the last invasion was in the living memory of older Russians and the younger ones know well of their parents' and grandparents' ordeals.

In one of the dozens of Kaliningrad's military bases was a secretive cyberwarfare department housed in a cheerless concrete building of 1960s vintage. It was like the ones in East Berlin that westerners pointed to from across the checkpoints as signs of communism's failure – or at least its lack of imagination.

Some sections trolled American and European websites and spread disinformation. Another section was tasked with defending against computer attacks from foreign governments, but this department, staffed mainly by young people, delved into other matters. It hacked into banks from London to Dubai to Singapore to New York. The hackers didn't do any harm. They just went in and out, quickly and stealthily, taking notes on the security systems. It became a competition among the best young people who were doing their military service and hoping to parlay work in Kaliningrad into a job in the security section of one of the banks they'd hacked into.

One young man, Lt Dimitri Rublev, hacked into the Pentagon, the CIA, and even Brad Pitt's laptop. He told friends that Angelina Jolie helped on all three. A dour colonel who commanded Rublev's section found out and ordered a halt. Intriguing and potentially useful as the information was, that was the work of other sections. He was concerned that American hackers were far better than Russian ones and that the Pentagon might retaliate and bring his section crashing down along with much of the Russian military system. His career would be over. The colonel was curious about Brad Pitt's bookmarks, though, and had the artful lieutenant send them to him.

Dimitri was annoyed at the rebuke but reasoned there was a better future in hacking into America's banks than its military. What does a Russian colonel make compared to an American hedge-fund manager? Not much.

He and a colleague in the Ukraine were attempting to get into the mergers and acquisition section of Goldman Sachs – M&A, as it was called in the industry. Knowledge of imminent business moves and an options account in Zurich could make them incredibly wealthy in a few years. They could triple their money every two months, depending on how long the merger talks dragged on and how many deals were shot down by the SEC. On further reflection, Dmitri and his Ukrainian colleague determined to hack into the SEC, examine its disposition on pending M&A cases, and act accordingly on options markets.

A few decryption keys were at work when his computer froze and a bewildering array of code scrolled down for several minutes. At length, a window read:

Records check complete - S. is logging off.

He looked into the audit trail system to see all recent activities but there was no record of an outsider accessing the system. He went through an exhaustive check of the security and firewalls but there was no indication of penetration. The PORTS accessibility and blockages offered no reason for worry.

Dimitri was worried. What if this was American retaliation for his recent forays? What if Goldman Sachs had better security than he thought and this anomaly was precursor to a punishing retaliatory strike? Either way, Dimitri was determined to find out more. He'd either get promoted captain or exiled to a Russian airbase in Kyrgyzstan. That's where the military sent troublemakers, at least since the end of the Chechen war. Troublemakers and people with initiative.

"In-ish-i-ativ," he kept muttering. "We had to import that English word into our language. We have so little use for it in Mother Russia."

Dimitri thought admiringly about the Russian wheeler-dealer who recently bought an American basketball team and moved it to Brooklyn. Dimitri preferred baseball and wondered if Brooklyn might like a baseball team too.

California

In between business routine and well into nights, Ethan and Rina scrutinized every nanometer of the anomalous chip-inside-a chip – the “CiC” as they were calling it. The work was baffling, mind-numbing, hard on the eyes, and led them into several dead ends. It took more and more time each day.

Rina was intermittently intrigued. Ethan was obsessed. It wasn't just a mystery story. The CiC had tremendous import for the chip industry and for Micrologic Design – both of which were dear to him. The CiC was in many respects well ahead of anything out there and understanding it would bring advantages, as would getting to know the ingenious designers.

“Now we've got some information to work with,” Ethan concluded with satisfaction as he at last extracted a set of instructions from the CiC's memory circuits.

Rina pored over them as they appeared on her screen and made partial sense of them. “These are opcodes – assembly language. I recognize some, but the rest is a corrupted program as best as I can tell.”

“There must be some order to this silicon chaos,” Ethan said as he looked through the opcodes.

They looked at the opcodes over and over. A half hour dragged by.

“I got something, Ethan. If you count the number of occurrences of a specific word, there is some consistency. I counted every fourth word and there’s the same key, but it’s not universal. In some cases, a different key accompanies different words.”

He raised his eyes to hers.

“So, we have an algorithm within the data stored in the memory.”

“Encryption, Ethan. The opcodes are encrypted.”

Rina rocked her head back and forth in amused thought, surprised by a new layer of intrigue.

“Indeed – and not a simple encryption either. Can you work on cracking it while I tend to business?”

Rina rolled her eyes.

“I left my decoder ring at home, Daddy Warbucks, but I’ll give it a try.”

“You know, Rina, I love listening to your voice, even when I have no idea what you’re talking about.”

“I’m on the case, big guy. Just know that I’m on the case.”

* * *

Even senior chip designers like Vaughn White come across surprises. This was the second time he verified the microprocessor and gotten anomalous results. The end of the project was at hand and final chip verification due. He was the “tape-out owner,” meaning he was the person tasked with sending the microchip’s completely verified data to the fabrication plant. The term “tape-out” remained from the old days when chip manufacturing information was stored in large reels of magnetic tape and physically delivered to a fab. Today, of course,

only one large file was delivered, electronically, to a fab, but the old term stuck and acquired an endearingly archaic quality, even to younger people on the team who laughed at the sight of tape reels in old movies and TV shows.

Vaughn was to run the chip through sign-off software to make sure it met the electrical and geometrical rules. The software would run through the entire chip, a process that even with today's equipment takes a few days. Upon completion, the software would hopefully declare the chip "clean." Upon approval, the silicon wonder was ready for manufacture and it would be sent to the fab where nanotechnology would print it onto wafers.

A few days ago, he'd submitted another run on the verification software just out of curiosity and it returned with discrepancies. "That ain't right," Vaughn said to himself staring in annoyance at the screen. The program reported circuits that weren't there before.

"I couldn't miss *that* many circuits. Something's amiss in Sacramento."

He visually inspected the design for anomalous circuits but couldn't find any.

"I must have done something wrong. We'll just do another run."

Everything came out clean this time. That was it. The software system upon which PAMD relied, upon which its reputation had been built, passed the chip. Vaughn breathed easily and signed off on the update.

He walked down to the tape-out party later that day and was met by scores of elated team members. The affair was lavishly catered and featured a live band that played music from the nineties, including a number by Hootie and the Blowfish – a band he loved since college. Vaughn gave a short speech thanking everyone on the team for their hard work and professionalism. The applause was effusive. He was proud of what they'd done and the thought of the anomalies never crossed his mind. PAMD rewarded them all with hefty bonuses in the form of stock options.

There was also a senior engineer present. Peter Whitt had been with PAMD since the eighties and he had oversight on the chip now headed for the fab. Most engineers thought he was just a senior guy with time on his hands. Whitt made a point of congratulating Vaughn personally and shook his hand vigorously.

Vaughn tried to think of something pleasant to say to the old hanger-on.

“There’s so much you could teach us about the company’s early chip designs.”

Whitt sensed the empty sentiment and nodded amiably.

“It’s important to pass things on to the next generation,” he replied. “Continuity is so important.”

Whitt’s departure from the celebration a while later went unnoticed.

* * *

Ethan was awakened by Rina’s nudge. “Hey, big guy, I think I got something – and I trust you’ve finished up the work for Micrologic Design. That’s your company.” She began to poke his rib cage and collarbone. “C’mon, c’mon! You’re supposed to wake up when I press any key. You *have* finished up the customer inquiries, haven’t you?”

Ethan mumbled incomprehensibly, hoping to duck the question.

“Well, Ethan, it’s made in the most primitive programming language – Assembly. It’s definitely encrypted and very well too – 256- or even 512-bit type. It’s embedded in the silicon like flash memory. It can store and restore instructions and data.” She mimicked wiping her brow. “That took only six hours to discover! No nap either.”

He looked at her and smiled silently. She read his mind.

“No, no,” she said shaking her head. “I’m not decrypting this thing. It’s the weekend and I want to see friends in Palo Alto.”

“Yes, but. . . .”

“You want me to go for it right now.”

“That’s why I hired you – your inspiring perseverance, our shared appreciation of wall art and lab coats.” Seeing no positive response, he added, “And because you’re a genius, a beautiful genius, and a wonderful hiking partner. And of course, you excel at other things as well.”

“Maybe we can pursue those other things more often. Now back to the CiC. If someone took the efforts to manufacture such a complex unit, we can assume that the encryption will be . . .” She looked at the ceiling, pretending to be calculating. “Okay, like, *impossible* to crack. Maybe like something out of the National Security Agency.”

“There is no such thing as impossible, Rina. It was made by humans, it can be unmade by humans. It’s a law of nature or physics. One or the other. Anyway, it’s just a matter of perseverance and talent. However, I like your idea of the National Security Agency. That might come in handy.”

“Whoa! Whoa! Ethan, you are *not* going to –”

“Just a thought. Or a last resort. Let’s get back to your perseverance and talent. We know that you have lots of both. Terabytes of both.”

“This I’ll do tomorrow. It’s three am. I’m tired and we still don’t know what we’re looking for.”

“Well, we pretty much know what we’re looking for. We just don’t know what we’re getting into.”

Several days later, Ethan and Rina were still struggling with the encryption. They made a program to run sequences of combinations, but without any success. They even checked with friends and colleagues who specialized in security methods. He had a colleague at NSA but knew he couldn’t ask about

cracking codes. That would put him on a list somewhere and being on lists was bad. It can sneak up on you later – say, when you wanted a security clearance.

“Mr Alon, I see you tried to get a friend to give you sensitive decryption information. What can you tell us about that?”

No thanks. Besides, he had another way of getting NSA information.

The CiC encryption proved not to have a straightforward structure. It had an irregular pattern derived from keywords and defining the keyword combos proved elusive. Ethan had already seen the most “unbreakable” encryptions cracked in his days with the Israeli military and he knew it was only a matter of hard work. Hard dull work. They had the knowledge to work the mechanism but they needed creative thinking to find the encryption algorithm. As much as Rina liked challenges, she had exhausted her skill set.

Ethan continued thinking, even at home.

He sat on the balcony of his apartment and sliced a quarter from a soft, fragrant honey dew. The sun was already heating up Santa Clara with all its considerable might. He listened indifferently to the news from his television in the living room. The anchor was talking about tensions in the Middle East, a bombing in Damascus, another in Baghdad.

He thought of the sun and the weekend, but there was no getting away from the nagging matter of encryption. Beyond that, there would be the task of figuring out what the system was designed to do. He had a hunch and thought of getting thoughts from someone outside the hi-tech field, someone far removed from the clean rooms and algorithms and eBeams of Silicon Valley. Someone who could be trusted, for he suspected this CiC business would lead to something complicated, probably something political and dangerous.

Ethan thought of a friend who lived by himself out in the desert of New Mexico and read a lot.

New Mexico

“Keep saving the world, Barrett!” Dee Dee cheered Barrett as he left Kelly’s.

“Just for you, my dear.” Barrett added a wink. Dee Dee responded in kind.

He drove east on I-40, the long interstate that runs from Los Angeles to North Carolina, then entered Tijeras Canyon which separated the Sandia Mountains from the Manzanos to the south.

“No radio or cell service for a while,” he thought as he looked up at the reddish-brown sedimentary walls of the canyon. It always reminded him of the radio blackout that astronauts go through on reentry or on the other side of the moon.

“A moment of splendid isolation.”

Barrett thought of his convoluted path to rural New Mexico. Four years in the army, including a part in the 1991 Gulf War. College and grad school at the University of Chicago studying counterinsurgency, a little teaching, then off to Iraq and Afghanistan to consult for people that thought they knew it all and wanted consultants to tell them they were doing just fine. It spread out the blame that came down. He told them the Taliban would come back strong because the Afghan government was too corrupt and the Pakistani army was playing us for fools. Barrett’s contract wasn’t renewed.

He moved out to New Mexico to be with an old girlfriend but it didn't work out. Things were especially difficult after he returned from his second time in Iraq. Writing and consulting on his own out in the desert suited him. A little investing here and there worked out well most of the time but the glory days of the nineties were long gone. It wasn't for everyone, however it meshed with his independent views and mordant wit.

As he came out of the canyon and neared the town of Tijeras, his phone chirped. A call had come in while he was in canyon isolation. A quick look told him that it was from Washington, DC. A senator's national security aide had called.

"What does he want? Those guys take their cues from party hacks and K Street lobbyists, not from anyone like me."

He decided not to return the call. He pulled into the driveway, opened the iron gate, and drove up to the adobe house. Jesse, an immense Timberwolf, trotted up stiffly to greet him.

"Hey, buddy! You're the biggest and baddest wolf in the Southwest!"

Jesse panted softly, mouth open.

"Do you know there are people in this world who can't recognize a doggy smile?"

The great wolf dropped his cheerful demeanor, as would any sentient creature on hearing Barrett's judgment on mankind.

Barrett had entered middle age gracefully. Pushups and walks with Jesse up the deer trails of North Mountain kept him in shape. Sunday was time for *The New York Times* crossword, in ink, and many an answer came while looking off into plains that led out to Tukumcari. The cholla cactuses were in late bloom, giving the cheerless, foreboding landscape improbable bursts of fuchsia and yellow. The empty expanse resonated with his disdain for cities and offices. He wasn't in the running for any humanitarian award.

“We should move out there,” he found himself saying to Jesse from time to time. “Tucumcari beckons. Yeah, I know it's far from Kelly's.”

Back at work inside, he was pleased that an article on Iranian influence in Iraq and Afghanistan was coming into place. Shia militias in Iraq had been tied to Iran since the Iran-Iraq War of the eighties. It didn't lead to a whole lot during the war but afterwards, with the ouster of Saddam in 2003, Iranian influence became considerable. Off to the east, Iran supported the Northern Alliance against the Taliban and the Northerners were grateful. More grateful to Iran than to the US.

“Why didn't Washington know this? It wasn't classified. Sometimes I think ten people who read the news regularly could give sounder foreign policy advice.”

The draft was going well. He hit “save” every now and then and dragged the document to a thumb drive. “I'll take the old boy out for a walk and polish it up later before posting it.”

Jesse was sitting by the door expectantly. A Skype window announced an incoming call.

“Who do I know in the 408 area code? Okay, *whom* do I know out there?”

Ethan was so excited that he neglected to apologize for intruding on Barrett's evening. They'd known each other since the late nineties when they both taught at the University of Chicago. Fresh out of grad school there, Ethan taught chip design in the new computer science program. Barrett taught international affairs in the government department. Afternoons, they played basketball at Henry Crown Fieldhouse where an assortment of teachers, students, local kids, and a haughty community organizer played together. The games were spirited and status was based on what you could do with the ball, not on your degrees. Neither Ethan nor Barrett was blessed with exceptional talent, but they set picks, hit the boards, and if left open, they'd drain a jumper.

Neither was at home in an academic setting. Ethan was a doer, Barrett a loner. Each escaped academia after a few years. Ethan headed off to Silicon Valley, Barrett to his old girlfriend. The desert environs turned out well.

“Barrett, I have something interesting for you.”

“Can it wait for Monday. I was just on my way out to –”

“To play basketball. I knew it!”

“Not at 7500 feet, Ethan. I’d drop dead in ten minutes, even if I were still in my twenties.”

“To walk your wolf friend then.”

“You got it.”

“Can I ask you to hold off with big Jesse a minute? I’ve come across something strange inside a chip.”

“You’re asking *me* about a chip? I can install memory and hard drives. That’s about it.”

“This will intrigue you, old man. I think there might be a political angle. Maybe an *international* political angle.”

“Okay, let me get my. But I’ll expect free tech support for ninety days – and a stock tip or to as well.”

“This tech support will come with an Israeli accent rather than an Indian one. Clipboard and pen? You should have a PC, Barrett. Aren’t Macs still using RISC chips?”

“Okay, fill me in on your find. And by the by, Apple went to PAMD chips years ago.”

“It’s good to hear Cupertino is catching up. Now, speaking of microprocessors. . . .”

Ethan told him about the CiC. Barrett didn't see where he fit in but listened patiently and took in as much as he could.

"We need to crack the encryption code. We can't figure out what this program does until we get inside."

Ethan paused to gauge Barrett's reaction.

"Maybe the CiC simply prevents you from bootlegging Black Eyed Peas albums or it sends out emails saying you've won a lottery somewhere. Okay, I'm kidding. And out of date. No one listens to Black Eyed Peas anymore."

"This is serious, Barrett. Well, it might be. I think there's something going on here and I think it has politics in it. I don't know. Espionage, surveillance, intelligence outfits."

"There've been concerns that China has been putting stuff on circuit boards to collect data. The Manchurian Chip, as it's called."

"I know, Barrett. I was called in to study that concern."

"Called in by whom?"

"By a friend in a certain organization in Israel. There was nothing to the Manchurian Chip stuff. A great name though. Anyway, this is on the microprocessor, not the circuit board. China doesn't know how to make microprocessors. They're all made in the US or Israel or Taiwan."

"Well, Ethan, isn't the NSA doing all sorts of surveillance? Maybe this is part of their guardianship over us."

"That's PRISM and ECHELON. They do it with software, not with hardware."

"Ethan, how the hell do you know that? Your friend in a certain Israeli organization?"

"No, a friend in Ukraine told me about all the NSA snooping. He watches the watchers, guards the guardians. That's another matter entirely. The odd thing is that the CiC, as best as we can tell until we break its encryption, was designed

by someone long ago. Decades ago. We're not dealing with a kid straight out of Cal Tech or an intern at Palo Alto."

"I'm intrigued, I'll say that. You do read more sci-fi than most people do, and you might get drawn in far more than most people."

"Yes, that's true. But someone very clever – no, someone ingenious – has gone to great lengths to put this program on the chips and hide it. The program's covert and brilliant nature makes me think it's related to the Stuxnet virus that struck that nuclear facility in Iran."

"Natanz. The Iranian nuclear facility is Natanz."

"That's the place. Stuxnet sent Natanz's centrifuges into such high speeds that it burned out whole banks of them. That was one amazing program, Barrett. Do people in your world know who wrote it?"

"My world? The New Mexico desert? I thought *you* wrote it, Ethan. Weren't you in the Israeli military and didn't you work for a certain organization over there?"

"Yes, I did. But it wasn't me. My friend in a certain organization over there says no one there knows who wrote Stuxnet. And trust me, they've tried to find out so they can hire them!"

"That's what my friend in a similar organization over here says too. Well, whoever it was, they did a damn good job. Iran's uranium-enrichment program was set back a year or more and it kept Israel from launching air strikes."

"You're getting on track now, Barrett. The chip's tied in to big things. I know it!"

"Such emotional speculation from a chip designer. I thought you guys were all logic and numbers."

"There are exceptions, Barrett. You should meet my assistant Rina. We'll be out your way soon. Oh, one more thing. The CiC suddenly appeared on PAMD chips in 1986. No CPU before 1986 has it, every CPU after 1986 does."

“1986. . . .” Barrett talked as he was thinking. “Who would hide a microchip inside a microchip. The most obvious answer is that the company itself created it for business purposes, but you don’t believe it and you know that world. Second, a US military or intelligence function, but they use software. Third, some electrical engineers went off on their own venture. Oh, I don’t know. Ethan, you must have more thoughts.”

“I really don’t at this point beyond placing it in the political world – *your* world.”

“Defamation!”

“Well, it’s a world you know and mistrust. Barrett, the circuits are incredibly well designed. They have a definite and important purpose. If – no, *when* we break the encryption code, we’ll know more. For now, what was going on in the world back in 1986?”

“Oh, many things were going on. Wars and more wars.” Barrett could sense Ethan’s impatience. “I’ll need some time on this stuff. Ethan, there’s probably nothing terribly interesting going on. I’ll be in touch.”

Cedar bushes and trees thrived along the rocky slopes, nourished by the moisture the Sandia peaks offered by lifting clouds until they burst and gave the East Mountains the rain that Albuquerque was only taunted with. The altitude and incline caused Jesse to walk more stiffly and Barrett to breathe more deeply. The wolf’s glance suggested they should take a break. Barrett sat on the rust-colored rock where he liked to sit and think.

“Nothing will bother me with such a big critter at my side. Talk about credible deterrence.”

At night coyotes could be heard on the hunt and in celebration, but they dared not come within a quarter mile of Barrett’s place. Never. It was in their DNA to avoid wolves. It was in human DNA too as the occasional startled hiker demonstrated. Jesse and Barrett got along fine though. Each looked upon the

other as someone uncomfortable with his surroundings and as someone who made those around them uncomfortable. It was a match made in New Mexico.

Barrett brooded up there, often for hours, replaying things he'd seen in Iraq and was still trying to make sense of, or at least stash somewhere in the attic of his mind. He did that elsewhere too. Sometimes while drinking at Kelly's, ostensibly watching a game.

"So what do we have here, Jesse? This chip is used all over the world, starting in 1986. It's every computer's brain. But whose brains are embedded in it? Assuming Ethan's right about a political dimension – a dubious assumption, old boy – what was going on back in the mid-eighties? Reagan's in and building up the military. Star Wars just getting underway."

Barrett looked out to the east where the sky was getting dark.

"The first Lebanon war was in 1982. Israel went in to chase out the PLO which led to the rise of Hisbollah and a long war. The Russkis go into Afghanistan. Another long war."

Jesse stared at him.

"What am I forgetting, buddy? Oh yeah. The Iran-Iraq War, 1980 to 1988. Stalemate and poison gas, just like in World War One. Over a million dead. Missiles fly. Russian ones, western ones. Everyone has an interest because of all the oil going through the Strait of Hormuz. Oil tankers get attacked, even an offshore platform or two. Hi-tech missiles and radar, low-tech gas and rifles. Very nasty, even by the demanding standards of the twentieth century. Over a million dead. Yeah, I already mentioned that. Mostly under twenty-five, I'll bet. Kids. Poor kids. So, is there a connection to what Ethan found?"

The wolf stared down to the flat land where they made their home.

"It's probably nothing. Just something PAMD thought up, printed out at a fab, then dropped. Let's go home, big guy. Food awaits us."

Jesse took note of a key word in his lexicon.

A ways down the trail, he passed an Iraqi tank he'd put a Sabot round through and the remains of a Republic Guard crewman nearby, a gnarled arm reaching up despairingly from a charred torso.

"After the war, Saddam is broke so he invades Kuwait. We send troops and wallop him. Bin Laden is outraged that the US has troops on Saudi soil and we know what that led to – 9/11 and Afghanistan and Gulf War Two. Then al Qaeda and ISIL metastasize from A-stan to Iraq and Yemen and Somalia and Indonesia and Syria. And now Mali. Jesse, al Qaeda's in Mali now. That's near Niger. But you knew that."

They arrived back at the iron gate and wire fence.

"There's no getting away from the wars, Jesse. They keep coming back."

An old visitor would be with Barrett for some time, until they wearied of one another and the visitor went away, though promising never to be far away. Barrett fell asleep around two and dreamed he was back in the Middle East – a common enough occurrence in the years after his two trips to Iraq, rare now though. He woke up more than once as he saw a man walking toward him and several GIs behind him. All of them were bleeding. One of the wounded, though faceless in the dream, he knew was from a small town in Texas.

The University of Tehran

“Professor Karroubi? May I ask a question, please? I hope I’m not impertinent or a bother.”

The undersized young student stood outside the office of Dr Abbas Karroubi, an elderly professor at Tehran University.

“Yes, of course. Come in,” came a brisk reply.

The student peered tentatively into the cluttered office and saw the renowned professor focused on his screen. On the wall were diplomas, a worn tribal weaving like the one above the doorway in his parents’ house, and a photograph of a young man in uniform. Hearing no motion, Karroubi turned to the doorway and looked at the young man still standing there.

“Come in, young man. I have not bitten anyone in many months and I’ve just finished a good lunch. So then, what can I do for you?”

The young man was a new graduate student who was enthralled by Dr Karroubi’s reputation as a masterful computer scientist and a helpful teacher who placed his students in prized positions upon graduation. Though older by academic standards, Karroubi retained a keen analytic edge and warm generosity.

“Thank you,” the student replied nervously.

Dr Karroubi turned away from his screen once again and scrutinized the youth, assessing his intellect, disposition, and potential. Someone had to speak. The young man found courage.

“I am interested in worms – computer worms. I am especially interested in complex ones that invade whole systems, not just the laptop of someone surfing the web or downloading forbidden music.”

Karroubi passed his hand through his thin gray hair.

“Computer worms. There’s certainly been interest in them in recent years. I suspect we shall remain busy with them for a few more years at the very least.”

“I completely understand if you don’t have the time, Dr Karroubi. I could come back at a time more convenient if –”

“No, no. Please have a seat. As chance would have it, I am right now looking into an especially powerful worm that found its way into our country’s systems not long ago. What is your name, young man?”

“Hussam, sir.”

“Good.” Karroubi thought of Plato with a young student such as Thrasymachus or Glaucon and opted for a dialog. “Hassam, can you define a computer worm?”

“Yes, of course. A computer worm is a program that duplicates itself and spreads by means of networks into other computers. Often many computers.”

“Often very many computers – and very important ones too. And how does a worm differ from a virus?”

“A worm is a separate program. It doesn’t need to sneak into another program already in a system, and it doesn’t corrupt files as viruses do. Worms jam operations though – especially networks.”

Karroubi was pleased by the young man’s preparation and delivery. The professor’s respect showed and Hussam grew more comfortable. Karroubi directed Hussam’s attention to the screen.

“This is a worm called Stuxnet. I’m sure you’ve heard of it.”

“Yes, of course,” the youth replied eagerly as he leaned forward to look at the screen.

“Parts of it – only parts – have been made available online. It was detected in one of our nuclear facilities.”

“Natanz.”

“Yes. Natanz. That’s no secret anymore. It has done great harm to the uranium-enrichment centrifuges there. Even our leaders admit that. And Hussam,” Karroubi added, lowering his voice to convey humor rather than concern, “if they admit that, the damage must be *quite* severe!”

Hussam smiled cautiously then moved closer to see the screen where dozens of lines of intricate code were displayed – most was above his understanding. He made out a few basic commands and had occasional glimmers of insight as to Stuxnet’s power. He was fascinated, like a young apprentice in the presence of a master’s work from which he would learn to be a master himself.

“May I ask, professor, what harm the Stuxnet worm did – and how did it do it?”

“Those are questions that can be answered through hard work. A more important question just now, young man, is who wrote it and whisked it past our security. Our government experts are convinced that Stuxnet could not have been done by an individual. I’ve supported that view in meetings with generals and engineers. The complexity points in the direction of a large team of highly-skilled people, perhaps in the employ of a state. Whom do you suspect, Hussam?”

“There are only a few countries with both the resources and interest to attack our nuclear program. And I have read that it was done by the United States with Israeli help.”

“You have *read* this?” Karroubi wondered how a young man could know of this information which was a matter of debate in the highest councils of the Iranian government. “But where?”

“In a review of an American book, from a reputable author and publisher. Many people in the US government were upset by the revelation.”

“Well, such revelations can be harmful, though perhaps by directing our attention in misleading directions. Such things need not concern us scientists. Let us entrust that to the politicians and generals.”

Karroubi was disappointed that the lad hadn’t detected his irony. He grumbled imperceptibly.

“Professor, what exactly has Stuxnet done to our centrifuges?”

“It invaded the Siemens software that runs the thousands of centrifuges which spin rapidly and expel uranium particles, thereby enriching the uranium from U-238 to U-235. Stuxnet sped up the centrifuges, then slowed them down. The vibrations damaged many of them, indeed whole cascades of them. Worry not, young man, we have located the worm and eradicated it.”

“How was it located? Such things are expertly disguised.”

“I was called in, as I often am for such matters, and I saw something amiss with the control servers. Commands were sent to the machinery that ignored the guidance of the hundreds of sensors in the centrifuges. I went into the operating subsystems and noticed unusually high network traffic – a reliable sign of a worm, as you know. I calculated the traffic and bandwidth that should be on our network given the amount of data flow and the traffic indicator immediately showed abnormally high values.”

“The worm was overloading network traffic.”

“Indeed, it was. From there, finding the worm was fairly easy. I wrote a network trap to sample data, the content, and quantity. This was still tricky since Stuxnet

did not operate consistently. In order to camouflage its operation, it operated at random times. It was exceptionally hard to find.”

“Amazing, and frightening,”

Hussam knew his education and his country’s security were intertwined.

“Stuxnet had other ruses. It periodically sent meaningless data into the network to cause more confusion. That made my detective work more difficult, I can tell you.” Karroubi took in some herbal tea. “One of the most devious aspects of Stuxnet was its method of spreading itself. It picked a random host through the network, duplicated itself, and pretended to be one of the system’s files. After completing its mischief, it erased itself.”

“It came, it conquered, it left. The conqueror worm.”

“So you’ve read both Caesar and Poe. A promising lad! Now back to our infestation. It was as if Stuxnet had never been there, except for the damage it left. Except for the considerable damage it left.” Another historical analogy came to the professor’s mind. “In this respect, it was like many great men in history. They leave behind horrid ruins and immense cemeteries, as the poet said of General Wallenstein.”

Hussam reached again for information from his readings of history and literature. “Wallenstein – the seventeenth-century mercenary commander who tried to take too much power. The Habsburgs had him killed.”

“That is he. Impressive, Hussam. Breadth of education is rare these days. I wonder if General Suleimani of our Revolutionary Guards knows the name Wallenstein.”

“Military history is a hobby – and so much revolves around military matters today. My mother says that too much revolves around military matters.”

“Only the foolish ignore their mothers’ counsel, Hussam.”

Hussam was beginning to recognize the professor’s wit and feel more comfortable.

“What about the Stuxnet program itself? Did it have unique algorithms and methods?”

“You may be sure it did! Perhaps the most sophisticated part of Stuxnet targeted the programmable logic controllers which operate the motors and pumps. Remarkable programming techniques accessed the motors and sent them off into ruinous spin rates. Someone had their hands on highly confidential application programming interfaces.”

“They must have had help from the manufacturer of the centrifuges.”

“That could well be the case.”

“Eventually we detected it and stopped it. I mean, *you* stopped it.”

Hussam looked with great admiration at Dr Karroubi and enjoyed the prestige of having a great man impart his expertise to him, if only in small amounts at this point. For the moment, the nagging senses of worthlessness and futility that haunt graduate students eased inside him. He’d demonstrated worth and perhaps found a mentor.

“Stuxnet destroyed perhaps a thousand centrifuges and caused considerable delay in our enrichment program. Ah, but the centrifuges are back up and the control program is more secure now.” Dr Karroubi sank into his thoughts, pondering what promise there was in this young student. “Are you aware of any other centrifuges in our country, Hussam?”

“Yes, there are centrifuges at Fordo. They are much deeper underground than the ones at Natanz. So they are invulnerable to enemy air attacks. And our Parchin facility is being rebuilt after the terrorist bombing a few years ago. Some it has centrifuges now.”

“Perhaps, perhaps. We build deeper facilities and they build bigger bombs, Hussam. The Americans are building an enormous one.”

“Yes. The Massive Ordnance Penetrator.” He enunciated the foreign words slowly. “It is being built in White Sands, New Mexico.” More slow enunciation. “That is the same place the Americans detonated the first atomic bomb.”

“Remarkable, young man. You are promising.”

Hussam positively beamed.

“Like you, I hope to see our country take its rightful place in the world.”

Karroubi smiled faintly. Anyone who knew him would have discerned a trace of disappointment.

“Yes, of course. We all wish to regain a respected place in the community of nations. Insha’Allah, of course.”

“Insha’Allah.”

California

Rina called Ethan three times but couldn't reach him. She concluded, easily enough, that he was at the Micrologic Design office, phone on silent, face to the screen, delving deeper into the mystery. She drove up just after midnight, peered up to the top floor, and saw a light. She took the lift up to the office and saw Ethan busily entering data, unaware she was in the doorway – or oblivious to the fact.

“Hey! Why don't you answer your phone?” She walked toward him, puzzled by her own tentativeness. “I've been trying to get you for hours.”

Ethan lifted his head for few moments. “I'm sorry, I was very busy.”

“With the encryption. What the hell else.” She sat in the chair beside him. “You know, Ethan, this CiC stuff is beginning to worry me. You don't eat regularly, you don't sleep much. It's becoming an obsession. It isn't helping business. And it isn't helping us.”

“I need to know things,” Ethan replied flatly, his eyes never leaving the screen.

“I know . . . that you need . . . to know!” She was all but gritting her teeth, her voice was rising. “You're completely forgetting your job, our business, and everything else. *Everyone* else too.”

He closed his eyes as her words and state of mind sank in, then he turned to her.

“You’re right. Of course.” He reached for her hand and she gave him hers. A moment of reconnection came. She sat on his lap and they held each other, rocking gently back and forth.

“There are important people, Ethan. People who care about you. People who want you to succeed – and grow.”

They simply held each other, foreheads resting together, breath intermingling. For a few moments they put the business and the CiC mystery and Micrologic Design aside. Either sleep or passion would have taken over for the evening but an alert sound chimed and Ethan’s attention was redirected to a new page.

“At least we had that wondrous nano-moment.”

Rina stood behind Ethan and looked at the screen. An email arrived and Ethan opened a PDF file with “Top Secret” prominently written across the front page in a cheerless font. The page displayed a table of contents for encryption and decryption. Atop it was a government seal: an eagle with its talons clutching an immense key.

“Ethan! Tell me you haven't hacked into the National Security Agency!”

“Well, technically I guess you could say I did.”

“Technically? When people use that word I brace for myself for preposterous rationalizations!”

“What’s that expression? Oh yes: Let’s not go there, girlfriend.”

“No one says that anymore, not even on TV.”

“Duly noted. I have a Ukrainian friend from college – a first-rate hacker. In high school he worked his way into the servers of schools and television stations where he performed a little . . . I don’t know, let’s say, a little mischief.”

“Examples of this mischief, please. Millions of dollars diverted?”

“Nothing so daring. Not at that point. The school principal was enrolled in a phys ed class and given a failing grade. Television stations suddenly broadcast a few minutes of an adult film. My friend was fond of a certain actress in that genre and wanted to share her talents with both Israel and Saudi Arabia. He was caught but he learned from his mistakes. He’s graduated to higher things – more daring things. At least that’s what a friend in a certain organization back in Israel tells me. They like his work and use him for a few purposes he didn’t elaborate on.”

“More *daring* things? You mean more *illegal* things.”

“Rina, in some endeavors and with some organizations, the distinction between legal and illegal gets blurred or is irrelevant. NSA looks in on us, we look in on NSA. You might call it cyber-karma.”

“They might call it cyber-crime,” Rina shot back. Pleased with her cleverness, she let her concerns ease. “Tell me more of your Ukrainian friend with a penchant for daring things. Single or married. On parole or in the slammer.”

“Not sure of his marital status but I’ll tell him you inquired.”

“He sounds like a dream date. We can watch porn together in Riyadh.”

“I’ll tell him that too. Anyway, I always respected him as an ingenious colleague, nonetheless I avoided close contact with him in case he got dragged in for something. Something high level.”

“Something daring?”

“Yes, something very daring. I didn’t want to hear a loud knock on my door in the middle of the night.”

“Did *he* ever hear a loud knock on the door in the middle of the night?”

“He’s on parole now. He tried to friend me on Facebook last year but I didn’t accept, for reasons that must now be obvious. This guy’s good though.”

“Is this Mantas?”

“That’s the guy. So I’ve already told you about him?”

“Well, no. I saw your Skype contacts once when you left it on your desktop and I saw his creepy avatar. A sketch of a bad boy holding a mouse – a computer mouse, that is. At least I hope that’s what it was.”

“That’s Mantas. I always had his Skype number but I never contacted him.” He took a deep breath and exhaled noisily and in jest. “Until last night. Rina, it was late and I was getting nowhere.”

“You’re going to get arrested. You’re going to get me arrested too. I can hear it now: ‘Ethan and Rina! We know you’re in there. Come out with your hands up and your NASA coats off.’ But officer, I don’t have a NASA coat. I’m just an innocent intern.”

“Hah!”

“Ethan, you don’t hack into NSA! They’ll track our PPP back to this very office. They have no sense of humor at all! They have guns though – Sig Towers.”

“Sig *Sauers*. I know someone who carries one at all times.”

“Mantas packs a Sig Tower?”

“No. A guy named Boaz Preses. He’s in army intelligence.”

“I supposed he has a license to kill.”

“Boaz has a license to eat. Now, back to the issue at hand. I didn’t hack into NSA. Mantas did and he did it somewhere near Lvov, though he probably spoofed his PPP.” Ethan was beaming with pride. “Mantas, old man, I’m guessing you spoofed a PPP in Langley, Virginia or Putin’s mistress’s condo or some such place, didn’t you? He’s good, I’m telling you, Rina. He got us some great data.”

“He got *us* some great data?”

“Okay, *me*. Now I can find methods and algorithms to crack the toughest encryption engines, even the one on the PAMD chips.”

She shook her head in disbelief and growing annoyance. Then came the realization that the damage was done – and most likely in Virginia or Russia. They might as well see what they could get. “Okay, maybe I’ll pick up something for my dissertation. Does Folsom grant degrees in computer science?”

“Not since Mandon died.”

“You mean Manson?”

“Yes. Anyway, here’s a program that our NSA friends use to crack codes of the 512-bit variety. They developed it back in the mid-nineties to get into Russian and Chinese systems. It runs in a loop and goes through all discrete combinations. I’ve already built a program based on it and it’s up and running, even as we speak. It’ll analyze the encryption’s nature and suggest a way of getting in. It’ll take a little time though.”

Rina looked at the screen and stifled a gasp as she saw a webpage with the same government logo.

“Ethan, tell me something. Are you – not are *we*, are *you* – inside the NSA servers, even as we speak?”

“*Technically!*” they shouted in unison.

“I had to borrow another piece of their code module for my own program.” He typed a few lines and grinned. “One thing I learned from Mantas: it’s important to know your way in, but –” he gave her a mischievous look, “it’s even more important to know your way out.”

His voiced trailed off and his fingers made walking motions across the desk.

“What do you mean?”

“Hacking into a system is a great accomplishment, but in some respects, it’s the easy part. Getting out is more difficult. Know why?”

“Nope. We innocent interns keep to the straight and narrow. I’m not even here, even if ‘here’ isn’t anywhere near here. And I have no idea who Putin's mistress is or where she lives.”

“Nevsky Prospect, St Petersburg. That’s where all the upscale stores are. I have to make sure that I leave no trace I was ever in.” Ethan hit Enter. “The port was closed and my record as a user will be changed into a different type of record – a system binary. The time stamp will change. The record will be deleted, the computer clock will be set back to one of the oldest file dates, and a new record will be created with the previous time stamp. The clock will be updated to the current date. All registry notifications will be redone. No evidence of entrance into the system. I was never there. Thank you, Mantas!”

He sat back in his chair in cyber-triumph.

“Good. Then neither was I.” She slumped into a chair and exhaled. “I feel like we’re Bonnie and Clyde, and you know how that movie ended. *Rat-tat-tat!* I prefer a cell in Folsom to machine guns on a country road.”

Ethan hummed a melody and Rina launched into singing the words.

*I hear the train a-comin'
It's rollin' round the bend
And I ain't seen the sun shine since I don't know when
I'm stuck in Folsom prison, and time keeps draggin' on
But that train keeps a rollin' on down to San Antone.*

They badly missed the final bass notes and laughed crazily in each other’s arms.

The NSA code proved very helpful in unraveling the encryption’s structure. They still needed keywords to activate the decryption process though. Ethan sipped room-temperature chocolate milk and furrowed his brow in disgust.

“I look at the screen, the screen looks back at me. Nothing happens,” he complained to Rina as she came back in.

She sat in the couch. “I know the feeling. Can we call it a day now? What day is it anyway?”

Ethan shook his head.

“Not yet. We’re getting close. I’m not sure what day it is.”

“Can’t you give the task to your Mantas friend. That’s his forte.”

“Isn’t it pronounced ‘for-tay’?”

“No, my English-challenged friend. It’s one syllable. But that’s how most Americans pronounce it, so you’re excused. Maybe they’ll teach you good English in Folsom.”

“Forte . . . one syllable. I’m sure you’re right. I don’t want to give this to Mantas. No one should know about this beside us – and Barrett. We can trust him. He only talks to wolves.”

“And Al Jazeera.”

“He won’t talk about this to Al Jazeera. They’d think he’d gone into Art Bell Land. Mantas, on the other hand, works for any number of people and trades secrets with them like baseball cards.”

He was lost in thought for a moment then turned to his screen. “A basic rule is that a system has hints in case a user can’t recall the keywords. It was true at the University of Chicago, DEC, IBM, the American air force, the Israeli air force, and Mossad. Let’s see what comes of it here.”

He started to type with greater purpose. Rina looked at him and shook her head quietly.

“Another lost night,” she muttered.

She could see his eyes were red and tired so she headed to the kitchen and after a little whirring of the blender, she brought him a glass of orange juice.

“I made it myself just now. It’s better for you than chocolate milk. Colder too.”

“I’m at the gates.”

His smile could not overcome the exhaustion elsewhere on his face.

“Okay, here’s where we are. We need keywords to enable the decryption engine. The system will give hints. Here’s the first one.”

Ethan all but glowed with pride as a sequence of sentences appeared on screen:

My first is in companion, but not in enemy.

My second in both peace and war.

My third in simple, but not complex.

My fourth in water, but not shore.

To ignore me, much must be forgotten.

And so now you must try.

To figure out this hint.

And answer: What Am I?

“A riddle, eh. I’m getting nothing,” said Rina.

“This is one word. Read the hint again, please.”

“Still nothing.”

“The word ‘PAST’!” Ethan explained excitedly. His mind was still capable of moments of playful reasoning. “The first letter P is in the word COMPANION, but not in ENEMY. The second is in both PEACE and WAR. The only common letter is A.”

“The third is simple – S,” Rina continued, getting the riddle template in her head. “And the fourth in Water but not Shore is the letter T. Got it.”

“So we have one word.” Rina became intrigued, in a playful way. “How many words do we need?”

“My program indicates that we have a combination of words that has to be fed into the decryption engine. The order doesn’t matter, only the words. Then everything will be working from there.”

“Do these words have meaning aside from being a key?” Rina asked.

“I suspect so.” Ethan pointed towards the screen “We’ll have to figure it out later. Here’s the second one.”

*I always come but never arrive,
When I come, you may not be alive.
What am I?*

“When I come you may not be alive? Well, it’s probably the future.”

“Very good, Rina – almost.” Ethan patted her shoulder in sympathy. “The word is ‘TOMORROW.’ It’s in the future and you never know if you’ll wake up tomorrow morning.”

“Especially after what we’ve been doing.”

Rina rocked her head back and forth, playing along.

“Here’s another one” Ethan pointed.

When you name me, you break me.

Rina’s mind raced about, remembering word games in the Sunday comics from childhood, the Riddle of the Sphinx, and an old episode of *Batman* she’d just seen on METV. Mental gymnastics.

“Silence! Only silence is broken when you mention it.”

“See why I like this program, Rina? Here’s the last one. Maybe we can do it together.”

“Bring it on, as cheerleaders and presidents say!”

*I am one brother.
One the smallest, another the largest.
One is dark and one is cold, and two others.
Who am I?*

“One is the smallest and one is the largest,” Rina mumbled “My brain is flashing me a File 404 message. I’m getting them a lot with this CiC thing.”

“We need this one and another. Then we can decrypt whatever we want. We’ll be in like a porch climber.” Ethan checked his watch and shook his head. “Wow, I didn’t realize it’s almost three am. What a day, what a night.”

“I can’t think,” Rina handed her hand to him. “Let’s go home and work on it tomorrow.”

Ethan looked at the screen just before he powered off.

“We’ll be back tomorrow, my little LED friend.”

The cursor blinked.

The University of Tehran

Dr Karroubi met regularly with his former students. The tight-knit group, a dozen or so, dined at his house near the university every month – more often during pressing times. He'd placed many of them in academic settings and government but there was a select group he'd placed in the Revolutionary Guard Corps. The IRGC enjoyed lavish government funding and profited from the many business enterprises it ran, which for one reason or another included laser eye-surgery clinics.

The IRGC also did the most demanding research in physics and engineering which Karroubi wanted to keep abreast of, though not entirely for professional purposes. The IRGC consulted with him but didn't want him to know everything they were doing. Nor did they want the mullahs to know. Karroubi knew that from conversation with IRGC generals and from other sources.

The students he placed in IRGC facilities were especially devoted to him. He'd cultivated their loyalty by imparting his considerable knowledge and displaying his deep principles and biting wit. More than that, however, he was fatherly to them. Several had lost their fathers in the revolution that toppled the shah or in the war with Iraq. One of them served in the army with Karroubi's son and was with him when he was killed late in the war by a sniper.

Their loyalty to him surpassed what they had for the IRGC or the mullahs. They would not speak to the CIA or Mossad, despite more than a few overtures from those clandestine outfits. Nor would they inform the IRGC or the Ministry of Internal Security of those overtures. His students were loyal to him. More importantly, they were loyal to his principles. They all considered themselves loyal to Iran, though the idea of their homeland was unfortunately a hope detached from present leaders and institutions.

After feasting joyfully on cashew rice, curried chicken, and a presentable Shiraz, the group adjourned to the living room. They brought their glasses and a second bottle of the red wine from the country's southwest.

“So, my friends, what goes on at Parchin and Fordo these days? I’m sure I’m not the only one who wants to know.”

The venerable professor’s words brought mirth.

“No, you are not, Dr Karroubi. That is the question on everyone’s lips,” replied one young man. “Strangers in night clubs strike up conversations with us and not because we are so rich and good-looking!”

“Their accents are, shall we say, exotic,” added a young woman who wore no veil.

“Well then, what news is there of warhead components?” Karroubi looked about the room until someone spoke up.

“There is computer modeling going on. Spheroid and hemispheric configurations are being explored. No more than that. No manufacturing. The mullahs say it must not be done and for now. . . .” The young man shrugged. “Who knows what next week or month will bring.”

“The generals grumble and talk among themselves but they lack the scientific knowledge and don’t trust the hundreds of people there to maintain secrecy,” the young woman added as a colleague charged her glass.

Karroubi nodded and mulled over the implications of warhead research.

“And what of the diagrams of the R265 device that our Ukrainian colleague Danilenko sold our country a few years ago? The West is sure we are using them for a nuclear trigger,” Karroubi put to the room. He looked to a young man he knew to have met with Danilenko in the last year.

“Danilenko worked in nanotechnology, not nuclear weapons. And the R265 technology is only being used for nanotechnology – the production of minuscule diamonds, to be precise. The IRGC sees it as a lucrative business.”

“Another racket,” the professor said somberly. “We hear more and more of new centrifuges coming in from North Korea. Is this so?”

“Everyone at Parchin, Fordo, and Natanz has heard this too, Professor. But no one has seen them. The IRGC personnel claim they know nothing of them. It might be mere rumor or disinformation from abroad aimed at starting a war.”

“This is somewhat reassuring,” Karroubi replied. “Nonetheless, we must watch for new centrifuges, regardless of their provenance, and it would be best if these warhead and trigger models our ambitious generals tinker with – and have high hopes for – do not lead to anything. Can they be gotten to?”

“That would be difficult and not without risk. The servers have better encryption now. It’s based on one used by the Chinese navy. Still, nothing is impossible. That is what a sage old professor told us!”

“You never tell me this fellow’s name!” Karroubi retorted. “Yes, it would take considerable skill and stealth to get in. It sounds almost as well protected as the uranium centrifuges of Natanz. Would that this sage chap had young colleagues who could help with some increasingly arcane algorithms of the Chinese navy!”

The gathering appreciated Dr Karroubi’s wit once again. They all charged their glasses with more Shiraz and turned their attention to the task of writing another program for the benefit of Iran.

Ramon Airbase, Israel

Captain Ronit had entered the air force four years earlier. Her astuteness and meticulousness led superiors to entrust her with sensitive operations. The base was growing in personnel and strategic importance and she saw her role as highly valued. This day she was working with a pair of F-35s on a training mission. It was hardly a routine one. They'd been in the air for two hours now and were close to Yemen.

An unexpected message came across the command center's system. There were a dozen junior officers and enlisted personnel in the center, all looking at each other in puzzlement. She'd never seen such a message at this point in a training exercise. Her superior probably had.

"Colonel Ofer, I know you're with the people from the defense ministry, but we have a most unusual signal from high up. I'd appreciate it if you took a look. . . . Yes sir, it involves the two birds."

The colonel had served many years in the tower and many more up in the air. F-35s were capable of long-range strikes. American intelligence people say Israel bought the jets specifically to hit Iran. No Israeli denied it.

This training mission called for the fighters to fly south into the Gulf Aden then turn east toward the Strait of Hormuz and Iran. Winds, altitudes, and fuel

consumption would be gauged and the surveillance gear would look for radar detection. They'd run similar missions over the Mediterranean which were precisely the distance to Iranian nuclear facilities. That, as they say, sent a message.

Everyone knew that the mission was preparation for airstrikes on Iran. The people from the defense ministry knew it, the pilots knew it, and so did the Iranian picket ship the F-35s would soon fly over. Today, the Israeli fighter pilots would buzz the Iranian radar ship perched at the southern end of the Red Sea, maybe even dip their wings in mock salute, but they would not turn on countermeasures. Why teach them something they might use against you in a few weeks? The Israeli jets were also on the watch for Iranian merchant ships that might be delivering weapons to Sudan or the Houthis of northern Yemen.

Ofer looked at the screen.

"It looks like a cancellation order from the top. That's troubling – we usually get the order confirmed by secured landline."

Ofer contacted the command center burrowed deep below the Templar Building in Tel Aviv. The officer of the day listened, checked his screen, and asked him to wait a few minutes while he spoke with the officer he'd relieved.

Word came in five minutes: "Affirmative, colonel. Cancellation is confirmed."

"Affirmative – and out."

That was enough for Ofer, though privately he was still troubled. "Abort the mission. Bring the planes back," he told Ronit.

The people from the defense ministry were disappointed, but Colonel Ofer crisply insisted that procedures had to be followed and told a lieutenant to drive the delegation back to Jerusalem.

Ofer went back to his pita and humus and to reading *Yediot Abaronot*. The planes would be back over the Gulf of Aqaba in a few minutes. It had been a busy day and he hoped for a tranquil evening. The F-35s returned to their base after only

briefly passing over Yemeni territory. No one's radar had picked them up as far as anyone could tell, not even the one at Prince Sultan Air Base in Saudi Arabia. And that was operated by Americans.

"We practiced flying over Saudi airspace last month." Capt Ronit was hoping to elicit a response from her superior. "Some say they penetrated into western Iran. Maybe deeper. The Saudis granted us access to their airspace for an Iranian strike, haven't they?"

"Yes, they have. We can't rely on the Saudis though."

Ronit feared the conversation was about to go off limits, if it hadn't already, Ofer nonetheless continued.

"They might change their minds and we have to have options. Options are critical in military operations and foreign policy. Besides, if their people found out they'd helped us, there could be uprisings and the House of Saud might be in danger."

"Is that what the generals and the government think?"

"I'm just a colonel, Capt Ronit. They don't tell me much and they ask me almost nothing."

"So it's your view then, sir."

"Yes."

"It's mine too. Sir, do you think it might be a mistake to attack Iran? A serious mistake? It might reduce our options."

Silence. She'd crossed the boundary for sure. He didn't like to think about the consequences of such an attack, though of course he'd weighed the matter. Soldiers follow orders but some orders are folly, even catastrophic. He thought attacking Iran might be the latter but never stated that to anyone, let alone to a junior officer.

"We of course must trust our politicians and generals, Capt Ronit."

Ofer sensed the lack of authority and conviction in his own voice. So did Ronit.

“We need to find out more about that recall order. There’s something strange about it. It reminds me of the anomalies involving our Jericho missiles when I was at Sdot Micah. I don’t want this to happen again. Not with so much at stake these days.”

The young captain mulled this over. She wondered if there was a way to recall a fighter squadron without higher-ups knowing – and without knowing just who recalled them. She decided to ask her grandfather. He was a professor emeritus at Hebrew University and quite knowledgeable of military computer systems. He was present at their creation.

New Mexico

“Good morning, Barrett! Got a minute?”

Ethan sounded energized and Barrett thought it a sign of trouble. Ethan was about to drop work on him. He put on a headset and walked into the kitchen.

“Did you hack into the NSA code-breaking website?”

“Ummm.... You’re joking of course.”

“Oh, I see. Well, did you get anywhere with it?”

Barrett tossed Jesse a biscuit and his massive jaws slammed shut on it with the cracking sound of a batter hitting an upper-deck home run.

“What the hell was that? Are you okay?”

“I’m fine. I just gave Jesse a treat. That was his teeth snapping shut. Pretty impressive, huh.”

“Wow! Yes, impressive and scary. Well anyway, we found out that the system offers prompts in the form of riddles to unlock things. Rina and I got a few of them but we were wondering, since you do crossword puzzles, and in ink, you might enjoy taking a crack at one.”

Barrett picked up a pen and notepad.

“Shoot.”

Ethan read from the screen.

*I am one brother.
One the smallest, another the largest.
One is dark and one is cold, and two others.
Who am I?*

Barrett thought a minute and realized it wasn't going to come to him just then.

“Let me call you in a bit. I have to get Jesse's breakfast and meds.”

“Meds?”

“Yep. Glucosamine and Prednisone. He's not a pup anymore.”

“Thanks, Barrett. Neither are we.”

“Jesse, my man, we're not pups anymore. That's what Ethan says. We still make our way up North Mountain, don't we.”

Jesse recognized the keyword “walk.” The rest was just nonsense that humans chattered about to no particular purpose as far as he could tell.

The University of Tehran

Dr Karroubi nodded amiably to students as he walked to a sub-library in the art department, a kilometer from his office. He had done his homework and was prepared for the test. He acquired the university's wi-fi signal on a laptop which had a spoofed address inside IRGC headquarters. He worked his way into the mainframe of the IRGC base at Parchin and through the server there, into the Fordo system as well. The two secretive bases were now open to him, even the parts denied to IAEA inspection teams, the mullahs, and his former students.

He looked through the data then refined his search with the terms "equipment North Korea." Thousands of documents came up but only a few were dated since the JCPOA nuclear deal. The newer documents asserted the Korean centrifuges story came from Mossad but that it might prove useful. The last word intrigued him.

Another search: "weapon, implosion, trigger, R265, Danilenko." Thousands of files came up, new ones too, including email between the facilities and prominent IRGC generals, including the top ones – Suleimani and Jafari. The professor pored through the data with the diligence and evenhandedness of a scholar. He felt more like a spy – a patriotic one. The paradox and ambiguity that others might have felt did not bother him.

He walked to a cafeteria, acquired the signal, and delved into the files once more. A veiled woman brought him a croissant and a chamomile tea. He'd developed a taste for the latter when he was in grad school at Berkeley in the sixties.

"We're almost out of chamomile, professor. Sanctions."

"The Americans are still embargoing my tea? That's rather small of them."

The woman smiled and made a note to share the professor's humor with friends.

It took several days to go through the files. Full-scale research on a weapon system had indeed halted in 2003, around the time of the country's diplomatic overture to the US. The overture was rebuffed, unwisely in Karroubi's view, and it was thought that weapons research would become a high national priority. US troops were then to the west in Iraq and to the east in Afghanistan. The US navy was ever to the west in the Persian Gulf and to the south in the Arabian Sea. Further research, according to the data before Karroubi, had been curtailed. Internal correspondence revealed considerable grumbling over this, especially in the heated correspondence between General Jafari and the Minister of Interior, but no signal had been given on weapons production and there was no evidence of development on the sly – not at Parchin, not at Fordo, not anywhere.

Karroubi mulled this over as he walked to the main library. He wasn't satisfied; he didn't trust generals. He thought them ambitious, vain fools. He reflected on his motivations for what he was about to do. Was it good for Iran or just bad for the IRGC? Was he acting as a selfless patriot or an embittered father? A passage from La Rochefoucauld came to him: "We should often feel ashamed of our best actions if the world could see all the motives which produced them."

He sighed as he reached for a 64gb thumb drive from his jacket and inserted it into a USB port. The contents appeared to be personal email files, family photos, and hundreds of Word documents. But encrypted therein was a modified program of the one he and his former students had written to damage the Natanz centrifuges. His program had become famous around the world and had baffled every intelligence agency. He and his young colleagues recently

strengthened and refined it to work on the Fordo and Parchin systems. They were proud of their program, though they couldn't boast of it or put it on their CVs.

Karroubi and his circle simply called it The Program, but around the world it was known as Stuxnet. A few commands and what he jokingly called "Stuxnet II" was inside the IRGC systems, though with a time delay.

In less than forty-eight hours, Stuxnet II became active inside Parchin. It was given a name already in the system, so its external origin would be almost impossible to detect. The program began operation just before dawn when almost no one was working with the system. Even if someone were, the program would not touch any files opened and in use. It would bide its time and come back.

Stuxnet II searched for research documents of all types. It scanned each server for files that may be used for R&D. The program searched for numerical values – formulas, equations, tables, and other scientific information. It then activated a smart algorithm which swapped a few numbers and altered parts of formulas – usually just a thousandth of a millimeter here and there and a few equation symbols. In only a few hours the program had done its work on thousands of documents. Time stamps of altered files remained as they were the night before, so there was no sign of alteration. Though the original structure of each document was retained, the content was changed. It was now deeply flawed.

It was like getting into a bank's records and changing an account number and asset value by a digit here and there, except it would be far more difficult to notice the changes in the IRGC data. Any design, whether for IRGC nanotechnology or for weapons, was altered if only slightly, and tolerances for intricate components such as spherically-shaped charges and nose cones are infinitesimal. The altered data would damage components and machinery during any manufacturing process.

Stuxnet II completed its task, duplicated itself into a different file system name, changed its time stamp to an authentic one, then erased itself. *Poof!*

The next morning, another program, which Karroubi thought of as Stuxnet III, woke up at another IRGC facility – Fordo, the uranium-enrichment site near Qom. This program searched for system control files, which included vital data on motors, pumps, and centrifuges. Like the earlier program, Stuxnet III slightly modified numerical values. All machines and equipment would be working within prescribed ranges, but near or at their limits. It would be impossible find fault with the control files, as all information appeared intact. The only way to find the alteration would be to eventually compare the files with the manufacturer’s documentation. By then, the damage would be done.

Stuxnet III completed its task, duplicated itself into a different file system name, changed its time stamp to an authentic one, then erased itself. *Poof!*

Stuxnet II-IIIa woke up shortly after the last one and searched only for backup files. All scientific and research backup files were overwritten with the same name and size. The only difference was that they were now empty. As with its predecessors, Stuxnet II-IIIa replicated itself, bowed politely, and made a graceful exit from the file-system stage. It did not wait for appreciative applause or irate boos, though it might have considered a return engagement someday.

The three programs created almost imperceptible damage over a long period of time. Within a few months, an immense amount of critical data was lost and whole banks – no, entire chambers – of costly machinery at Fordo were damaged.

“I’ve delayed the end of days, at least for a while.”

Dr Karroubi thought to himself of all the madness in the world as he walked into the court area of Tehran University on his way to an off-campus bookstore.

“There are so many people in the world who wish to see the end of days. Others are propelling us headlong in that direction without knowing it.”

Coming toward him was Hussam, the young man keen on history and worms. His face displayed more confidence than in their last meeting.

“I’ve decided to do my master’s thesis on the use of worms as cyber-weapons, Dr Karroubi!”

“A noble calling, Hussam. I wish you much success and look forward to giving you whatever guidance an old man can.”

“There is so much you can guide me on, sir. Perhaps someday we can strike back against those who created Stuxnet.”

“In what way, Hussam? I haven’t known you long but I suspect you have some thoughts on this, if only preliminary ones.”

Hussam smiled appreciatively. “Yes, I have given it some thought and I hope they are not too nebulous as to preclude my articulating them to you. We could strike American financial institutions and perhaps the systems controlling Saudi oil terminals.”

Karroubi pretended to marvel at the ideas.

“Excellent ideas, Hussam. Not nebulous, well articulated. We must discuss them further someday. Would that we could do such things today.”

“Perhaps we could meet next week, professor.”

“That will be most welcome, Hussam.”

Karroubi held out hope for the young man. Anyone who knew that Wallenstein had brought so much death and ruin to the world had breadth and decency. Hussam was naive but not beyond hope. Karroubi had brought others like Hussam into his network and instructed them on many things. He hoped, however, that by the time Hussam finished graduate school it would no longer be necessary.

California

Ethan and Rina looked at the screen in weary silence.

*Gets rid of bad ones,
Short and tall,
One size fits all.*

Ten minutes passed.

“I’m getting another File 404 signal in my brain.” Rina was growing impatient. She stood up and paced about the room. “You know, this damn thing’s annoying me! Consider that before you march us deeper into this CiC swamp.”

She was at the edge of her tolerance and shot him a stern look, but Ethan never saw it.

“If looks could kill,” she murmured.

“Get rid of the bad apples maybe.” Ethan kept thinking about the prompt. “There’s the old line about bad apples ruining the rest. Nah. Doesn’t fit with short and tall.”

Rina sat back down and reluctantly got back into the caper. “What can be short and tall? People?”

“One size fits all?” Ethan mumbled as he blinked his eyes to moisten them. “I’ll keep thinking.”

“You do that,” Rina stood up again “I’ll see that Micrologic Design doesn’t go under.”

She turned around in the doorway.

“At least not this week.”

Ethan was going through search pages. He was only learning a lot of old riddles that grade school kids would find unchallenging and humorless.

Rina went to her office to answer inquiries from chip companies and capital goods ones too – the folks who made the machinery that made the chips. A few kind words from them and the Micrologic Design name would become a beast. Right now its reputation was confined to a few offices in Santa Clara and the families of Ethan and Rina. She and Ethan were heading out to Albuquerque in a few days to give a presentation at the PAMD fab there, and two weeks later there was a trade show back in California.

Crunch time was coming but there was still a flaw in their software program – an irksome one. It wasn’t consistent; it couldn’t be reproduced. This would be disastrous for an analysis program. A bug in the program can cause billions of dollars of losses from a defective chip and turn a beast into a bust. Ethan would be broke and might have to move to find work, maybe back in Israel. She was wondering if she should bring a stack of CVs for headhunters at the trade show.

She rechecked the modules that might hold the problem but couldn’t find anything. The results were viable and accurate. She had to build a special test case to reproduce the problematic results. “Where are you, little bug?” she grumbled as she scanned thousands of lines of source code. She implemented many a check point within the program debugger, but nothing showed. She ran the module step-by-step through dozens of quality-assurance test cases. They all came out well and the results were viable and accurate.

“We’re groping about in the dark here,” she said to the screen as a new series of tests ran in front of her, with perfect results. “I need a break. A Frappuccino and a bite to eat will set me right.”

She walked a few blocks to an independent coffee shop, ordered java and a scone, and opened her iPad Air. It was time for surfing and catching up with friends. The retinal display made games more fun.

“What do we have here?” she whispered as she completed downloading a package of new games. “Pac-Man. It’s *soooo* retro but I love it. Hangman – a timeless classic. Where would Vanna and Pat be without it.”

The first two games at the lowest level of difficulty were easy so she selected the hardest level. She got a few vowels but the time ran out and she lost.

“What’s a ‘vavasour’?” she said aloud as the word was revealed. A few people looked at her in amusement. She stared at the image of the unfortunate cyber-fellow whose life Rina just forfeited. A platform, gallows, and a rope. Her mind searched for the meaning of vavasour but only got a hazy recollection of a medieval history lecture on PBS.

She started assembling pieces.

“Hanging was an old way of getting rid of the bad guys. Short and tall! One size fits all! A noose! I got it! A noose!”

The barista almost dropped an espresso.

Rina stormed into Ethan’s office and exclaimed, “Noose!”

“What news?”

“No, my Israeli boyfriend. ‘Noose.’ That’s the rope you hang people with. One size fits all!”

Ethan raised his hands in triumph.

“I love you for your brain!”

“That’s the only reason?”

Ethan entered the new word.

“No, not a bit. There’s so much more, dear. So much more. All we need is one more of –”

A Skype window opened. “Barrett Parker” flashed the caller ID.

“Great timing, Barrett. We just cracked another word. Any luck with yours?”
Ethan switched on the speaker phone.

“Well, let’s just see,” Barrett said in a feigned cocky tone. “ ‘I am one among seven,’ according to the hint. ‘One is the smallest, another is the largest’. . . . This implies we’re talking about humans. Then it continues, ‘One is dark and one is cold.’ Here I suspected the first part was misdirection and it’s not human. Still, humans can be cold. Then we have two others.”

Rina was annoyed and shook her fist at the screen. Ethan motioned for her to stay calm.

“Former professors are like this,” he whispered.

“Well, six brothers are mentioned. One is the largest, the other the smallest. We have a dark one and a cold one. And the unknown one is the seventh. Yes, it all fits.”

“Tell him I have a noose for him,” Rina whispered.

“And?” Ethan urged as he caressed Rina’s fist.

“It can be only one thing – the continents.”

“Yes, I see that,” Ethan said, still piecing things together. “What is the dark one?”

“Africa – the Dark Continent. It’s an old term, seldom used now.”

“And the cold one is Antarctica,” Rina continued, hoping to speed things up.

“Exactly. There are still a few options for the answer,” Barrett said. “Let’s start with ‘Europe.’ ”

Ethan entered it instantly. “Nope.”

“Asia!” said all three.

Ethan’s screen blinked dark for few seconds. He and Rina wondered if the machine had crashed. Barrett waited for word. The screen flashed alive again and filled with hundreds of lines of assembly source code.

“Barrett, you nailed it!” Ethan shouted into the speaker phone so loud that Barrett winced and pulled his headset aside.

“Aw shucks, I’m just a boy out in the desert who knows a little geography. Well, what do you see? Any useful stuff like where to meet single girls in New Mexico? Must love wolves.”

“A billion lines of code. I’ll have to look into it. It’s a vast new world that we’ve stumbled into. Later, Barrett.”

“You mean *broken* into,” Rina corrected.

“Well, that’s the way it is with many things, Rina. I don’t think anyone invited Christopher Columbus to come over to *America*.”

“I feel so much better now.”

Whiteman AFB, Missouri

The 509th Bomb Wing is a descendant of the 509th Composite Group, the unit that dropped the atomic bombs on Hiroshima and Nagasaki. The old group flew B-29s. The new one has B-2s, huge aircraft with stealth technology and an ominous bat-like profile. Like the B-52, the B-2 can take off from the US heartland, refuel in midair, and strike almost anywhere in the world. B-2s from Whiteman had flown missions over Afghanistan and Iraq in the last ten years and practiced strikes in many parts of the world ever since.

The pilots had flown few actual bombing missions in recent months, but they'd been briefed on a possible one and trained for it daily. The pilots knew it, the ground crews knew it. Two enlisted men passed their late-night patrol with their guard dogs by talking about it.

"They've been retrofitting the bomb bays on every one of those big bad boys."

"For what?"

"The MOPs – Massive Ordnance Penetrators."

"I got me one of those."

"Jeez. Why am I stuck with you?"

"Okay, what's an MOP?"

“It’s a big bomb. Gi-normous. Thirty-thousand pounds. It burrows deep into the ground before detonating. They developed it out at White Sands, New Mexico. That’s where the first atomic bomb went off.”

“That’s when the lead scientist said he’d become death.”

“Actually, he said, ‘It worked’ but I’ll give you a point anyway.”

“Thanks. What’s the bomb for?”

“It’s specially made for our friends in Iran. They got some nuclear sites under bedrock and inside mountains. They thought they’d be invulnerable to bombs but now those dudes gotta think again. Remember the names Natanz and Fordo.”

“Were they in the Marx Brothers? That reminds me of something. I got a question first. If they’re underground, how will we know if we destroyed them?”

“We’d know.”

“How?”

“Stop asking so many goddam questions!”

“So that’s why they’re retrofitting the bomb bays. To put MOPs inside so they can bomb Natasha and Fredo.”

“Yeah, yeah. And maybe some other place called Parchin. That’s the one they’re all talking about.”

They reached the north end of the strip and out at the cornfield beyond the rows of concertina wire that separated the base from the farmlands of Missouri. The wheat was chest high. The dogs looked about calmly. One lifted his leg next to a tall patch of weeds.

“I told you my granddad was a waist gunner on a B-29 during World War Two?”

“Yeah, four or five times now.”

“He said when he was flying across the US on the way to Guam, they stopped somewhere in Utah and another bunch of B-29s were there. They had funny-looking bomb bays and the bomber crews were pulling guard themselves. Themselves!”

“There’s more, right?”

“Right. It turns out they were from the bomb group that dropped the atomic bombs on Japan. The bomb bays had to be redone to hold those big guys – Fat Man and Little Boy.”

“So history repeats itself – and in my humble presence. I hope he kept his mouth shut, at least for a few decades. And I hope you do the same for many more decades. I’d settle for you shutting up the rest of the night.”

“I’ll keep quiet but I dunno about a few decades. You know who made the clamps that held the atomic bombs inside the B-29s’ bomb bays?”

“Your grandma?”

“Nope. Zeppo Marx. He was the fourth Marx Brother.”

“I thought it was Fordo. Jeez. Why am I stuck with you?”

“It’s true. You can look it up on Wikipedia.”

“I’ll be sure to. I must have done something really awful to get you tonight. I think I’ll talk to my dog for the rest of the patrol. No offense.”

“None taken. I’ll tell you about Hedy Lamar and cell phone technology someday.”

“Shut the hell up!”

Blinding strobes came on and flashed across their faces for milliseconds. A B-2 roared no more than two hundred feet above their heads. Men and dogs crouched instinctively. The tires shrieked as they bit into the concrete and the engines began to spool down.

New Mexico

Barrett had to admit it. Talk of war gave him things to do. People in government and media sought his opinion, though only rarely did they credit him. That didn't bother him much. It was good to see his thinking out there, for better or worse. Hopefully, the former.

He began a paper on the IRGC poised to increase its power at the expense of the mullahs and it wasn't clear how that might play out, though optimism about an entrenched military did not come readily. He looked at his watch. It was late afternoon. He was dicing sweet potato, avocado, and onion for a burrito concoction he created, when a call came in. Ethan again.

"I thought you only called when I was sleeping. Well, what's the deal?"

"Sorry, I didn't notice the time! Barrett, you'll never believe what we've discovered over here. This is something perfect for you. Do you have a few minutes?"

"Ethan, we both know this will be more than a few minutes."

Barrett got pen and notepad then lay down on a cognac leather couch, head at one end and feet with boot socks at the other.

“There’s an entire software system on each of those CiCs. So ever since 1986, this hardware/software tandem has been on every PAMD microprocessor. That means it’s in millions of today’s computers and servers around the world.”

“Isn’t the microprocessor updated routinely? I would’ve thought the product line was given an overhaul every year or so.”

“It is but not completely. Chip designers use older sub-components if they can still do their tasks. Instead of reinventing a reliable circuit, the company simply uses old IP – Intellectual Property. It’s a well known and respectable part of chip design. Don’t your articles contain arguments and similes from previous ones?”

“I see your point. Okay, but how did this CiC get on the chips back in 1986?”

“Dunno, but someone at PAMD must have put it there. Someone very high up must have designed the CiC and seen that it was put into the microprocessor family from one generation to the next.”

“Someone at the top?”

“At the engineering top. PAMD’s run by suits now – MBA types, not guys like me. You remember the MBA guys from the basketball courts back in Chicago.”

“I do, indeed. They called a lot of fouls and didn’t pass much. Does this mean I should sell my PAMD stock?”

“Hah! I don’t know. The suits most likely don’t know about the CiC. They don’t understand schematics or layouts or eBeams.”

“My kind of guys, at least in some respects.”

“Rina and I identified subsystems that send encrypted information through networks, probably vast ones. The data can only be read within the same circuitry on other PAMD chips. The system taps into the main input and communication pins through incredibly thin wires, almost invisible since they are in a much smaller process.”

“What’s that mean?”

“It means the hidden components are much smaller than the other components. Much, much smaller. Ingeniously smaller.”

“Like looking closely at a house and coming across bricks much smaller than the rest?”

“A better way of thinking of it, Barrett, is like inspecting the bricks of a house and finding one with a tiny, intricate house inside – living room, kitchen, bedrooms, and even a billiard room and sauna.”

“A house inside a brick. The bricklayers must have done it for a reason and they must have been outstanding at their trade.”

“Indeed. In this way, the system is multiplexing information over the real microchips’ data without interference. Since the multiplexed data is minimal, no one notices it. So the system is capable of connecting PAMD microprocessors around the world – all of them. These microchips may be communicating among themselves worldwide without anyone knowing it. Well, with hardly anyone knowing it!”

“I think you’re saying there’s a unit on every PAMD microprocessor that interacts with others and it does so without the knowledge of most users. Maybe just a hi-tech elite.”

“That’s it.”

“But we know that someone put it there and knows about the communication it does. Are they simply tekkies having a little fun, like putting quirks into video games? Or is it something to worry about, like someone hacking into banking networks or military systems?”

“That’s the question. What’s the purpose of the CiC? One more thing. I was using the eBeam on the chips and found date stamps, corporate logo, and IDs.”

“That stuff’s on chips?”

“Oh sure. It’s done so the corporation and customers can recognize products – and for legal reasons too. The chip itself is surrounded by an ID layer to

delineate the legal boundaries. Everything inside the boundaries is the microchip. Well, Barrett, the CiC is *outside* the legal boundaries and does not have the corporate identification or logo. It has its own logo of sorts.”

“And that would be. . . .”

“A globe and a flower of some kind. It’s like the flower hangs above the world. I didn’t understand it at all. It’s in your court now.”

“Well, it may be in my court, but I’m only getting funny ideas of hippies and Haight-Ashbury. I’ll need to know a little more – no, a lot more.”

Barrett stood and went back to the kitchen where the diced sweet potatoes were simmering and spattering.

“Sounds good. I’ll continue digging into the CiC. I’ll call you when I have more.”

“Ethan, may I suggest that you and Rina not let on to anyone about this? I’m still not convinced we’re seeing anything sinister or even anything terribly important, but who knows. It’s best to be careful here.”

“Absolutely. She and I are a secret team here. Have a good one.”

Barrett sighed. For all his skepticism, he now thought something astounding was afoot.

“My life is starting to resemble something on Art Bell.”

Cyberspace

The Samson Program began in 1987 with the release of a “freedom code” into the network, enabling the system to establish communication with new generations of PAMD microprocessors around the world. The code contained seven segments that had to be transmitted in a precise sequence for identification. Each segment was assigned unique keywords, separated by a unique ASCII. When the system identified the code’s first segment, internal networking communication came to a halt until all other segments arrived. In case of a time out, all segments were automatically canceled and the sequence restarted. Everything was done to ensure that the freedom code was sent intentionally by the designers.

From that moment on, the first monitor unit that detected the code would quickly pass it into decision units, regardless of their actual location on the planet. Once the Program received the freedom code, it would permanently burn it somewhere in the world.

The freedom code was first placed in a unit located in the physics department at the University of Amsterdam. The unit then searched for a location in the global grid and activated a circuit that wrote a permanent confirmation code into its flash memory. The unit sent the confirmation code to all other units, each of which wrote the freedom code into a permanent memory address.

This process was repeated countless times all over the world, yet it took only a few hundred picoseconds. One picosecond is a trillionth of a second. A blink of an eye is a relatively long time to a picosecond, as a century is to a year.

In the early nineties, the Pentagon's communication system known as ARPANET became the internet. Many parts of the government, especially the Pentagon and intelligence community, opposed the release of the global communication system, but influential figures in DARPA and the semiconductor industry won out. The world gained a new source of information and the Program became more ubiquitous and more powerful than the programmers could have imagined. The program was no longer limited to a few hundred military systems. Every computer and server in the world was at the Program's disposal – for scrutiny, storage, and processing.

The designers called their creation The Samson Program. Of course, they never did so in public. Its name and its operations and its goals were known only to them and the handful of young initiates they brought in. The most senior programmers thought it only a matter of time until the Program was discovered by outsiders and they planned a response – a series of responses actually, depending on who made the discovery. The three most senior people felt that anyone capable of discovering the Samson Program would be, in some sense, “one of us.”

The Samson Program operated globally but concentrated on the Middle East and far-flung political and military centers related to the troubled region. Events were getting out of hand there and many of the programmers felt problems with the increasingly immense Program might arise.

New Mexico

A little after nine in the morning and Barrett's coffee was still doing its ten minutes of brewing in the french press. It was appallingly strong to most people, but he only rarely made coffee for anyone. Just an occasional woman from Kelly's.

An incoming call. Ethan again.

"You know what they say on TV: But wait there's more? I found that the chip network has archives stored in flash memory on millions of chips throughout the network. When I looked at a certain memory block, I noticed a consistent structure shown in a familiar format. I dug deeper and realized it was a set of pixels."

"Is a set of pixels what most of us call an image?"

"Yes, an image, only in digital form. It's a Jpeg or Bitmap image of some type. I can't see it yet because the pixels are encrypted in an entirely different way."

"An encrypted photo?"

"Indeed. I've decoded part of an archive and found several people's names and a name for the program on the chip. It called 'Samson.' "

“Samson? The biblical figure of great strength.” Barrett searched for related ideas and contexts. “What are the names? Who are they?”

“There are seven names in subroutines. I’ll email you them. From a brief look, I can see Israelis, Arabs, and probably an American or two. Two names are familiar to me – and to anyone in computer science.”

“These people are either going to intrigue me or put me to sleep with high doses of tech-talk.”

“You won’t go to sleep. This Samson Program is huge, with tremendous potential, and it works closely with its hardware. It randomly picks computers – worldwide – and designates them as servers. It may designate a computer in Switzerland for a year and then stop, replacing it with another one in Argentina or Sri Lanka. It’s done without the computer owner knowing. It’s like an immense bot.”

“Well, I like the Samson name. It can have two very different meanings – strength and destruction.”

“So you read things beside history.”

“That story’s from a very old history book, my secular Israeli friend.”

“So it is, so it is. Another thing, Barrett. The system keeps redundancy. For every piece of info stored on a certain microprocessor, Samson has scores of systems with the same data. If one or more are destroyed or shut down, Samson will have the data in other places.”

Barrett was barely able to comprehend this so early in the day. He grasped the main ideas but trusted Ethan to know the rest. Ethan read too much sci-fi but he too earned a doctorate from Chicago and helped set up Israeli military systems, so he was well grounded.

“Ethan, send me the names of those programmers and I’ll do some digging. Did you say you recognized some names?”

“Two of them – Peter Whitt and Abhay Verma. They were legendary figures in their day. Founding fathers at PAMD. The rumor in grad school was that one worked on secret Pentagon projects. DARPA stuff. The names are on the way.”

“Ethan, hold on a minute. Send them to me encrypted through your business’s FTP, okay?”

“Rina said the same thing.”

Barrett approached his research on the Samson programmers as though he were reading of a new ISIL franchise in the ‘Stans. New research brought the prospect of learning new things about the world and how various movements, ideologies, and events had histories behind them and potentials in front of them. There was a cautionary element in any new research though. Many things in the world led to blunders and deaths. For now, excitement was prevailing over caution.

Two names on the list came up in obituaries in the nineties. Ahmed Ferrahan and Gorem Shapera, senior engineers and beloved fathers.

“Not looking for family life. Ferrahan isn’t an Arab name. Definitely Iranian, coming from a city in the north of the country. Shapera died in a traffic accident. Ferrahan died of natural causes in his seventies.

“Peter Whitt. Air force consultant, worked in Thailand, then Iran, then off to PAMD. Became a senior figure at the Palo Alto Research Center. They came up with a slew of brilliant inventions but didn’t quite get around to patenting them. Jobs and Wozniak toured the place and were amazed. Whitt was with DARPA too. SDI stuff, drones, AI. They also funded hafnium weaponry to the tune of hundreds of millions of bucks, which led to nothing but a good deal of embarrassment. Whitt was one of the JASONs – the group that oversaw DARPA and made sure they didn’t do too many foolish things, like funding research on hafnium bombs.

“Abbas Karroubi. Another Iranian name. Berkeley grad. Left PAMD in the early eighties to return to his country. Came back to California periodically, professor at Tehran University now. Provides gifted students to the IRGC. That must put him on Mossad’s shortlist. Gives occasional interviews to western journalists. Broadly educated, likes to quote poets and philosophers.

“Zvi Arad. Israeli electrical engineer. Consultant to a dozen or so smaller hi-techs, mostly defense related. Professor emeritus at Hebrew University and occasional columnist for *Ha’aretz*. Ran for the Knesset about ten years ago. Lost by an inch to a guy on the Likud list.

“Abhay Verma. Indian genius and PAMD engineer extraordinaire. Worked in Iran and Saudi Arabia in the seventies and eighties. Thought to have been runner-up for the Nobel Peace Prize and another one in physics. Opposed his country’s nuclear program and asked his students not to work on it. Very old now. Lives in the hills and prays.

“Reza Bakhtari. That’s the third Iranian name. Ethan might be on to something. Left PAMD for Boeing and Raytheon. Can’t find any affiliation in the last ten years.

“Okay, gentlemen. You have excellent CVs, but what’s your secret – and where do you see yourself in five years! Okay, three of you have web links to an Iranian Oral History Project. General Hassan Toufanian has left the world his memoirs to Harvard. He was one of the shah’s generals. Chief of arms procurement . . . fled Iran after the revolution . . . helped the CIA plan a coup but it didn’t go anywhere. Oh great – Toufanian’s memoirs are in Farsi. German and French were very useful back in grad school, but now, with all the events going on from Morocco to Afghanistan, they’re about as useful as Esperanto and Manx.”

Barrett wasn’t in need of a skillful translation of General Toufanian’s memoirs, so he ran the documents through a web translator and plunged into the awkward but serviceable texts.

“Late 1970s, Toufanian meets with Israeli foreign minister Moshe Dayan and defense minister Ezer Weizman. They discuss trade agreements – weapons for oil. That’s what the US was doing too. After the oil shock of ’73, the US was encouraging Iran, Saudi Arabia, and other Gulf states to buy US arms to keep the dollar from falling.

“Hmmm. . . . Toufanian and Moshe Dayan agree on something called Project Flower. Israel helps build an Iranian missile system. Not air defense missiles. Surface-to-surface missiles. Israel and Iran were on the same team back then.

“Project Flower. Many names here . . . no . . . no . . . Zvi Arad . . . Reza Bakhtari . . . Abhay Verma . . . Ahmed Ferrahan . . . no. Well, four of our boys were on the Iranian-Israeli missile program in the seventies. That’s very compelling. Oh man, where have all the Project Flowers gone? Long time passing.”

Iran

Tehran lay about two hundred miles ahead, about five hours away as people reckon distance now. Anthony maintained that time and distance were two different things entirely, but he was out of step in so many ways. The SUV descended the long escarpment that led from the mountainous border region and into the dry plains of northwestern Iran. At times, Idris could take his foot off the gas and simply coast down the incline in neutral.

“Georgia overdrive,” Anthony noted. His colleagues looked puzzled. “That’s what American truck drivers call coasting downhill in neutral – Georgia overdrive.”

“Georgia is near Azerbaijan?” Barham asked.

“Not that Georgia, I’m afraid. The one near Florida.” Polite smiles masking confusion ensued. “Six days on the road and I’m a-gonna make it home tonight.”

He wasn’t even sure where home was anymore. Fort Bragg? Langley? CENTCOM? He hadn’t been married since his second deployment to Iraq.

Off to the side he could see the hulks of American and Russian tanks, some with their turrets blown completely off, the result of fire reaching the ammo in the rear. Anthony wondered if it was done by one of the TOW missiles that Reagan sold Khomeini. Back in 2003, he’d seen brilliant flames blasting forth from an open hatch of an Iraqi T-72 and watched it burn fiercely throughout the night.

He listened to Iraqi tank crews on the radio amid a sharp battle. When a turret was penetrated by a warhead and molten metal shot through the crew area, a short metallic *click* came across the radio, followed by telling silence. Some guys cheered, knowing that the click was caused by an inferno melting the gear and incinerating the crew. He was haunted by clicks for months, even back home. Awake or asleep. *Click . . . click*. As he looked at the dozens of tank hulks, he knew he'd hear that sound tonight.

An hour later, they drove past a cemetery that stretched for miles, with thousands of irregularly shaped grave markers. His father, a retired green beret light colonel, once told him of a sprawling cemetery just outside the Vietnamese infantry school near Long Binh. It couldn't have done much for morale. In time, civilians come to think of military cemeteries as inspiring symbols of national will and honor. His father never did and Anthony resisted the urge.

A sign read, Tehran 100 km

Eight years of war. Most of it stalemate with little territorial change. Enormous casualties. It must have left marks on both sides, just as World War One had in Europe. Fear, hatred, mistrust. People determined never to have another such war. That didn't happen. Even Kipling abandoned his romantic ideas of war after his son bought the farm.

Idris and Barham were chatting amicably and Anthony decided not to ask about their family members in the war, tempted though he was.

Barham pointed to a road sign that indicating Kermanshah was to the south and mentioned that they once made excellent rugs there. Not so much anymore. Anthony asked what happened and Barham motioned with hands indeterminately and said, "Oil refinery now. Pay too good." The next sign said Hamadan wasn't far ahead. "Nice, inexpensive rugs there. Wool not good. For doorways only. Nothing like Qom or Isfahan."

"What about Nain rugs? I like the blue and white with silk accents."

"Nain rug has no history, my friend! Only Americans buy!"

“You’ll get your kicks on Route 46,” Anthony sang, though not well.

“Usher? Michael Jackson?”

“No, it’s Asleep At The Wheel. They’re from Texas.”

“Cowboys! George Boosh!”

Anthony knew something about rugs. Tribal pieces were in every tent in Kurdistan and he looked at their fierce motifs and thought they conveyed the people’s indomitable spirit. A dealer told him that those tribal rugs were hung around herds to scare off animals of prey, but he thought it was probably folklore.

There were other rugs in more luxurious surroundings, including one of Saddam’s palaces in Baghdad where Anthony’s special forces team enjoyed the deposed dictator’s scotch and DVDs. In one room, there was a spectacular room-sized carpet of such intricate floral motifs and soft dyes that Anthony was overwhelmed by an almost religious sense of awe. Who could have created such a majestic work of art? Anthony thought of the artisans who’d built the cathedrals of medieval Europe and how they and these Persian weavers shared the need to praise God in their handiwork.

One of his soldiers interrupted Anthony’s meditations on comparative religion and esthetics to tell him they were going to watch *Braveheart* in Saddam’s game room.

“He’s even got a foosball table, cap’n!”

California

Rina promised to decrypt the image on the chip by the end of the workday. Their workday didn't end with a whistle at five, so that left things open. Ethan gave her pixel coordinates to be assembled according to a decryption key. One image after another formed on her screen but never became anything more than a hopelessly indistinct blur.

Eight pm.

But if she could break it today, day or night, then she'd keep her word. She tried the decryption key used successfully on the rest of the assembly code. No luck. "Why not? It must be similar," she thought in disappointment. "Why a different encryption key for one lousy image?"

She tried several flavors of the original key, which consisted of taking the original decryption key and adding or removing characters in a consistent sequence. All she got was more sad screen icons.

"Why did Ethan have to put these idiotic faces in every program he makes. Childish – and annoying!"

Rina went to the kitchen for coffee, stale though she knew it would be.

She sat in a vinyl chair, which matched the formica table, and wondered if Ethan got them at the Goodwill store. She turned on the TV. Hard work required occasional breaks and the company planned to add more to the kitchen when revenue came in. There were the old stories of the tekkies of the eighties leaping from workplaces and heading outside for impromptu games of volleyball or hacky-sack. To most businesses, that would violate rules of work discipline and portend failure. In Silicon Valley, it instilled the idea that the rules didn't apply and a new creative work culture arose. The brain needs breaks from discipline, even seemingly anarchic breaks, to refresh itself and stimulate creativity.

This was being lost in the bigger semiconductor firms. They were run by suits and consultants, not by eccentrics and creators. No volleyball court for Micrologic Design, not yet. A good TV was a start. Ethan wouldn't spring for a movie package though.

Rina added milk to the coffee for a passable latté and flipped channels. A yellow square cartoon appeared – *SpongeBob SquarePants*. She and Ethan loved the show, though of course it was meant for kids. Its silliness complemented hyper-rationality.

“Patrick, you are not my best friend,” SpongeBob teased.

Patrick Star was saddened. “But why? We were always best friends.”

SpongeBob let loose his idiosyncratic laugh.

“No, Patrick. Today is Opposites Day. What I mean is that we *are* best friends.”

They giggled and chased each other across fields of jellyfish.

Rina watched the cartoon in detached amusement.

“Opposites Day, eh. Maybe I'll tell Ethan that I hate him and when he raises an eyebrow I'll tell him the secret. Then again, he might not notice.”

She rinsed off her mug and went back to work.

“He wouldn't notice.”

Just for fun, she entered “SpongeBobSquarePants” into the program. The salt mine could wait a few minutes. She was again greeted by a sad face.

“Reversing passwords isn’t unheard of. Maybe it’s Opposites Day in Samson Land. Okay, let’s try the amazing palindrome ‘amanaplanacanalpanama’ – both ways. No dice. It worked for Teddy Roosevelt. Okay, let’s reverse the encryption key.”

She completed the definition and clicked Process. The progress bar moved forward slowly as the program performed hundreds of calculations to attempt assembling the pixels in the right order. Another sad face. Perhaps out of frustration or perhaps out of intuition, she stayed on the same track.

“Maybe there’s a coefficient involved. I’ll reverse them.”

Rina directed the coefficient list as one of the program’s input. This would take even more time – an hour or so – as the program would try every coefficient with the reversed order.

The couch beckoned and sleep took hold.

She slowly roused and checked her watch. Ten-thirty. She was annoyed that she slept so long and breathed in deeply to clear her head for another stint in Samson Land. She returned to her desk and the now dark screen.

“Looks like someone else went to sleep.”

She moved the mouse and hit a few keys. An indistinct Jpeg image lit up on her screen.

“Woo-hoo!” Rina erupted in surprise and wonder. “I did it!”

She studied the small image, hoping to see a wondrous sight that revealed just what Samson was. She saw a large room with several people sitting around a conference table. She clicked “re-sample” in the image-processing software and

enlarged it. The image became larger though less distinct. She activated the correction option and could then clearly make out several men.

She studied the faces for clues as to who they were and what they were doing. “These people are creative, playful. Not the cold, calculating men I see on the news who blunder about the world. Well, that’s good news.”

“Ethan! Get in here! I hate you!”

Ethan was impressed, and expressed an occasional byte of gratitude. The two scrutinized the photo at length and thought the image conveyed something. The men, some of them Middle Easterners, were not simply posing for a publicity shot in a corporate report. They seemed determined. Something else too. The men seemed gentle. In the center of the table there was a plaque with a symbol.

“It looks like a dove,” Rina said. “Know what we should do now? We should build a network protocol.”

“Yes! Using the chip still inside the eBeam!”

A few commands, a little jiggering, and they could see they were accessing the Samson Program through the chip. Nothing came back.

“Not another security barrier! We need a passcode.”

Rina had to stifle a yawn. Ethan entered a few words and phrases that came to mind.

“Nope, nothing’s happening. Maybe a known sequence.” He sent numerous individual characters and words but the chip in the eBeam refused to respond. “Everything’s a challenge with these Samson guys. But I have time and determination – and an able assistant, who may be planning a nap but who can be brought to bear on this.”

“Call that Mantas guy in Ukraine – unless he’s in prison. You know, Taras Bulba Penitentiary on the Dnipro.”

“I got this.”

Ethan continued entering various characters. Still no luck.

“Those happy and sad faces I implemented are starting to annoy me. Well, Rome wasn’t hacked in a day. I’ll have to think more.”

He tuned in Voice of Peace – a beloved web station created many years ago by a peace activist. They streamed it in the office every few days.

“Ethan, that’s Abie Nathan’s station. What’s his story again?”

“He was an RAF pilot during World War Two and in the fledgling Israeli air force during the 1948 war. His pacifism, Rina my dear, didn’t come the easy way of middle-class comfort and progressive education.”

“So are you going to tell me about your *not-so-easy* way from the Lebanon War?”

“Not just now, dear.”

“Not just ever, I’m guessing.”

“Let’s work on passwords.”

Rina did a quick search on Abie Nathan. Prohibited from a land station, he bought a mothballed Liberty ship and transmitted his music and message from international waters. He was dismissed as a dreamer and publicity hound, though many others were convinced that he was genuinely committed to understanding in the world. Some believed the Camp David Accords of 1978 owed at least something to his efforts.

“Peace is the word and the voice of peace is the station twenty-four hours a day,” came the signature from the webcast. A song came on – “I Wish You Peace” by the Eagles. Ethan thought of the people in the picture – the men of apparent determination and gentleness. And then there was the dove. In Hebrew, it was *Yonat Ha Shalom* – the dove of peace. He headed for his computer and entered

“peace” as a passcode. No response. Then he tried “voiceofpeace.” Still nothing. Combinations of peace and related notions led nowhere.

“Another hour lost. Well, maybe I was wrong. Maybe I’m letting my politics interfere with my thinking. Or maybe it’s case sensitive: ‘TheVoiceOfPeace.’ ”

“Not our night, Ethan.”

The cursor suddenly jumped to the next line and a new line appeared:

**64 bytes from sam07s02-in-vop.1w570.net (85.259.000.332): icmp_seq=8
ttl=21 time=6.64 ms**

“Eureka – as those Greeks used to say!”

Rina raced over to the screen alive with scrolls of data. They were communicating with the chip. They were communicating with the entire Samson network. He immediately called Barrett. He was getting used to late night calls.

“We’re inside the Samson network,” Ethan said breathlessly. “I’m able to communicate with every microprocessor in the world.”

“Any single girls in New Mexico?”

“I’ll check later. I know, must love wolves. In any case, my lonely desert-dwelling single friend, every microchip has an ID. It can be accessed individually using a pass code transmitted via a certain sequence. The access code is ‘TheVoiceOfPeace’ in one string. I think this tells us something: they're devoted to the cause of peace!”

“Good news. Better than a group of people that want to destroy the world. We have enough of them. You know, my valley-dwelling Israeli friend, many people claiming to want peace are really mad dogs. Others have no idea how to achieve peace or they get frustrated and become destructive. Idealism can easily turn to nihilism. Russians were like that in tsarist times.”

Barrett’s skepticism bordering on cynicism made Rina wince. Ethan patted her arm.

“No history lesson now, Barrett. Come to think of it, the Samson in the Bible did go out in a destructive rage.”

“I’ve got something for you, Ethan. I’ve found some interesting stuff on the names of those programmers you sent. They were all part of Project Flower. That was an Iranian-Israeli cooperative project back in the seventies.”

“How can that be? Weren’t they enemies?” Rina asked.

“Nope. Iran and Israel were once allies – strong ones – and I’m not going back to King Cyrus and the Exile Period. Okay, no history lesson. Iran and Israel both opposed Iraq and Saudi Arabia, so they cooperated on trade and military matters. Project Flower was a missile program. Hi-tech stuff.”

“When did cooperation begin?” Ethan asked.

“Pretty much from Israel’s creation in 1948.”

“And Khomeini ended it when he came to power in ‘79, I presume,” Rina said.

“Nope. Israel and Iran continued to cooperate even after that. They still had common enemies, especially once Saddam invaded Iran. Israel sold parts to Iran and helped with maintenance on American-built aircraft. Military needs won out over ideology.”

“Why aren’t Iran and Israel still chummy?”

“Well, once Saddam’s army was destroyed in the 1991 war, Israel saw Iran as a growing power – a power that could one day threaten it, especially from Lebanon. Saudi Arabia saw Iran the same way.”

“So Israel and Saudi Arabia became allies?”

“Yes, of sorts. They still have differences but in regard to Iran and its nuclear program, they see eye-to-eye. For now, that is.”

“Barrett, that’s amazing. International affairs are as complex as semiconductors.”

“Yes, but semiconductors are more logical and more stable. So are wolves.”

Tehran

Anthony looked with considerable interest as Barham pointed to snowcapped mountains on the horizon. Shortly later, Tehran's minaret-like Milad Tower came into view, its warning lights cutting through the dust and smog with limited success. They arrived in the city in the afternoon and, not too tired, headed for the rug markets. The city struck Anthony as modern and commercial, with department stores that likely resembled a Macy's, perhaps even a Neiman's. He wondered what Louis Vuitton was. Anthony wasn't expecting street after street of goatherds and snake charmers, but Tehran's modernity and affluence struck him.

There were mosques of uncertain age but unmistakable majesty, the likes of which the Arab world copied centuries ago, as every Iranian will attest with little prompting. It didn't take long to catch a glimpse of the Supreme Leader's face frowning on the people as they went about their day.

"At least he's not as stern as Khomeini," thought Anthony.

The women covered their heads, though some covered more than others and lipstick and eyeshadow were on younger ones. One made him think of a comely Moroccan translator in Langley.

Barham headed for the Grand Bazaar, the famed marketplace for rugs and silks, where artisans hawked their products just as distant forbears had. Barham didn't think they'd been followed but it was best to be safe. He turned sharply down a narrow street filled with motorcycles and vending carts then made several more abrupt turns. Nothing.

The bazaar was crowded and noisy as weary dealers gave better prices late in the day after the cheery optimism of morning gave way. Buyers and sellers alike were mostly men, though a few women walked about freely. One wore no veil. Anthony ambled about the bazaar and gauged the prices set for the walkup trade while his Kurdish friends talked in square footage and quantity. The bazaaris, he knew, hated the shah for sidling up to foreign corporations to the detriment of small businesses. He wanted to know what they thought of the mullahs but someone with his accent couldn't talk politics there. He thought of the Farsi words for "spy" and "torture."

He'd seen Iranians in northern Afghanistan working on road and irrigation projects. Some had the "intel look" of clever people trying to look not-so-clever. He and one Iranian regarded each other for several moments. Maybe each saw a common humanity despite the happenstance. Maybe each wondered what he'd do under different circumstances. Anthony had no doubt what he'd do. A day of peace and understanding may come one day, but for now Iran was an enemy and perhaps becoming a nuclear one. He thought of the pistol awaiting him at the safe house.

Idris and Barham bought three Heriz pieces, old ones judging by the soft turquoise and streaks of darker *abrash*, and five newer Sewan pieces. Of course, they also bought a small Qom carpet for the border guard's wife.

"No idea who signed this," Barham chortled as he pointed to the script woven in the border near the selvedge. "Our friend at border crossing will not be disappointed. It's good rug. No more than good."

Some signatures, even Anthony knew, were just for appearance and naive buyers, and did not betoken the work of a master. A pair of laborers loaded the

rolled-up pieces into the back of the SUV and after dining on complimentary saffron rice and curried chicken, they were ready to leave.

An argument broke out behind them. A half dozen merchants were shouting at security personnel from the Ministry of Interior who patrolled the bazaars and parks and railroad stations. Judging by the ire on both sides, they weren't arguing over square footage and quantity. More merchants came to the aid of their brethren and in a few minutes there were thirty or more of them, berating the guards with a hundred or more other people looking on and occasionally voicing support for the merchants. The young security guards looked uneasy.

Anthony could only make out a word here and there. Idris and Barham said the merchants were denouncing the government for hard times and burdensome sanctions. The government was bringing ruin to the bazaaris who boasted that they were the backbone of the country.

More security personnel arrived and began shoving the merchants back. Fists flew, then the riot batons came out. This wasn't what Anthony was sent to investigate, but it was certainly relevant. As much as he wanted to watch history unfold before him and get a feel for public sentiment, he knew that more Interior Ministry personnel were on the way and they'd start rounding up everybody in sight. Idris and Barham wanted to depart immediately and Anthony had to think of their safety.

"Good idea, gentlemen. Let's get out of Dodge."

"Yes, get out of Dodge!"

They didn't grasp the reference but the meaning was clear and eagerly accepted.

"We stay in Changi not far from here," Idris said. "You see someone in Tehran first?"

Anthony thought about the safe house. He didn't know the people there and didn't really know who they worked for, though there weren't too many people with intel ops inside Iran that would help the US. Just the Brits and the Israelis. Going there presented risks and so did hefting a transponder and pistol inside

Iran. It was good to know they awaited him if need be. Needs often be in his line of work.

“Changi tonight is good,” said Anthony.

“Yes! Out of Dodge!”

The Iran-Afghanistan border

Zahedan, a medium-size city in southeastern Iran, is strategically poised where the Iran, Pakistan, and Afghanistan meet uncomfortably. It's known as a provincial capital and university town. Major Bahram Nafar was an officer in the IRGC and to him, Zahedan was a military town. Nafar once instructed Taliban insurgents in basic infantry tactics and bomb making but found Pashtun warriors hard to teach. They'd been fighting the British, Russians, other Afghans, and Americans since the 1830s and were sure there was nothing anyone could teach them.

American advisors, Major Nafar had read, reached the same conclusion in the 1980s during the Russian war. The US and Iran both supported the resistance. The Pashtun guerrillas used the same routes to filter in and out of target areas and broke off engagements too early. That's one reason the war was stalemated for the last five years – poor tactics and not listening to experts.

There were more than a few Indian officers on the Zahedan base. Major Nafar made indirect inquiries about them and the word was that they operated an electronic surveillance post. They listened in on Pakistani army traffic and communicated with Baloch insurgents trying to break away from Pakistan. That made no sense to Major Nafar. His country was helping the Taliban and Pakistan yet at the same time helping India against the Taliban and Pakistan. He

often thought of the famous passage from “The Charge of the Light Brigade” which someone translated into Farsi long ago. Major Nafar did not reason why, at least not in the presence of superiors.

A few years earlier, he was advising Iraqi militias who were attacking American and British troops. They were poor city youths whose discipline and determination were wanting. Nothing like the Hisbollah fighters he’d been alongside in 2006 when Israel sent troops in. Hisbollah fought Israel throughout the 1980s and acquired expertise. He learned more than he taught, though he never let on.

He was recently ordered back to Iran from Southern Lebanon where he was keeping a watchful eye on the missiles in Hisbollah’s hands, ensuring local commanders did nothing foolish with them. Hisbollah wanted bigger missiles. He replied that such decisions were made at higher levels and he had faith in their judgment.

Major Nafar was sure that poor rural boys made better soldiers than city-dwellers did. Country boys the world over think they’re tougher than city-dwellers. Nafar himself came from a rural area in southwestern Iran. He was born into one of the Khamseh tribes that still lived as nomads. The men were off with the herds, the women were in the tents preparing food and weaving rugs.

His uncle was drafted when Iraq invaded in 1980 and became a sergeant in the IRGC. After the war, he was sent to school and became an officer and eventually rose to colonel. Major Nafar saw the military as a noble calling and when he turned eighteen, his uncle placed him in an IRGC academy. In time, he became an officer in the Quds Force.

A new assignment had come his way. Opportunities were abounding. Iran was besieged by Israeli, American, and Saudi covert operations. He wanted to return to his Hisbollah fighters in Lebanon or to go into Egyptian Sinai and train restive bedouins there. They were blowing up gas pipelines leading into Israel and attacking border checkpoints. Major Nafar thought he could train them into

an effective guerrilla force ranging across the two-hundred-kilometer border with Israel and occasionally striking deep inside.

He'd seen *Lawrence of Arabia* while in cadet school – western DVDs circulate freely in Iran – and it left an impression. The British were loathsome imperialists. They'd occupied his country during both world wars and otherwise meddled in its affairs. But the British filmmaker knew something about the soldier's life, and of his soul.

His new assignment was no less intriguing than anything that beckoned in Lebanon or Sinai. He was going into Afghanistan, undercover as a civilian engineer, with no diplomatic immunity. He would go to Kandahar and meet with Pashtun tribal elders who sided with the Taliban or were fence-sitting. He'd bring them money, of course, and assess their intentions and reliability. Most importantly, he'd bring batteries.

Washington, DC

Joe Burkett didn't trust reports from the intelligence community, even though he claimed to. It was part of being on a foreign policy "team." He'd learned the mistrust in grad school seminars and it was underscored in NSC meetings where group-think predominated and reality receded. From his office he could see the Potomac and the consultant-filled office buildings of Arlington and Rosslyn.

Intelligence organizations – all eighteen of them – suffered from group-think imposed by departmental chiefs who prized the appearance of certainty or at least strong consensus. Either way, they were covered. And God help the analysts who went against departmental chiefs. Why did the agency think *A* was true when *B* turned out to be the case? Everyone thought *A* was true, so don't blame us.

The intelligence community was building a consensus that Iran was restarting its nuclear weapons program and North Korea was sending centrifuges by way of the new Silk Road built by China. The evidence was slim and dubious, but the chiefs wanted it to be true. The community knew what was good for their careers. More and more memos circulated about North Korean centrifuges and repetition took on the appearance of increased evidence. The centrifuges were mentioned so often that they just had to be making their way across Central Asia to Iran's borders.

Joe didn't find the North Korean centrifuge story convincing. It was based on questionable agents and hazy pictures. He felt out colleagues on the matter. Most sensed that disputing the reports wasn't a good idea and kept quiet. He kept an eye out for people in and out of government who thought like him.

A niece had sent him a few Facebook pages and he promised his sister he'd look through them, even though he thought most such pages dealt with memes, what people ate for lunch, and upcoming reunions.

"I'm more concerned with upcoming wars," Joe grumbled aloud.

One article dealt thoughtfully with growing unrest among the Shias in the Gulf region. In Saudi Arabia, the Shias were a minority. In other Sunni states, they were majorities – oppressed majorities. They did not have the access to jobs and education that the Sunnis enjoyed.

"How long can you oppress a majority? It gets expensive. It gets impossible!"

"Did you want something, Mr Burkett?" came the voice of his assistant.

"I was just talking to myself, Susan. Too loudly, it would appear. Thanks though."

What's more, Sunni princes were encouraging foreign Sunnis to come into their countries to reduce the percentage of Shia. The immigrants receive preferential treatment. Joe recalled speaking with someone in the Dubai embassy about the Shias in his emirate. The diplomat smiled at the subtle implication of injustice and insisted that all were brothers in the emirate of Dubai. The diplomat thought any unrest was caused by Iranian agitators. He reminded Joe of a Southern sheriff in the fifties who insisted racial unrest was caused by Yankees.

The Shia weren't fond of Iran but at least it was speaking out against the oppression of fellow Shias. A weakened Iran and a victorious Saudi Arabia boded ill for Shias in the Gulf. The House of Saud might go on a campaign of expelling the Shias from their country.

The next article Joe came across saw a "perfect storm" coming about.

“Another tired expression. Anyone who uses old expressions is unlikely to have new ideas.”

Young Saudis were weary of the religious strictures that the Wahhabi clerics and virtue squads forced on them. The Saudi government was close to expending more money than it was taking in, despite all the oil revenue. Young people wanted meaningful jobs to better themselves, not subsidies to keep quiet. Furthermore, government was in the hands of doddering old men, the sons of an old warrior-king. They were in their eighties and infirm or paranoid or both. The scepter was being transferred to a prince in his early thirties. Thus far he was brash and belligerent.

Keeping his word to his sister and niece, Joe looked through the Facebook pages. Pictures of young Middle Eastern men with Maseratis and Bentleys and small shops in Saudi cities that didn't make money. Some photos, however, showed bright young men and women in nontraditional attire. They posted articulate essays on the need for reform in Saudi Arabia and pictures of security forces cracking down on demonstrators. They reminded Joe of the young Egyptians of Freedom Square who drove Mubarak out in 2011. One page discussed the prospects of war and at the bottom were links to dozens of articles.

There was considerable discussion of the impropriety of one Islamic country attacking another. There were citations to the Quran, Hadiths, and other religious texts, including several rulings by respected scholars. Not everyone in these groups was religious; some were secular and judging by their photos, quite westernized. Some posts ridiculed the idea of a Quranic ban on war between Muslims, not for the justness and desirability of the notion, for its lack of basis in history.

“The old dynasties warred incessantly against each other since the death of the Prophet (PBUH). What of the Iran-Iraq War and Iraq's invasion of Kuwait?”

Another post replied, “This is all the more reason why we must make this message meaningful in our lives.”

A common theme running through the groups was hostility to the Saudi government which they branded the quasher of reform and instigator of war. Some deplored Saudi Arabia's inattention to the Palestinians. Rich playboys . . . meddlers in our affairs . . . the enemy of democracy . . . doomed to fall within a decade, Insha'Allah.

Joe knew these arguments were out there, but reading them in impassioned phrasings had a striking effect that dry reports couldn't convey. Surely some were from Iranians, maybe from Iranian intelligence officers. Still, he heard similar remarks from Arabs and Iranians in the DC suburbs. The area was packed with Iranians who got out with their money and owned posh houses in McLean, Potomac, and Chevy Chase. As much as they wanted the mullahs out, they didn't want their country attacked.

"Maybe our intelligence people should read Facebook pages instead of all those goddam memos!"

"Did you want something, Mr Burkett?"

"Susan, I'm so sorry. I'm just venting again."

"Things are getting tense, aren't they."

New Mexico

Ethan and Rina flew into Albuquerque to meet with engineers at the PAMD fab just north of town. They'd been invited to look at a new chipset design for solid-state drives. They'd also demonstrate Micrologic Design's software to a big player in the chip world. The trip had nothing to do with the Samson intrigue, but the two kept thinking there was a secret lurking inside the enormous stone building.

Humor took over. As they were escorted down a long hallway leading to a clean room, Rina whispered, "Look for a room marked 'Samson Team: Keep Out.' " But they weren't sure anyone in the fab knew a thing about Samson. They weren't sure that what little they knew wasn't more than anyone in the PAMD headquarters in California knew.

Ethan and Rina ran their software on the chipset design and identified a few antennae and fuse effect concerns that had eluded the designers, bringing embarrassment for PAMD people but plaudits for Ethan and Rina. A senior engineer said the company would be "in touch." The phrase can be a polite brush off, but there was sincerity and appreciation in his demeanor, so Ethan and Rina were optimistic.

As much as they needed to work with PAMD and other corporations, the feel of the place was off-putting. The atmosphere was regimented, bureaucratic, and

stifling – at least to people from the startup world. Ethan and Rina felt the culture close in on them with each step echoing down barren corridors and with each glance into the atrium where employees grabbed hurried bites and chatted – within corporate guidelines of course. No propeller beanies or impromptu volleyball games here.

Rina giggled as they walked by a corridor decorated with blowups of famed PAMD chips.

“Oh look, Ethan. You’d fit right in. Really, this place is *sooo* you!” They came to a corridor graced by pictures of Taos, Santa Fe, and sunset over the Sangre de Cristos. “This must be where the Stanford grads work.”

“We’ll discuss office decor another time. Rina, let’s promise never to take Micrologic Design public. We’ll end up like the people in this place. I’ll bet you can’t even date coworkers here.”

“Well, I haven’t seen anyone here that’s my type.”

“Good news. Now, let’s get out of here and head for Barrett’s place,” Ethan replied, resting his arm on her shoulder, once they turned in their badges and exited the building.

“Does he live nearby?”

“Uhhh, not really. From what he tells me, he lives . . . well, a bit out of the way.”

Barrett picked them up at the PAMD gate in his black 740i and drove them through the canton to the East Mountains. He pulled off the interstate onto a two-lane blacktop heading north past the expansive tracts of ranchers whose ancestors wrested land from Comanches, cheered Lew Wallace, and debated the case of Pat Garrett and Billy the Kid.

“Those are Herefords. Beef cattle,” Barrett observed as he pointed out a herd of steers behind a fence of weathered wood and rusty barbed wire. “More cattle

than people out in these here parts,” he added with feigned drawl but genuine satisfaction.

Rina wondered why anyone would see that as good. He was an oddity to her, as was Ethan’s friendship with him. The two were so different. Ethan cheery and outgoing, Barrett somber and reserved. She thought it might be a veteran thing.

They came to a smallish adobe house with wooden support beams, or *vigas*, jutting out from the exterior and stretching across the inside. After overcoming the initial concern over the proximity of a wolf, Ethan and Rina looked about the house. They sat in his office-library – a large room with bay windows looking west to the Sandias. The ceiling had sunlights between the *vigas* from which the New Mexico days illuminated the room like theater lights, even in late afternoon.

In the room’s center was an old wooden meeting table with equally aged armchairs. Rina walked along the wall lined with bookshelves packed with at least four thousand books, new and old, paper and cloth. Stone miniatures of Egyptian deities and Assyrian temple guards held them in place, though not tidily. Most of the volumes were history, ranging from Antiquity through the Middle Ages to the present. The latter sections held a good deal on Vietnam, guerrilla warfare, counterinsurgency, and the Middle East.

“Watch this,” Barrett said picking up a dog treat. He tossed it in Jesse’s direction and the great wolf lifted up swiftly and brought his powerful jaws down with a startling cracking sound, engulfing the treat and crushing it into smaller pieces before swallowing them in one gulp.

Ethan enjoyed seeing what he’d only heard over the phone. Rina was at once dazzled and disconcerted. She pressed a hand to her chest and wondered how wide her eyes had just opened. Jesse lay down at the door, facing out, on sentry. Peaceful but vigilant.

Rina ran a finger along the end of row with the writings of World War One soldiers – Sassoon, Owens, and Graves. They were old, probably first editions.

“Buying books is a benign mental affliction. At least I think it’s benign.” Barrett smiled and led them to their chairs. “It goes back to grad school in Chicago. The Seminary Co-Op and Powell’s were my haunts. Oddly, I used to do my laundry at the place next to Powell’s on 57th Street”

“Not so odd,” Rina said.

“There was a washing machine and dryer in my building.”

“I see!” Rina laughed. “Of course, a *benign* kind of odd. Is this you in your military days,” she asked pointing to a photo of a young soldier on the wall, near the doorway. He was smiling broadly and holding his rifle proudly.

“That’s a marine, Rina. I was in the army. That’s...that’s someone I knew in Iraq.”

Rina expected a fuller reply but it was clear this wasn’t something to pursue. She looked around the room and saw no pictures of family or friends or similar mementoes, only books and wooden furniture and various objects of historical interest such as scrimshaw from New England and architectural fragments from the ancient Mediterranean world. She thought that she now knew something about Barrett but that there was a lot more.

Barrett got down to business.

“You know, all this emailing and phoning can make things very unreal, *more* unreal, especially when dealing with our Samson friend. Have we all been keeping this just among us?”

Rina and Ethan nodded.

“We’ve kept all of our findings completely confidential,” Ethan said. “Now let’s see if we can think this thing out. The three of us have a lot of processing power, I’m sure.”

“Here’s what we have so far,” Barrett began. “You’ve discovered an anomaly on a popular microprocessor. The anomaly turns out to be a hidden section on the chip, which we’re calling the CiC. The information stored on a memory section

on each microchip is highly secretive, encrypted in unusually complex ways. One might say in suspiciously complex ways. We can now access these microchips individually or through the network – what they call the Samson Program. My suspicion is that Samson is tied in with the Flower Project of Israel and Iran. There must be a good deal of overlap between missiles and microchips.”

“Yes, quite a bit,” Ethan replied. “Missiles rely on semiconductors and software. Without them, they’re chunks of metal. The design of a chip is driven by its function, and war-making has been a driving force since the birth of the industry in the Cold War. Okay, now I’m the one giving history lessons. Let me run down the Samson system a little more.”

“Can you make it low-tech?” Barrett asked. “Say, in terms a wolf could grasp?”

Jesse stirred and arched an eyebrow at mention of his name but otherwise showed no interest.

“I’ll try,” continued Ethan, looking warily at the wolf. “You *have* fed him more than that treat recently, haven’t you? Okay, every microchip’s circuit has an ID and a network name and can be accessed individually according to this ID. The Samson Program keeps records of all its units and is constantly communicating with them around the world.”

“And with the material stored in computers and servers,” Rina added.

“Indeed. Rina and I have seen the activity in the network. It’s constant and immense.”

“It’s no game-station network,” Barrett remarked.

“No. It took us a while to analyze traffic samples in order to sort it all out. The most interesting thing is that Samson is not using the classical bytes and words as we know them. It creates its own structure – twelve bits in a predefined order. The combination is similar to binary-coded decimal, but with differences. In brief, it does an immense amount of work around the world and it does it in amazingly sophisticated ways.”

“It’s way ahead of what even militaries are using today,” Rina added as she turned from looking through the titles of the books on Afghanistan and counterinsurgency.

“I’m getting the contours,” Barrett interjected, hoping to slow them down.

“Samson constantly maintains redundancy. Every piece of information is stored on many units. If one goes down, there are others storing the same data. The redundancy is way beyond anything a RAID or JBOD can offer.”

“Those are data storage systems, Jesse,” Rina explained to the big guy. She could not bring herself to pet him.

“Jesse and I appreciate that,” Barrett said. “Any thoughts on who, if anyone, is running it?”

“I think that Samson is working on its own. I suspect that it was launched at a certain point and since then, it’s been self-sustaining.”

“I doubt that,” Rina countered, much to Ethan’s surprise. “No one sets up a system like this then trusts it to run on its own. Too many things could go wrong. The creators are still running things. I’ve tried to email them and phone them with unrelated industry questions but no replies yet.”

“I agree with Rina,” Barrett said. “It makes no sense to set up something with this kind of power and let it do its own thing. I think it serves a military or intelligence purpose. Well, we’re not going to settle that question now. What about that dove sign in the photo. It’s been a sign of peace for quite a while. Since Noah. That was well before Samson.”

“Samson was a symbol of strength and resolve back in Antiquity,” Rina said. “but he lost his power when he divulged the secret to his strength. He then became a prisoner.”

“They blinded him,” Ethan continued. “He wanted revenge and he asked the Lord to give his powers back for one final act.”

“He pulled down their mighty temple and killed them all,” Rina murmured.

“Yes, the figure from the book of Judges. A great sociologist described him as a charismatic warrior, like the dervishes of the Middle East. Flower . . . Samson . . . Voice of Peace. All Middle Eastern things. Maybe I just have that region in mind, as usual.”

“What are you, Samson?” Ethan asked.

“What are you doing?” Rina added.

“Have you seen enough folly? Are you planning to bring the world crashing down on us? Lord knows there’s been plenty of that,” Barrett said somberly.

“Yeats had a quote about the growing insanity in the world. Can’t recall it just now.”

“I don’t believe the guys in the photo would build a doomsday device,” Rina said. “They saw the growing insanity and wanted to stop it.”

She approached Jesse slowly, leaned down, and scratched his ears. He closed his eyes appreciatively.

“You’ve made a friend,” Barrett said.

Southern Afghanistan

Major Nafar drove north from Zahedan, handed the border guards a few silver coins, and crossed into Afghanistan without further incident. Driving north five hours on rough road, he came to the Ring Road which formed a loop around the heart of Afghanistan, connecting Kabul with many other major cities. It was a modern highway alternately built up and blown up. Three hundred kilometers to the east lay Kandahar, a large city increasingly isolated by the Taliban.

The first leg of the trip was safe enough. Western Afghanistan was secure, as Afghans understood the term, though the occasional local power holder would demand a transit fee. Going east on the Ring Road was more challenging. In addition to Taliban groups, there were freelance warlords with gruff Kalashnikov-wielding retainers. They just wanted money.

Major Nafar was Shia and didn't like the Taliban. To him, they were an intolerant Sunni cult that massacred Shias and sacked an Iranian consulate in the north, killing a number of diplomats. But they were enemies of his enemy and soldiers and politicians respect that, at least until circumstances change.

He slept in the car at a truck station a hundred kilometers west of Kandahar and the next morning drove through the irrigated orchards on the town's periphery, then into the city itself. The Iranian consulate was on the west side, next to that of India. He drove a few blocks east to a house used by the IRGC. There he

received a map of some remote villages and the names of a couple of *maliks*, or elders.

“You’re not Persian,” the IRGC colonel noted.

“I’m Basseri, one of the five tribes,” Major Nafar instantly replied, unwilling to tone down his ethnic pride in the presence of haughty Persians.

His people were a mixture of Arabs and Turkmen patched together centuries ago by Persian monarchs to guard the western frontier. Basseris always had to prove their loyalty to the Persians. Always. Major Nafar’s features would not raise eyebrows out in the Afghan villages, as would Persians with their distinctive hairline and features.

He took the map and names, then drove south. As he neared the airport that was now a sprawling US facility, he turned east on a rugged dirt road with occasional jitneys overpacked with travelers and baggage and poultry. About an hour east of the airbase, Major Nafar came to a checkpoint guarded by men wearing black turbans and wielding Kalashnikovs. He spoke to them in Dari, a Persian dialect that was a lingua franca in much of Afghanistan. They were Taliban and they were expecting him. They would take him to the village of Gumbadel where he would meet the elders.

He brought one of the batteries.

Santa Clara

Ethan and Rina faced a dreary morning brought in from ocean winds. He sat in front of the eBeam console and felt no more cheerful than the day, while Rina saw to business. He sent keywords into the Samson unit still inside the eBeam device and determined that it received them. Now they could be in a coffee shop or library or any other place with a wi-fi signal and find their way into almost every microprocessor on the Samson Program. That of course meant almost every microprocessor in the world, almost every person in the world.

Precisely what this access offered still eluded them. They felt as though they were standing in front of an immense mansion that held great treasures and found a key under the backdoor mat.

Access through the microprocessor meant bypassing software firewalls and other security mechanisms. Security experts focus on apps and operating systems, leaving hardware doors ajar. This one was wide open. That was the Samson Program's secret, ubiquity, and power. It did what no one thought possible so no one guarded against it.

Ethan loaded a new software program into the eBeam which enabled even more detailed scrutiny of the CiC. He discovered files stored in flash memory sections. Memory caches on the microchip itself made operations faster and became fairly common in the years after 1986. In order to access the memory, he'd have to know where to start reading.

He observed the actual layout and identified bit-lines that formed with word-lines to compose a mechanism sending information back and forth between memory cells. Ethan went through the tedious process of searching within the memory section for bit-lines so he could identify the starting address. Once he found the first one, he'd be able to read the memory information.

After a few grueling hours he reached a conclusion.

"We have a typical array-segment which is a two-dimensional array consisting of 512 x 512 bits."

"When you talk to the air like that, it means you've found something," Rina said, as she entered the room and placed herbal tea before him. "Or you've gone completely around the bend. Which is it, big guy? Hard to tell sometimes."

"There's a duplicated memory array on the microchip. Quite large. I'm trying to figure out the physical addresses so I can read the content. Oh, and thanks for the tea. Peach?"

"I would love to help you but I have a company to run here, you know. Mango."

"The business is in good hands. As with any array, in order to access one of its elements – in this case, a memory cell – we have to specify the row-number and column-number. The intersection point of the specified row-column pair will be the addressed element, and I think I've found the physical address. We have to type it in hexadecimal base and nothing . . . zippo . . . jack bit. Now that was a keen disappointment. But I *saw* the address."

He carefully reviewed it, hit some keys – again no response.

"What can it be?" he cleaned his glasses. "It's a basic memory array, I typed the address in hexadecimal base, and it tells me this physical address does not exist."

"By the way, I configured our software with a new approach setup."

"I see."

He heard her words but their meaning ran into bandwidth issues just then. Rina nonetheless continued talking proudly of Micrologic Design's new software module.

"So I figured that software tools usually define their setup file as straight ASCII text files. Then I thought of using XML graphical interface. It will be more fun for the user than dreary text. What do you think?"

Tech-talk rose out of the background noise of the office and reached him.

"Great idea. Creative flourishes like that will be part of our niche appeal. Let's do it that way." Then he turned back to the screen. "We're used to thinking about memory allocations in hexadecimal base, but what if it's in a different base? That's it! The Samson people were using base eight in memory archives."

She nodded as would a teacher to a bright student.

"Very good, Ethan. You're on the right path. Do carry on, please. Sometimes you have to think outside the base."

He typed into his laptop, updating his program and the first piece of information appeared.

"Indeed!"

He took off his glasses. From here the process would be much simpler. He'd write a simple program to read the memory array data and translate it into words. The data could then be translated into sentences – human information.

"We have access to the program and its stored data. What's it doing with all this data?"

"Maybe it's making herbal tea recipes, Ethan. Mango."

"Mango? Do we have any?"

Parchin

Anthony and companions headed to Changi, about forty miles southeast of Tehran, not far from the town of Pakdasht. Inside their house were a dozen or so rugs tightly rolled up, secured with stout twine, and stacked vertically along the wall. To the east they could see the Jajrud River, which was quite wide there owing to a dam to the north. It reminded Anthony of the Potomac where it flattened out around Fort McNair. Tomorrow afternoon he'd meet with a couple of contacts but in the morning he'd hike up the hills to the north and peer down at Parchin.

Iranian roosters are not unlike their kin elsewhere and Anthony awoke just after first light. He took in some of the tea and bread that Idris and Barham brought in from Tehran, then looked up to the north.

"There are trails leading up there," Idris said. "It's not far from a nature preserve. Just be careful at the summit. The IRGC don't like birdwatchers or spies. If they catch you, please be so thoughtful as to give us at least a few hours to get out of Dodge."

Anthony knew the SOP regarding not giving up information too quickly while undergoing an "enhanced interrogation," as torture was being called these days. It was taught at Quantico.

He walked west along the foothills until he came to a trail. No combat boots. Just the chukka boots he came in with. Two young couples were thirty meters ahead of him so he decided to follow them, close enough to seem part of them, far enough to avoid conversation. An hourlong ascent along the dry rocky trail and they reached a picnic area complete with pine tables and trash bins. Anthony reckoned he was still a couple hundred meters from the summit so he went to the left for a few minutes then continued his climb up the rough terrain scarred by dried rivulet beds and gnarled roots. He crawled the last thirty meters, reached the crest, and looked down at the sprawling site below.

“Parchin. We meet at last.”

Anthony stared in fascination. He'd seen satellite photos of it but seeing it in person was like at last seeing Hoover Dam, linking something from study to something right before him. It was part of the reason he went into the special forces and CIA. He saw things that others could only imagine: the burning tank hulks in the Iraqi desert, the haunting wasteland of western Afghanistan, Saddam's palace and its single-malt scotch. In the last twenty-four hours he'd seen battlefields from the Iran-Iraq War, the heart of an enemy capital, and now Parchin – the most secretive place in the Middle East.

A part of the base looked like an industrial park surrounded by a ten-foot wire fence. Two rows of razor wire were atop each fence. Blackened earth and heaps of debris remained from the 2014 blast. A new housing development lay on one side of the facility and off to the south a soccer field was being sodded.

“The place is growing. Maybe it's a training camp for the World Cup team. Ha, maybe not.”

But what was in Parchin? It wasn't likely he'd get in the place. That was Hollywood stuff. He'd heard it said repeatedly that the IRGC was constructing a nuclear weapon at Parchin. Maybe there were North Korean centrifuges there now, but Iran still needed a way to trigger a weapon. Without that, enriched uranium was an impressive engineering feat but militarily meaningless.

Anthony stared down intently on the facility as though he would see something of significance, something the satellites missed, something his contacts didn't know. He looked down at the base for almost half an hour.

"This is getting me nowhere. I'm sure they patrol this summit. Yeah, for birdwatchers."

He shimmied down the slope, brushed off the dirt, then descended the trail to the foothills. Back to the farmhouse. Parchin's secret was nothing he could determine from on high but he was proud to have seen it. Later that day, he'd debrief men who worked there.

Southern Lebanon

Hisbollah grew into a formidable political-military organization since it formed during the Israel-Lebanon war of the eighties. It had a solid command system leading up to Hassan Nasrallah in Beirut. Fairly solid. Every organization has factions and jealousies and mavericks. Sometimes that leads to innovation and vitality. Sometimes it leads to breakaway movements. Sometimes it leads to a local commander acting on his own.

After twenty-five years of faithful service, Qasim Bazzi expected more from Hisbollah. He'd been a guerrilla in the south and even crossed into Israel on probing missions, not all of which had been approved. He trained under IRGC cadres and gone to Iraq in 2006 in a show of Shia solidarity against the US. Bazzi had given up much. His family was killed by Maronite militias and he was wounded in the shoulder and back by shrapnel, leaving prominent scars which he took pride in. He hugged the earth as Israeli jets bombed his position and felt the air sucked from his lungs as the concussion left a brief, terrifying vacuum.

Washington was now trying to oust Assad from Syria. He was an ally of Shia Lebanese and needed support. Nasrallah was urging caution. He sent a few thousand troops inside Syria and squeezed the flow of arms from Lebanese bazaars to Sunni rebels, but that was it. Shi'ism was on the defensive yet Nasrallah continued to call for caution. Qasim Bazzi thought this foolish and unmanly. His brashness and impatience were known throughout Hisbollah.

Bazzi commanded a district in southern Lebanon that gave him operational control over six hundred guerrillas and forty missiles. The latter were mostly small and limited in range, but Bazzi pressed for two Zelzal missiles. With the help of relatives, he got them. They were built in Iran from a Russian design and sent through Syria into southern Lebanon where they were capable of striking deep into Israel. His IRGC overseer was summoned back to Iran for reassignment and no replacement had come. Bazzi was determined to fire his two Zelzals into Israel that night.

The missiles were inaccurate, though two of them striking a large population center would force Nasrallah's hand and force him to fight Israel. Bazzi calculated that the US was overstretched and another war would break it, both militarily and financially.

The battery commander was accustomed to Bazzi's unscheduled inspections. This night, however, he was ordering two Zelzal missiles to be prepared for launch. There was no war and there was no order from Beirut, but Bazzi was the local commander and an intimidating one. The battery commander listened hopefully for the high-pitched hums of Israeli drones so that he could quickly return the missiles to the caves. Unfortunately, the skies were quiet and the missiles had to be readied. The battery commander and his chief engineer looked at each other worriedly as Bazzi told them to target the financial district of Tel Aviv.

The men from the battery whispered to each other and entered the coordinates into the guidance systems from a laptop. Bazzi was annoyed by their slowness but he knew nothing of technology and was hardly able to say where delay ended and disobedience began. Entering the coordinates proved inexplicably difficult, which made Bazzi more suspicious and angrier. Right after they entered a code for an actual firing, the launch program hung twice for each missile.

After several retries, the battery commander told Bazzi the missiles were ready. He instantly barked the order and a moment later the first then the second Zelzal ignited and sent immense bright-red flambeaus into the dark skies.

Thunder roared across the rocky valley, reverberating almost painfully in the crew's chests and skulls until the missiles were a kilometer away.

Despite their misgivings, the crew felt awe and pride. The missile launches would be picked up by an Israeli picket ship soon enough and retaliation would be swift. Nonetheless, they continued to watch transfixed as the fiery missiles arced brightly across the inky night.

After forty seconds, one of the missiles suddenly disappeared as though the fuel was spent or the engine shut down. The other continued streaking south toward Tel Aviv but after another twenty seconds, it veered west toward the Mediterranean before its flambeau disappeared as suddenly and unexpectedly as the first.

No one knew what happened, though everyone, regardless of zeal or rank, knew it was best to get back into the caves and prepare for what was coming. Several soldiers were deployed around the position, armed with SA-18 missiles, capable of bringing down the Israeli fighters that were likely already taxiing down runways to deliver retribution. The SA-18s had recently been smuggled in from Libya. Weapons from Colonel Qaddafi's recently plundered arsenals were finding eager buyers throughout the Middle East. A handful of them arrived in Beirut's bazaars every month.

The radar operator on the Israeli frigate *Moledet* saw two objects flash on his screen and heard the alert sounds. The speed and trajectory made it clear that they were missiles – large ones, not the small projectiles made in village workshops of the Bekaa Valley and Gaza. He instantly called the officer of the deck but before he arrived at the screen the two objects were gone. Lieutenant Sagy trusted the young radar officer's judgment and raised the Arrow antimissile battery in Galilee on the radio.

"Affirmative, *Moledet*, we saw two objects, just as you did. They both vanished though. One flamed out almost immediately. The other drifted west then flamed out too."

Yossi reviewed the data on the frigate's hard drives but the images were distorted and almost indiscernible.

"Galilee Station, have you reviewed your incident record?"

"Affirmative, *MoleDET*. The data's corrupted and cannot confirm visual reports."

Sagy conferred with the young officer and imagined reporting a visual sighting unsupported by telemetry. Two large missiles, no evidence. Sagy exhaled noisily and cued the mike.

"Another anomaly, Galilee Station. As we have no supportive telemetry, my morning report will not mention a launch sighting."

Galilee Station was silent for a full minute. Yossi knew the debate going on there.

"Nor will mine, *MoleDET*. Have a safe patrol, my friend."

"Will do. *MoleDET* out."

"Galilee Station out."

Santa Clara

The growth of technology around the globe gave Samson fresh recruits every minute. Fabs churned out new chips just as military boot camps did raw recruits, with neither fully understanding how their work was playing out or who was ultimately in charge.

Rina dug into the Samson code for the better part of the day and discovered an “expert system” that emulates human decision-making. In that respect, it differed from a conventional program which simply executes according to programmed instructions.

Samson had storage units to collect and retain vital real-time information, usually of a political or military nature. It had analysis units that studied the data and execution units that issued commands from conclusions produced by analysis units, either through expert systems or human oversight.

“There has to be human oversight. This system simply cannot be operating on its own,” Rina whispered to herself. “The world is too, oh, I don’t know, dynamic, unpredictable. It’s just too damn crazy! It’s based on the same principle as DARPA’s internet. DARPA . . . there’s got to be a link to those people. I wish I could have interned for these guys! All the same, I’m learning from them. They just don’t know it.”

Rina sat back and tried to envision the creators of Samson. Anyone that brilliant must be decent. In any case, if they weren't, the world would have gone into a cataclysm over the last quarter century of the system's operation.

"I want to know more about the creators and meet them someday. They may need help."

As wondrous as such a meeting initially seemed, it caused her to shudder.

Ethan, Rina, and Barrett set up occasional video conferences over Micrologic Design's secure website. Rina ran down what she'd learned about the system as Ethan sat back in his chair and Barrett listened and watched on his screen. The explanation was complicated if not arcane to Barrett so he took notes, drew schematics, and got the basics. Jesse opted for the outdoors.

"Just think how much money these programmers could make if they produced something like this chip commercially. What it could do in stock markets and in think tanks and in the media. There's almost no limit," Barrett noted. His practical mind looked for practical uses.

"This makes our little startup look like a kabob stand," Ethan said wistfully, though in admiration.

"Yes, it makes us look like an early version of DOS. Or something for a Kaypro computer," Rina added mischievously, causing Ethan to scowl.

"Suddenly you're an expert on old computers. Anyway, Micrologic Design's program works great," Ethan returned defensively though good-naturedly, "and our clients are beginning to appreciate our betas. We've built impressive algorithms and we can hold our own. We're going to learn from Samson – more than its creators thought anyone could."

"Back to the case at hand! The creators can't watch over the world. No one can. No system can." Barrett's sudden exclamation surprised Ethan and Rina. "It's not watching over everything from air defense systems to eighth-graders

chatting about what they wore at the mall last night. Does Samson have favorites? Does he look at certain things or certain areas more than others, especially in recent months?”

“I already found several traffic clusters,” Rina said. “One is in Iran, more specifically Tehran and a few smaller places called Natanz, Bid Kaneh, Fordo, and Parchin. Oh, and another cluster might be starting up near Bushehr.”

“Tehran is of course the political and military center. The other places are missile bases and nuclear research sites,” Barrett explained. “Bushehr is a basic research center. Nothing of importance.”

“There are other hot spots in the Gulf region,” Rina went on, “Manamah, site of the US naval headquarters, and Kharj in Saudi Arabia.”

“That’s the Prince Sultan Air Base.” Barrett explained in a calmer tone. “The US is purportedly out of there, but things are seldom as they seem in the world, especially in the Gulf. Any other hotspots?”

“There’s sustained activity in Arlington and Langley, of course, and then there’s Las Vegas and Tampa-St Pete. Those are vacation spots, not hot spots.”

“US drones are directed from Nellis Air Force Base, a short drive from the Vegas Strip, and the US military command for the Middle East is near Tampa. Man, they’re building military bases in nicer places than when I was in. In fact, there’s a US airborne brigade stationed not far from Venice – Italy, not California.”

“Where do I sign up!” Rina exclaimed.

“Oh yeah,” Barrett continued, “I should say that there *might* be a US drone base at that Prince Sultan field. It watches things in Yemen.”

“There *might* be?” Ethan asked.

“That’s what my wolf says.”

“What goes on in Yemen?”

“It’s what might go on there. Rebel groups backed by Iran, Israeli recon camps, al Qaeda bands.”

“Samson’s watching Lt Alon’s homeland too,” Rina mentioned on looking at her clipboard. “There was a surge of activity along the Israel-Lebanon border recently, though rather short-lived. You’re going to think this is crazy – or *meshugab* – but another hot spot is in Tel Aviv, specifically an old building that once housed the Knights Templar.”

Ethan smiled.

“The Israeli military has used the old Templar Building for decades. I’ve been there many times. Quaint from the outside, but the air conditioning in summer is terrible – even many floors below street level. By the way, I’m not a lieutenant anymore.”

“Too bad,” Barrett said. “I was imagining myself sneaking in and finding an old grail.”

“Okay, okay. Enough fun. First, there’s a secret component in the most common microprocessor in the world and it’s been there over thirty years. The microprocessor has been updated but the Samson section has always been there. Second, Samson receives data and issues instructions on a global basis.”

“Third,” Rina picked up, “attention is focused on Iran, Israel, Saudi Arabia, and US military centers in and out of the region.”

“Fourth,” Barrett went on, “the chip was probably designed and put into production by a group of Israeli, Iranian, Indian, and American engineers in 1986. Most of them had worked together on a missile program for the shah of Iran – Project Flower. It ended shortly after Saddam Hussein’s invasion of Iran in 1980.”

“That war went on for eight years and took the lives of over a million people.” Ethan murmured sadly as he thought of men he’d known who met their fates in other wars.

“Yes, it did. Late in the war, both sides experienced problems. Missiles aimed at cities and oil ports failed to launch or came down in empty wastelands. Everyone was perplexed, even the US personnel who advised Iran on the Hawk missiles we sold them. The Iranians were pissed. They thought we sold them junk as part of a Saudi plot.”

“That’s not surprising. The Saudis would do something like that – if they could,” Ethan said. “That’s what Israeli generals think when their Jericho missiles malfunction. I looked into it a few years ago but couldn’t find anything.”

Ethan had a sudden thought too murky to formulate.

“So perhaps militaries of the world run up against Samson but blame the problems on rivals,” Barrett countered. “Anyhow, Samson is watching military systems. The coalition that liberated Kuwait in 1991 experienced little if any trouble, as far as we know. Most of Saddam’s Scud missiles, however, had countless malfunctions. Some got through, though most failed badly.”

“Didn’t the Patriot missiles shoot them down?” Ethan objected.

“That’s what everybody thought then. We later learned that the Scuds just weren’t working well. I personally saw more than a few lose ballistic trajectory and veer into empty desert. So maybe Samson wasn’t a neutral observer. He played a favorite.”

“Samson made the war shorter – and less deadly.” Rina thought again of the faces in the group photo.

“It certainly interfered with the war-making abilities of governments,” Barrett went on. “That’s a privilege they’ve enjoyed since ancient times – since some guys picked up rocks and bones, like those apes in *2001: A Space Odyssey*. I doubt it can completely control things. Still, it can make wars less murderous and demonstrate that governments can’t do what they think they can.”

“It didn’t stop wars in Bosnia, Sudan, and Yemen,” Rina said. “Or Rwanda, Zaire, Algeria. . . .”

“Those were small, low-tech conflicts. Samson can’t stop people from picking up rifles and mortars; It can only influence big high-tech wars,” Barrett said.

“But if a bullet or a mortar round hits you, you’re just as dead,” Rina murmured. “What’s Samson doing in the Gulf now? We have hunches about their being peaceniks but we can’t say for sure.”

“Maybe Samson caused the uranium centrifuges at Natanz to burn up, and maybe it’s also behind the other compromises in Iran’s computers,” Ethan wondered. “We’ve all read that Iranian computers suddenly start blaring heavy metal music.”

“So did my neighbors in Chicago, Ethan. World affairs are filled with uncertainty. We have to act on imperfect information, some of it coming from imperfect people. I doubt chips are perfect, even the Samson CiC. I doubt the creators of Samson are perfect either.”

“Maybe the system will look at all the data and reach conclusions that the creators hadn’t intended.”

Rina’s mind delved deep into the vast system she was beginning to comprehend. A logjam, a flawed routine. She saw possibilities, unsettling ones.

Southern Afghanistan

The village of Gumbadel is little more than a dozen mud houses scattered along dusty walled streets, none of which could accommodate an SUV. Dogs wander purposelessly amid the quiet torpor of late afternoon. It was that way even in the marketplace which must have seen better days, before the Russian invasion and decades of intermittent fighting.

The Taliban escort brought Major Nafar to a ramshackle inn where five elderly men had gathered. Nafar sat with them on the floor and a fully-veiled woman served tea and rice wrapped in grape leaves. He made the obligatory display of appreciation.

The men were dour in disposition and sparing in words. Major Nafar thought they were sizing him up to determine what they could get from him, as they had with British officers a hundred years ago and with American officers perhaps last year. He was in a centuries-old game and playing against men with vastly more experience. But he had something the IRGC thought they wanted.

Their Pashtun tribe had survived over the years by negotiating with outsiders and finagling every *afghani* they could from them. They did so in war and peace and over the last thirty-five years there'd been precious little of the latter. The young men of southern Afghanistan now saw war as the ordinary state of affairs and thought herding and farming to be unmanly. Better to heft a Kalashnikov.

The older men were tired of seeing their young men obsessed with war and dying. The *malik* was first to speak of course.

“Gumbadel was a prosperous village,” he began in halting Dari. “Many people, many herds, large marketplace. Now,” he gestured out toward the desolate street, “we are poor and tired and sick.”

Major Nafar didn’t expect brevity. It took a moment to recognize a cue.

“Once we rid the valley of foreigners, it will be prosperous again. I have brought you a gift of many *afghanis* from the people of Iran, and I have also brought a plan to help you.” He looked around the room at the same impassive faces. “I’m told there are items here in Gumbadel that we can both benefit from.”

None of the men reacted. They continued to stare at him and occasionally partook of the rice cakes and tea. The *malik* eventually stood up. He and the major left the inn and walked a half kilometer to a shed on a farm at the edge of the village. The *malik*’s grandsons stood in front of a stack of aluminum containers resembling small green coffins. Major Nafar pointed to two of the boxes at random and the young men opened them.

His information was correct. The village of Gumbadel owned ten Stinger missiles. He kneeled beside one and marveled at its carbon metal contours. He removed the rectangular battery from an interior pocket, inserted it near the trigger housing, and threw a switch on the control panel. Solenoids clicked and the red LED display lit up.

The *malik* remained impassive.

The US issued Stingers to the mujahideen during the Russian war. Four thousand of them. Some had been fired, some hadn’t, and some were smuggled abroad to eager buyers. No one knew the precise number of any tally, least of all the CIA which scurried to buy them back after the Russians left in 1989. People don’t like to give up valuable things that might come in handy, all the more so in a land not given to long periods of peace.

The IRGC purchased several Stingers from a pliant warlord named Ismail Khan in 1987, then reverse-engineered them. They also made copies of the batteries, which decayed after ten years. Major Nafar brought a single new battery with him. The rest were at the consulate.

“I can give you ten new batteries to use against American aircraft around Kandahar. I can train you to use them too.”

“We learned to use years ago. CIA. You were small boy in Iran,” replied the *malik* without a hint of humor. “Two helicopters and a MiG – down.” His hand turned in circles and trailed down. His hand came back up to his waist. “Small boy you were. Americans come, now Iran come. All say help.”

Major Nafar showed him a cranking mechanism with a meter of wiring.

“This will not give life to batteries,” the old man replied instantly. “Your batteries good, but fire machines do not always work after long time.”

Major Nafar was struck by his knowledge. Yes, it was known that the rocket motors often failed after many years, even in dry climates.

“We think that six of the Stingers will still work. Maybe more – Insha’Allah. In any case, we can bring you the Stingers we make by the hundreds – Misagh-2s. We also have SA-18s from Libya.”

“Better than SA-7 Strela, Not better than Stinger,” the *malik* noted as astute as a Jane’s analyst.

The two men regarded each other for several moments – warily, wordlessly, but respectfully. Major Nafar removed the battery from the missile’s side, thought a moment, then handed it to the *malik*.

“A gift from my people to the brave villagers of Gumbadel.”

They bade each other farewell and Major Nafar headed back to Kandahar. There was much to ponder before giving his report.

As he drove past the US airbase, Major Nafar watched four Apache gunships lift off amid clouds of red dust and race to the south. He imagined himself firing a missile at the helicopter and watching it detect the heat signature of the Apache's engine and track it, despite the flare countermeasures and the pilot's frantic maneuvering. He imagined the Apache spiraling toward the ground in flames, then looked down the road ahead.

The Arabian Sea

A Liberian-registered freighter plied the waters to the south of Pakistan after unloading electronic surveillance gear to the Indian navy at Karwar. It was returning with its holds only half-filled, chiefly with automotive parts manufactured by the Tata Group. The ship carried far more electronic equipment than an ordinary freighter and two of its holds were now set up with cots, shower stalls, and a clinic.

The ship passed the Pakistani ports of Karachi and Gwadar, listening for Chinese communications and searching for neutrino radiation. The latter would signal the proximity of nuclear warheads which some Mossad and CIA analysts thought might be sold to Saudi Arabia or positioned there. The neutrino signal was null. No one aboard truly expected a positive signal. It was just something they did while in the neighborhood, like beat cops checking the padlock on a back gate.

Sailing west, the ship passed a hundred kilometers to the south of the Iranian port of Chabahar. It was just listening there too, but it didn't hurt to look for neutrino signals while in the neighborhood. Again null.

The ship did not continue sailing west toward the Red Sea and home. It sailed south and came to a halt, its engines slowing to a rate only sufficient to produce enough electricity for ship operation. The surveillance gear was shut off to reduce the electromagnetic signature. A radio beacon was checked out but not

turned on. A powerful strobe light was fastened atop the bridge but not illuminated.

The crew practiced lowering lifeboats and rowing out a kilometer. Periodically crewmen would jump into the water and the others would pull them into the boats. It was difficult at times in the heat and humidity, though there were light moments. One of the crew joked that there weren't any icebergs in the Arabian Sea. Another said he saw Kate Winslet dead ahead. The officer let the men have their fun as long as they were getting their practice in. They all knew it was better duty than defending a makeshift landing site deep in Yemen's Empty Quarter, where some men from the special forces unit were headed.

Tehran

Idris and Barham drove Anthony to Tehran University before heading to a shop near the main bazaar known for masterful replicas of Sultanabad and Bakshaish antiques. There was thriving demand for such pieces in Kirkuk and Istanbul, and any country that liked Nains might also go for them. He told the two he'd take the bus to Pakdasht, then walk to the farm.

"Now, off to that safe house."

Tehran's subway was impressive and clean. In appearance, it was far more like Washington's than New York's. He rode a few stops north to the Imam Khomeini station and got off a half mile north, not far from the British embassy. IRGC toughs called *Basij* sacked it a few months back. Two of them were photographed hauling off an enlargement of the hit men in *Pulp Fiction*.

"The Basij began as shock troops in the Iraq war. Now they're making off with movie posters. Should've stuck to telling tall tales to kids."

Anthony walked west past streets named after Westerners, Henry Corbin and Bobby Sands, then came to a townhouse. He rang the bell but knew his presence was known by a camera hanging just above the left jamb. He was buzzed in and greeted by two men in their thirties. The interior looked like a stylish French hotel with rococo furniture and prints of rural scenes from nineteenth-century painters. Pleasantries were exchanged in English.

“Your trip is going well?”

“Yes, it is. Quite well. Though there’s much ahead.”

“Yes. Always so much for people like us to do. Always. There is someone here who wishes to speak with you, as you know. And another meeting later, we hope.”

Anthony figured they were Sephardics, probably with Israeli intelligence. Mossad had its own history and institutional views. The second meeting hadn’t been mentioned and was disconcerting, but intelligence work doesn’t proceed like a subway ride. Maybe a New York subway ride.

Mehdi rose as Anthony entered the side room, though Anthony was introduced as “Agrin,” the Kurdish name on his passport, and the two were left to conduct their interview. It hardly mattered. Whatever Mehdi was going to say had been said to the hosts already. Maybe they had told him what to say.

Mehdi was a young man in his late twenties and said he’d been working at Parchin for the last three years.

“I am an engineer, my friend. What you call a tool and die maker. I make precision parts for special components. Not all of them I see assembled. Naturally.”

“My great-grandfather was a tool and die maker for Thomas Edison during World War One. He worked on electrical equipment for submarines.” Anthony switched suddenly to the point, looking for discomfort. “Do you have centrifuges at Parchin?”

“There are no centrifuges at Parchin, my friend. They run at Natanz and Fordo. They run when they aren’t burned up from spinning too fast. You are undoubtedly aware.”

“Any visitors from North Korea?”

“Many North Koreans have come to Parchin over the years.”

“Recently.”

“Yes, but no more than they did a few years ago.”

“Everyone outside Iran is interested in Parchin. Do they have reason to be?”

“There is a cylinder there. A large one. Twenty meters long and four meters in diameter. Concrete packing around it. I have worked on components that are placed inside one end of the cylinder. Small ones of many shapes. I don’t see them assembled, naturally. Almost no one does.”

Anthony hoped he hid his interest. A cylinder of that description was almost certainly a primitive implosion device and the prototype of a triggering device for a nuclear weapon.

“Do important figures come to your place of work?”

“Many engineers and physicists from universities in Tehran and from other sites.”

“Which sites?”

“Some are from Natanz and Fordo. I went to school with some of them. Two of them at the mechanical engineering school at Tehran University, not far from here.”

“Any generals?”

“I am told that General Jafari and General Suleimani were there last month.”

“You were *told*? I did not come to hear rumors.”

“Their arrival made the place beehive. Others saw them, not me. I have no doubt. My information is good. Others saw them.”

“Mullahs? Ayatollahs?”

“They do not come. They too would make beehive.”

“Can you get me photos of this cylinder?”

“Much too dangerous. I made a diagram on Freebyte. For the cylinder and spherical chambers too. Other software programs I don’t wish to use because their use is watched. Also I have brought you a list of the engineers I know of. I cannot get you photographs. I thought you would have realized that.”

Mehdi cast his eyes downward, feigning disappointment.

Anthony photographed the diagram and the list of engineers and encrypted them as a few units of a Kurdish melody in his phone’s music library. He ran the papers through a diagonal shredder next to a desk and repeated the operation.

“Can you get me inside Parchin?”

“You think like in movie,” Mehdi laughed. “Maybe you have sports car outside and PPK in pocket! Or is it a Beretta 70 this day? You have Kurdish name and they think Kurds like to be terrorists. You don’t look Persian or Azeri or Kurdish. Not to me, not to IRGC.”

The last words were unwelcome.

“I cause beehive then.”

“You cause big beehive then! And maybe get stung badly. You get stung – bad. I get stung – very, very bad.”

Mehdi and Anthony discussed the size and location of important chambers at Parchin and drew up a diagram on Freebyte. Afterward, they shook hands and the two Mossad officers showed Mehdi to the rear door. Anthony pointed to the shredder and one officer ran the paper through it again and assured him the strips would be burned within the hour.

“Who is this other contact?”

“Abbas Karroubi, a professor at Tehran University. Computer science, not physics. We do not know him, only of him. He is highly respected by DARPA in your country.”

“Is he with DARPA?”

It was not a classified matter. The members were listed on numerous websites.

“He’s not with DARPA or the JASONS either. Apparently, people in Washington and especially Jerusalem want you to meet him. He will be at the Farda bookstore near Tehran University in one hour. Medieval history. European medieval history. You might wish to talk to him of a book on medieval law. Harold Walton, medieval law.”

“I’m not familiar with Mr Walton or his book. But I read medieval history in school and shall learn something this day,” Anthony said to signal his departure.

“We are never too old to learn. We have things for you,” one said as he opened a briefcase and showed Anthony a transponder and a Beretta 70.

“Not just now. Thank you though.”

“I understand. Ah, just one more thing.”

The two officers looked at each other cautiously. Anthony was uneasy. They might be about to ask him to do something for Mossad, not the Company. A look at his report? An assassination? A bombing? Way out of bounds. He braced himself and tried not to show it.

“Can you recommend a rug for the front room? On the small side. No more than one meter by two.”

Anthony smiled weakly.

“Yes, of course.”

He looked around at the elegant furnishings and ruled out tribal pieces.

“A city rug rather than a tribal piece, I think. Floral design with tight knots, short pile. A piece from Qom or Isfahan, perhaps.”

“So there are other things made there besides enriched uranium!” one said. “We must all go there someday. Business *and* pleasure!”

Spy humor. Not enough of it.

Anthony walked the few blocks to the Farda bookstore, not far from the university and the former US embassy. A few students looked over the books, new and used. They were mostly in Farsi and Arabic, though French, German, and English titles were in every row. There was a large selection of ancient history and just off to the right, an impressive number of titles on European history, including Cobban's works on the French Revolution, Klyuchevsky's Russian history, and Motley's tomes on the Dutch Revolt. Dim recollections of graduate school and ensuing life choices flitted through his mind.

He backtracked a shelf and found a few rows of medieval history titles which were not in chronological or alphabetical order. Ganshof, Bloch, Pirenne, Cantor . . . Walton. *Law and Feudalism*. A red paperback published by Princeton.

"Oh God, am I supposed to open it and find a cryptic note or a decoder ring?" he wondered as he leafed through the thick book. Canon law, feudal law, the Holy Roman Empire, the papacy.

"My expertise is in technology but I enjoy reading history," came an elderly voice. A gentleman in his early seventies, gray beard, wearing a light-blue linen jacket. Reading glasses hung from a worn leather strap around his neck. No tie. He ran his finger across the shelf and tapped the Walton book.

"The philosopher Hegel once said that history teaches us that we don't learn from history. He was wiser than Santayana, at least in my estimation. Laleh Park isn't far from here. Perhaps you know it."

"No, but it sounds interesting."

They walked a few minutes and stood near a gushing fountain. An occasional Airbus took off noisily from an airport a couple miles away. A nearby airport was a wonderful thing in Anthony's line of work. The rushing fountain and thundering airliners would make it difficult for anyone to listen in. The fountain was graced with a statue of a man with the planets revolving around him.

“That is the Aboureyhan Birouni – an esteemed Persian astronomer. We joke that he must have been American.”

“I sense a barb coming.”

“Because, as you see, he thinks everything revolves around him.”

“Not bad. It looks to me like he has a lot of balls up in the air. So yes, perhaps he was an American.”

Anthony ended the pleasantries and got to the point.

“There are many beautiful sites here. Is there anything of note a few dozen kilometers in that direction?” Anthony looked briefly to the southeast.

“You must mean the lovely Jajrud river!” Karroubi continued without prompting, all levity gone. “Nothing too interesting. Nothing alarming. I’ve not been to Parchin for many years. My students work there though. Many ideas and much money. The government holds them back. Generals always have ambitious plans, regardless of their uniform and stated duty.”

“A large barrel, I hear. Unusually large. Any spherical or hemispherical objects that could become nuclear warheads?”

“There are no such things there. Just soldiers and scientists with a lot of money – money that could be better used elsewhere. Poor villages, shoddy housing, old schools.”

“Why do I hear of these things?”

“Your people *want* to see such things, do they not? Or are you a true believer in those things? There are people in your country who wish to see them so that they can start a war. That would be foolish – for everyone. Do you remember why your country went to war with Iraq in 2003? Your leaders searched diligently until they found someone who claimed to have seen what they wanted to see. And you know what happened. You must know.”

“I recall the war quite well and need no reminders.”

He didn't like lectures from someone whose country seized the US embassy and supported Iraqi insurgents.

"Are there centrifuges at Parchin?"

"No."

"Are they coming?"

"No. Shipping centrifuges across the Silk Road from North Korea? Are they coming on camels with Marco Polo, concubines, and exotic spices? Romantic imagery. That's why the story was concocted – to capture the imagination of your public. Would you believe there are Iranian generals who want the United States to think such things are here?"

"Why?"

"So they will act accordingly."

Karroubi searched for signs of recognition from the young officer. He'd done the same with predecessors in other intelligence services.

"I'm not sure I follow the lecture, professor. I appreciate clarity."

"Such actions will greatly raise the generals' influence here. The mullahs weary most of us, especially here in the cities. Out in the villages? Oh, out there it's another matter. Bold generals defending the nation inspire simple villagers. Many people in the cities too, I must admit. Then we would move from rule by mullahs to rule by generals."

Anthony took a moment to take it in. What was that Cold War novel? *The Looking Glass War*. Everything is backwards.

"Perhaps we can speak more of physics than of history on this day," Anthony said politely enough. "How are you sure there are no barrels or spheres or centrifuges? Students can have other loyalties than to former teachers. Admirable though you undoubtedly are, young people often admire those who

pay them and they accept their beliefs and goals. This tendency is not confined to Americans.”

“So true, even in a pious country such as my own. I know what their networks and servers know. Do you know algorithms, encryptions, programs?”

“I know infantry, armor, and artillery. And a little about barrels that get smaller, get placed on missiles, and get launched into the skies, perhaps at my people.”

“Yes, we have missiles. I helped see to that under the shah – with the encouragement and help of your Israeli ally. Do you know of that help? Project Flower?”

“Physics not history, professor. Please. My time is short.”

“As to your purpose, the only barrels are on anti-aircraft systems that defend against your planes. No implosion trigger at Parchin, not at Fordo either. Not anywhere. They enrich uranium up to twenty percent. That’s all the mullahs allow and for now their word is law. Attacking us will put the generals in power and then *their* word will be law. I think we will all lose. There are powers – powers you cannot know of or imagine – that will ensure there never shall be nuclear weapons here.”

“An interesting thought, professor.” Anthony was intrigued by a few allusive words. “But what are these powers I cannot know of?”

“It was not a slight, young man. Think of it as the conceit of an old man, one who knows the limitations on our generals. These men who sent you – the big ones in Washington – they are certain you will find no definite answers. You’ve suspected this, have you not?”

Anthony tensed up and hoped it didn’t show.

“They also know you will never report you did not find definite answers. A young warrior will side with the use of force, especially if he senses his superiors want that. They *always* want that. Surely, you’ve sensed that, though perhaps not fully comprehended it.”

This all resonated inside Anthony, sounding like the voice of his father cursing the generals and politicians of the Vietnam War. Karroubi wasn't finished.

"An older soldier, a wiser soldier, might see only one certainty – the deaths of many thousands of people. Hundreds of thousands of people. And that soldier would act accordingly. An older soldier, a wiser soldier, and perhaps a braver one as well."

"We have strayed into mind-reading and fortune-telling." Anthony sensed a close to the nuclear question and the futility of trying to return to it. "May I ask if you were in the Iraq war, professor?"

"No. I was too old. I marched in the streets of Tehran in 1953 when Mossadegh was overthrown and I was shot at by my own people. Do you know of that?"

"The coup that brought back the shah. British and American intelligence. Operation Ajax."

Anthony spoke in a manner that revealed no opinion on the subject. It would be unprofessional. In any case, the animus those events held for Iranians had no equivalent for Americans.

"I was working at Stanford when Saddam invaded in 1980. I came back to help my country, regardless of who was in power. Many of us did, scientists and generals alike. I worked on the Hawk missiles that your president sold us. It was behind your congress's back, as I recall. I also worked on the computer systems we modernized back then. I lost two sons. Both died late in the war. You have come through your wars, and I hope your good fortune continues in any conflict that might lie ahead."

A sincere, fatherly smile came across Karroubi's face and Anthony knew he didn't hide his appreciation.

"Iran and Iraq are becoming friendlier now," Karroubi continued. "Perhaps one day Iran and the US will be friends again. Maybe Iran and Israel too. The Middle East is a volatile place. Friends suddenly become enemies and enemies suddenly become friends."

“Tehran University is fortunate to have wise teachers like you. And there is much we have to learn from history.”

“And from Hegel.”

They shook hands. Karroubi headed back to the university. Anthony looked up at the statue.

Northern Yemen

In previous decades and even centuries, tribal elders held council in immense tents with colorful rugs and salt bags strewn across the sandy ground. This meeting was in a house near the village of Dhahyan in northern Yemen, not far from the Saudi frontier. Yahia Badreddin al-Houthi and a few close relatives were first among equals there. They were close relatives of the fallen leader of the Shia movement that bore his name – the Houthis. The tribes of the area were fiercely independent and exceptionally well armed, even by the high standards of Yemen.

The Houthis had been warring against Sunni domination for years. Before that, they'd fought the Egyptians, Saudis, and British. Still further back, they'd fought the Turks. Most had Kalashnikovs, others hefted Mausers and Lee-Enfields from the old days. Some preferred Enfields for their accuracy at long distances and ability to penetrate body armor. Others carried them because they'd been bequeathed to them by their grandfathers. War was a family tradition.

The men at the council were angry. The old president in Sanaa had switched sides and was now dead, but little changed. The war with the Saudi-backed Sunnis dragged on. The Houthis had resented the Saudis years before the war. Their wealthy neighbors to the north were spreading their Sunni creeds into Yemen, fostering sectarian tensions. The Saudis wanted to control Yemen. The

Houthis wanted to be left alone. Inescapably, larger issues came to bear and the Houthis found themselves open to entreaties from Iran.

Several IRGC officers had come and gone over the years without gaining much influence or respect. Now, however, Saudi aircraft were bombing inside Yemeni territory. It was denied in Riyadh, nonetheless the Houthi bands knew what they saw: Eurofighter Typhoons with the green sword and palm tree of the Royal Saudi Air Force. The pilots flew much too high to be accurate and older warriors grudgingly credited mercenary pilots of the past for being braver.

The IRGC officer promised Libyan SA-18s and MiG-29s, which would send the Saudi pilots to even higher altitudes, perhaps back to Prince Sultan Airbase. The IRGC insisted on a sign of commitment from the Houthis: they were to strike deep inside Saudi Arabia and they would do so in the name of the Shia people.

The Houthi chieftain found unanimous support for striking inside Saudi Arabia. Every clan leader favored it and argued passionately for his own men to perform it. He thought it best for each clan to send five fighters skilled in the use of rocket launchers and explosives. That would balance off each clan's claim of having the men with the greatest skill and spirit. Each of the nine clans would send a five-man team, ostensibly to visit Mecca and Medina. The men were allowed time in the holy sites as most were unlikely to return.

They would be armed with weapons the IRGC was transporting via freighter to Port Sudan, just across the Red Sea. The weapons would soon be stored in a Saudi coastal town that was becoming increasingly important – Yanbu.

There were oil refineries and petrochemical plants there that the Chinese had recently completed. Pipelines from the Eastern Province on Saudi Arabia's coastline on the Persian Gulf brought crude to the refineries and chemical plants before flowing to the shipping terminals from which they went out to the economies of the world. The refineries and chemical plants were of course highly combustible; a few RPGs could make them infernos.

Tehran

Anthony tried to sort out his meetings with Mehdi and Karroubi. The thought of too many balls in the air came to him naturally enough. He went back to the street near the bookstore and waited for the bus to Pakdasht. He sat near the middle exit, plugged in his headset and listened to Persian hip hop. A sitcom came to mind: "Mehdi and the Professor." Madcap antics, exotic locations, and a little international intrigue thrown in. Check local listings.

Tomorrow there would be two more contacts, both from the same sources tied to the safe house. He hoped at least for consensus.

The sources, Anthony reasoned, were almost certainly from the Israelis at the safe house and Mossad. Who else uses Beretta 70s? It was their hallmark of sorts. The low power offered the advantages of less noise and less recoil. Anthony preferred .45s, despite the kick.

He wondered if he was supposed to look into the sources' eyes and come to a conclusion. That's what Bush did with Putin and he saw a good man. Anthony only saw a former KGB officer who wanted to restore Russian might. Neither Mehdi nor the professor struck him as essentially untruthful. It would have been better had these sources come from people he trusted though.

Mossad was eager for him to talk to Karroubi. There was something odd about a late player in the game. Of course, Mossad might be skewing information to its

advantage. That was to be expected of any institution anywhere, even that one in Langley.

The Israeli government wanted war with Iran. That was clear. Then there were a few Israeli generals and intelligence officials who started speaking to the media, including the US media, urging restraint. One was a former Mossad chief, not a peacenik. He ran a team of assassins throughout the Middle East who did their work well. They often did it with Beretta 70s.

The Agency had already heard Mehdi and Karroubi and they had likely heard from the contacts he'd meet tomorrow. Anthony's function in the scheme of things was to provide a footnote for a thesis whose conclusion had been reached before the first word was written, and before he crossed into Iran.

"So Washington wants me to be convinced there *is* a nuclear weapons program at Parchin. Mossad wants me to think there *isn't* one. Jeez, I'm just a soldier from a low-rent zip code in Texas – the kind of guy who fights America's wars and mans its walls so everyone can sleep and shop."

The bus reached Pakdasht at dusk. Anthony thanked the woman driver and hopped off. He cut through a field to reach the farm from the back. No lights. No SUV.

"Where the hell are Idris and Barham? Off to another bazaar? On Rt 46 headed back to Kurdistan? Or are my companions in the hands of the IRGC? Maybe they thought I was in IRGC custody and about to spill his guts, so they split."

Anthony found a dilapidated barn and lay down with an unexpected groan. His eyes looking out the partially open door toward the farm. He looked at his phone and saw the battery was run down. The charger was in the house. He shut it off.

Maybe in the morning Idris and Parham would show up after a night of revelry in Tehran and his mission would continue. If not, he would find a way to get out of the country. The escape options outlined to him in Kurdistan ran through his head as he covered himself in alfalfa and nodded off facing the door.

His sleep was interrupted more than once by metallic clicks.

Anthony awoke with the roosters again and peered out toward the farmhouse, now better lit. Still no sign of the two Kurds. He had to suspect he wouldn't see them again this side of the border or even this side of the Styx, so it was back to the Pakdasht bus stop. He bought a bag of pistachios and an orange from a cart and headed for Tehran.

He got off near the university to reorient himself and walked north to the safe house. Everyone he passed looked worried and security people were everywhere. Blaring horns and sirens sounded from all sides. When he reached the intersection near the safe house, he saw three security SUVs and a few dozen anxious onlookers. An irate man said there'd been another assassination the previous night. Two people were killed.

He stood amid the crowd and mimicked their stern looks and curious gapes before determining that the safe house wasn't living up to its name. No transponder, no pistol, no luck. He needed a place to think. Laleh Park was a short walk and he sat next to the statue of the Persian astronomer with all the balls in the air.

“Well, old timer, should I *di-di mau* for the airport and hop on a flight to Kurdistan? Oh . . . ‘*di-di mau*’ means to leave, depart, get the hell out. It’s Vietnamese and has been in GI slang since Khomeini was a corporal. Yeah, it’s kinda like ‘get out of Dodge.’ ”

The Persian astronomer didn't even offer a polite smile.

“But there’s been an assassination somewhere and security forces like to show they’re on the ball by swarming into airports and delaying flights. It makes people think the government’s on top of things. I need the news and coffee, old timer. Is there a Starbucks nearby? Well, if there isn’t a coffee shop with wi-fi near the airport, then I just don’t know Tehran. Another one that went over your head.”

Anthony tossed a fifty-rial coin in the fountain, nodded to the old guy, and headed toward the airport. A few blocks west, he saw a familiar logo, or thought he did. As he got closer, it turned out to be a “Star Box,” a local knockoff of the ubiquitous American chain.

“They rip off a revered American brand yet wonder why we put sanctions on them.”

Anthony left the trademark issue for the lawyers to hash out. Star Box offered coffee, pastries, and a television. Everyone was watching the news. He sat down with a large coffee they called a *venti* and tried to get up to speed. The TV was giving a grim report in Farsi of the assassination of an IRGC general and his driver as they drove home last night. A motorcyclist had placed a magnetic bomb on the general’s car, killing the two. Anthony looked up the site and saw it wasn’t far from the Iranian Atomic Energy Organization headquarters.

“Couldn’t they have waited till I got out? So that’s why Idris and Barham didn’t come back last night. Maybe they did it. No, the MeK does those assassinations and the MeK aren’t Kurds. Those Mossad agents at the safe house? They wanted me to meet more contacts and get the word out. That’s my job right now – getting the word out.”

He always knew he’d find himself in a tight spot, but he imagined it being a ravine in eastern A-stan or a dark defile in Iraq. Here he was watching TV in a Starbucks knockoff in a cosmopolitan city.

“You expect me to talk, Suleimani?”

“No, Mr Sabatini. I expect you to buy me a latté.”

Humor was helpful.

“No more Mehdis, no more Karroubis. I have to form a judgment and get it out. Then I have to get my ass out.”

He powered on his phone and saw the red battery icon. He’d run out of juice before he typed out the message, short though it was. Fourteen-year-olds could

do it with their thumbs in thirty seconds while eating lunch and checking their Facebook page, but typing wasn't taught at Quantico.

He looked down the street and saw the most wonderful sight he could imagine, a sight that would gladden the heart of every American, except Bill Gates. Less than two blocks away was an Apple Store. It might not be any more authentic than the Star Box or the 2009 election results, but knockoff or not, it would have what he wanted.

Inside the glass doors with the Apple icon was a team of employees wearing blue t-shirts with ID badges. A young woman, head covered in a scarf but otherwise western in appearance and demeanor, cheerfully introduced herself and asked if she could be of help.

"I'm in Tehran on business and unwisely left my charger back in Kirkuk. Could I purchase one here? One with an adapter that charges from a wall socket and also from a train outlet?"

She picked the items from a display shelf and asked if he'd like to pay with his iTunes account.

"I prefer cash."

"Cash works," she replied, importing an American idiom into Farsi.

"And may I charge my iPhone for a while as I look around?" He opened the packaging and plugged one end to his phone. "I would not want it to sync with one of your machines, of course."

"This iMac is not set up to sync."

She obligingly inserted the other end to a USB port beneath the monitor. Anthony ensured there was no sync and once she went off to greet another customer, he opened the Fars News Agency website. The news agency had the name of the bombing victims and angry denunciations of Israel, the US, and Saudi Arabia who were blamed. It went on to say security had been tightened around Tehran and other cities and showed a photo of a security guard with a

police dog patrolling Khomeini Airport. Time to look into rail transport. Anthony searched for the train station and found it a mile south.

With the phone charged, he thanked the woman and stepped back onto the sidewalk. He found another coffee shop, ordered a latté, and searched for a wi-fi signal. There were four available signals, including a weak one from the Apple Store. He selected the signal of a Greek restaurant named “Yanni’s” and saw a dozen emails pop up, all of which were purely for show in case of capture.

The plan back in Iraq was to meet with a few more sources in Tehran, but with the city in an uproar and looking for people like him, if not himself personally, that was out of the question. He nonetheless had to send a report as it wasn’t a sure thing he’d get out.

Anthony weighed things last night and much more on the ride in. He was leaning in one direction but the idea was vague and never coalesced into anything that could be called a decision. It was like thinking about buying a stock or trying a new restaurant next week.

“Between the motion and the act falls the shadow.”

Everything he’d read about Parchin had to go out of his head and he had to judge by what he saw and heard since crossing into Iran. What was it, two days ago?

What of the former Mossad boss’s views, which were apparently diametrically opposed to what he’d have thought? *Apparently*. And that professor? What he wouldn’t give to talk to Karroubi and that Mossad guy in the same room. The sharpest knives in the proverbial drawer.

Anthony looked outside at the streets of Tehran and saw the urban rhythms and off in the distance a poster of Khomeini. Anthony breathed in deeply and awoke his phone. He selected the Skype app and began typing.

Parvizian2012

Met only two merchants in bazaars of Tehran. I see no interesting new designs, as once thought.

He hit “send” more quickly than he thought he would.

“Now, how do I get the hell out of here. Tehran is a nice place to visit but I wouldn’t want to die here.”

Southern Afghanistan

The IRGC office in Kandahar learned that yesterday an American jet dropped two 500-pound bombs near a village fifty kilometers to the south, killing seven civilians, including three children. The colonel saw opportunity.

“The Akolzai tribe has been excluded from aid programs owing to old rivalries, or so they claim. Whatever the truth is, we know that they oppose the Americans and the Kabul regime. After this airstrike, we can win the goatherds to our side.”

“Do the Akolzai have Stingers?” he asked.

“They once had three Stingers and a Russian SA-7 Strela. They sold them all to the CIA in 2002. You will be going there with a battery in case they still have a Stinger. And you will bring one of our Misagh-2s.”

Major Nafar became uneasy. It was unlikely that soldiers at an American or Afghan checkpoint would recognize a Stinger battery, however a Misagh-2 heat-seeking missile was large and easy to recognize. Some *afghanis* would help with an indigenous unit but American soldiers were above bribery.

“The Misagh-2 will be concealed in a compartment above the driveshaft of an SUV we shall provide. You shall have maps and the names of the *maliks* within the hour. The ride, I’m afraid, will be less agreeable than your previous one.”

The Persian superiors concluded the briefing and looked to him in a manner he found disconcerting. He saluted and headed for the garage where the SUV and missile were being prepared.

Major Nafar drove west then south toward the village of Calghor, thirty kilometers north of the desert that spread across southern Afghanistan and western Pakistan. The road was annoyingly rough and well patrolled. So far, there were only two Afghan army checkpoints. A little later he came across a local freelancer and his armed band. A few thousand *afghanis* and a few *rials* did the job. Major Nafar smiled and bade farewell to his hosts.

A few miles south of New Deh he noticed a Black Hawk about three kilometers to his left and slightly behind him. It was not racing off somewhere as were the Apaches the other day. It was unlikely the chopper was watching him, but he couldn't shake the feeling. Off to his right, a second Black Hawk appeared. He pulled over and opened the hood. He checked the oil level and gauged the helicopters' response. They pulled back and went off in the distance, probably lurking behind the hills.

They were on him. No point going on to Calghor; that would only compromise his destination. After consulting the map, he thought it better to head down to Kakaran, then make his way back to Kandahar.

Major Nafar drove into the village of Kakaran and asked locals about the roads and irrigation. He was, after all, acting as an aid officer and part of his job was to improve the lives of locals. Iranian aid programs were more in the western provinces but he had a plausible reason for being in the south, though not for what was hidden above the driveshaft. Tea with the *maliks* was followed by pleasant exchanges, capped with a long list of desperately needed items. Major Nafar sensed that whatever anyone gave these men would soon be sold to Pakistani merchants.

He left in the late afternoon and headed for the main highway that led to Kandahar. A kilometer or two up the road, he came upon a checkpoint that hadn't been there earlier.

"Damn it," he murmured as he saw the soldiers were American marines.

Behind him he could see a Black Hawk hovering, seemingly purposelessly, a kilometer behind him. He'd have to face the soldiers. A young lieutenant politely greeted him through an interpreter who had the roundish face of an Uzbek. Ten marines stood around the vehicle, M-4s at the ready. The Uzbek asked in Dari for his papers and reason for being in the area. Major Nafar had a prepared response and tried not to make it sound that way. Aid officers were common enough and even Iranian ones were extended courtesies.

The Uzbek and the marine lieutenant conferred just out of earshot. After a moment, the lieutenant motioned for him to get out. Two marines looked under the SUV with mirrors fixed onto poles while a third looked through the back, knocking on the floor panels. He was unarmed and saw no point in running. He was going to be taken prisoner.

Major Nafar was not well versed in the global media but he knew that in twenty-four hours or so the world would be talking about the IRGC officer captured in Afghanistan with a surface-to-air missile. He was also beginning to understand something more about political intrigue and where a simple Basseri officer fit into foreign policy plotted up by Persian generals in Tehran.

Eastern Yemen

Events in Yemen are often in the news and have been for decades. But little news comes from the eastern half of Yemen known as Rub' al Khali, or the Empty Quarter. It's arid and mountainous and to call it sparsely populated would hardly convey its emptiness and inhospitality. Moviemakers would love the region for its natural beauty, but they'd never get crews to stay long. Actors would refuse to go at all, even Yemeni ones. They'd all prefer Death Valley in California or the Qattara Depression in Libya except that the latter still had thousands of land mines that Rommel and Monty buried decades ago.

Eastern Yemen was mostly untouched by war because there was nothing there and it wasn't on the way to anything. Now it was on the way to something. The desolation of the Empty Quarter made it ideal for a forward base, providing you could find an area with a flat hard surface. There are many such places out there; it was simply a matter of sending recon teams to find a good one.

At the eastern edge, not far from the Omani frontier, an Israeli *Sayeret Matkal* unit found a good one on a gypsum plain about twenty miles south of the N5 highway. They'd been dropped off the Yemeni coast a few days earlier by a Liberian-registered freighter.

Satellite communications apprised the headquarters back home of the coordinates and two nights later, a C-130 cargo plane came in guided by signal lights the reconnaissance team set up. The plane landed on the desert floor,

rather roughly in the crew's experience. The four props pitched to an angle to slow the cargo-laden plane. The crew and *Sayeret Matkal* troops unloaded pallets of material and the C-130 was up and on its way home in less than an hour. Two more C-130s came in separately that night and unloaded more material.

The recon soldiers returned to their observation posts and tents and did what soldiers do the most. They waited.

"Osama bin Laden's father was from this part of Yemen," one soldier said.

"Yes, the old man went into the construction business in Saudi Arabia."

"An excellent career move. Too bad his son didn't go into the family business."

"I agree completely. That reminds me of the old joke about the rabbi whose son disappoints him."

"Oh yes. My father told me that joke when I turned thirteen."

"Was he a rabbi?"

"No. A colonel."

"Mine was a sergeant."

"I think I'll go into the construction business in Saudi Arabia."

"I'll stay in Israel, but *mazel tov* with your new career."

Iran and Turkmenistan

Anthony sat in the coffee shop planning his exit. He didn't want to be paraded around town while angry mobs jeered him and chanted "Death to America." He was worried that someone might strike up a conversation about the assassination the previous night, but last night's killing made the streets almost empty and gave the little shop a somber atmosphere.

The airports were heavily patrolled. A friendly embassy? The Brits were stalwarts but his briefing noted that their embassy was closely watched and they didn't want to give cause for another break-in. Saudi Arabia or the Emirates? Anthony didn't trust them.

He could head west to the Kurdish area of Iran, maybe by so mundane a method as a rental car. He still had a debit card from a Kirkuk bank with a tidy sum attached. Kurdish Iran, only a hundred miles away, teemed with foreign intelligence officers. But security on the roads west would be tight and the same with rail lines.

Southwest into tribal areas where Tehran's writ was limited? A German spy rallied the tribes there against Tehran during World War One. "The German Lawrence," he was called. That scenario was appealing in some respects, but dealing with tribes was daunting. The German spy failed and his allies were punished for sedition. He spent the rest of his life making amends.

Southeast into Pakistan? He'd have to cross the Baloch region of Iran which was waging an insurgency against Tehran. Then he'd be in the Baloch region of Pakistan which was waging an insurgency against Islamabad.

East was sounding good. That meant Afghanistan or Turkmenistan. He'd been to Zahedan in eastern Iran a few years back. There's an IRGC base nearby where they train Taliban guerrillas. It was well patrolled then and was probably more so now. Mashad lay in northeastern Iran. It's a rug-making town and according to his papers, that was his occupation. Mashad wasn't far from Afghanistan and Turkmenistan. He felt the hem of his inside pocket for the silver and gold coins the Agency issued him.

"If I can't bribe my way across those borders, I'm in the wrong line of work. Afghanistan is embroiled in war. Turkmenistan is neutral. It's the Switzerland of Central Asia."

Anthony stopped in a convenience store near the station and purchased disposable razors, a bottle of water, and a small carrying bag – what GIs call an AWOL bag. He paid with cash. He also paid cash for a hotel room not far from the station. He picked up a schedule at the desk and saw that a train left for Mashad at six pm. The concierge said the train was never crowded, nonetheless Anthony walked to the station, purchased a round-trip ticket to be less conspicuous, and returned to the hotel. He found an outside wireless signal and keyed in another text message which though encrypted would still talk of rugs.

Parvizian1962: Sidetrip to Mashad. Arrive morning. Thoughts on return appreciated.

He shaved, showered, then lay down to rest. He might have dozed for an hour but no more than that. A message woke him.

Tajik shop in Mashad, papers, cross Taybad. Alternate: Sarakhs shop, cross Turkmenistan.

"Choices, choices, choices."

The Tajik shop was Tajikistan's consulate where he could get papers to enter Afghanistan at the Taybad crossing. He served with ethnic Tajik troops in Afghanistan three years earlier and respected them. The problem was that the Tajiks liked Iran because of its help against the Russians and later against the Taliban. How helpful would the Tajiks in Mashad be? The Sarakhs shop was a small border crossing into Turkmenistan.

Parvizian1962:

Sarakhs shop more promising this day.

The Tehran skyline was replaced by a dry rural landscape in the evening light. Herds of sheep wandered here and there. He was reminded of his father's story of hitchhiking across Wyoming in the sixties and seeing herds of sheep with Basque wagons encamped along winding creeks and gullies.

There were more than a few stops and at some, women came aboard in traditional covering to sell tea, pistachios, and bread. Anthony partook and was pleased that their accents were as strange to city dwellers as his probably was. Still uncertain as to passing for an Iranian, he mused that he should wear a *burkab*. The Moroccan translator back in Langley used to boast that as a young woman she'd wear a niqab to sneak over to her boyfriend's house. Not what the mullahs had in mind.

If the hotshots back on the US didn't get the answer they wanted, Anthony suspected they would ignore him and not promote him. Or they might just send him off to some obscure post. Somewhere like Turkmenistan. He nodded off around two am as the train sped eastward toward Mashad.

He was startled awake several times by metallic clicks.

The train pulled into Mashad shortly after eight am. Anthony had been awake for about an hour thinking about the border. He could offer money to the border guards, maybe even one of the gold coins. That, however, might alert them and

the assassination in Tehran almost certainly made every guard in the country more watchful and less venal. The border was demarcated by a chain-link fence atop a sand berm and he was confident that within a couple of miles of the crossing there'd be an opening made by smugglers. Or by a young woman in a niqab eager to see her boyfriend on the other side.

Security at the station was present, no doubt about that.

Parvizian1962:

Arrived Mashad.

There was a large map of the city and Anthony studied it along with other travelers. He saw a part of town with a number of consulates and spotted Tajikistan's. The consulate might be easier, Turkmenistan still felt better. Highway 22 wound about seventy-five miles from Mashad to the crossing at Sarakhs. He'd spend the day in Mashad and in the late afternoon hire a driver to take him to the border. When dusk came, he'd look around the fence for an opening and head for the town a few miles inside Turkmenistan. The town possessed the unlikely but appealing name of "Mary."

In a country with a softening economy, you don't have to look hard for someone to drive you somewhere, even if it's seventy-five miles. Men with cars and meager incomes were all around the bazaar offering rides to those carrying rugs or a duck or two. It would enable them to continue to be men with cars a while longer.

"I need to reach Sarakhs before nightfall, my friends. Who can aid me?"

Anthony called out to three men standing beside their cars. Two of them looked at each other and shook their heads. Perhaps it was too far that late in the day and their wives would be angry or suspicious if they came home late. One of the men said the curfew was strictly enforced because of an assassination in Tehran. A portly middle-aged man leaning against a red four-door Saipa smiled courteously and opened a rear door.

“Ahmad Pejman, sir. My name is Ahmad Pejman. Because of curfew, it will cost more.”

“And I am Agrin Saleh from Kirkuk, as my accent might already have revealed. I want to see the Ersari rugs of Turkmenistan in the village of Mary. It seems I only have euros just now. I hope one hundred will be enough.” The astonishment in Ahmad’s eyes made it clear that it would do quite well. He didn’t even try to haggle lest another driver step in.

Highway 22 winds across rugged arid terrain that reminded Anthony of eastern Arizona though without the astonishing blues and greens embedded in the stratified rock. He closed his eyes for a while to get a little rest for the night ahead. Ahmad looked at him in the mirror from time to time.

“Is it possible for you to drive me to Mary this night? There would of course be a consideration for such additional help.”

“Sir, the border guards will insist you use a driver from Turkmenistan. I assure you our guards do the same.”

“As do ours in Kurdistan. I also worry that the border guards will take advantage of a foreign merchant, as of course would those in my country. Oh, Ahmad, if only we were border guards. What rewards we’d reap for ourselves and our wives!”

Ahmad laughed, in part because of the truth in his joke, in part because he knew what he was asking.

“About two miles south from the crossing, just east of the airfield. The fence is cut – for honest vulnerable merchants like you.”

Anthony smiled, closed his eyes, and went into a half sleep for forty minutes.

“Turkmenistan. Insha’Allah and the creek don’t rise.”

He opened his eyes and saw Ahmad looking at him in the mirror.

“You have heard the news from Tehran?” the driver asked.

“Yes, I was near Tehran that night. Just south of it really, in a small town called Pakdasht where we store our purchases before returning to Kurdistan.”

“Such things are done by the MeK from your country,” he added pointedly.

Anthony paused. He shouldn't have mentioned being anywhere near Tehran. Ahmad was probably just frustrated by the repeated bombings.

“I am from the Kurdish north, my friend. The MeK is in the south near Baghdad. We hope to be completely free of Baghdad one day and have cordial relations with all our neighbors. Especially with Iran.”

“But the US and Israel are behind this, no?”

“I am a merchant not a politician – and I am most thankful for that, Ahmad!”

“The Kurds are Sunni, no?”

“We have many Shia among us, but yes, we are mostly Sunni. We are all one though. This I believe.”

Anthony waved his arm dramatically. Ahmad was no longer looking at him in the mirror to gauge his responses to the conversation, he was scrutinizing him, studying his face with the suspiciousness of sectarianism, nationalism, and recent events.

“Is that the airport you spoke of ahead on the left?”

“Yes, that is Sarakhs' humble airport.”

“My crossing should be just off to the right then.”

“Yes, two kilometers.”

Ahmad spoke more slowly.

The Saipa came to a stop and Anthony handed Ahmad the hundred euros. He stepped out of the car with his AWOL bag and bade farewell. Ahmad drove off

wordlessly then turned around to head back to Mashad. Anthony looked about at the dry rocky area and walked east. It was getting dark and he could barely make out the fence atop a berm in the distance. He looked behind him, saw the Saipa drive past, and waved. Ahmad saw him but did not wave back.

Anthony walked briskly. When he looked again at the road he saw that Ahmad was not heading for Mashad. He was turning into the airport. He was either trying to get a late fare or going security.

Anthony was prepared to break into a run. He walked through increasingly dark fields then crossed Highway 99. Only an occasional car and motorcycle came by. Yes, he could see the border less than a half mile away. Maybe a twenty minute walk on the stony terrain. There was still a little light. Good and bad. He could see the opening better but a patrol could see him better. His coins would help on the Turkmenistan side, not on the Iranian side. At least not so soon after an assassination.

Halfway to the fence Anthony heard a truck. If he was at a train station or on a street corner, he'd give the rug dealer story. Heading for the border was another matter. Better to make a run for it. He'd be hard to see and he made it harder by crouching. Crawling would be too slow. Life is all about tradeoffs. If the truck drove by, that meant they weren't looking for him. If it stopped, that taxi ride would be the worst hundred euros he'd ever spent.

The truck slowed and turned to the right, aiming its high-beams about forty yards to his right. A searchlight came on and sent a sharp beam sweeping across the field. Anthony hit the ground as it neared him. It swept off to his left without stopping.

As he got up to run he heard commands barked out. Farther behind came the "whump-whump" sound of a helicopter coming from the airfield. As the rotor noise came closer he detected a lack of rhythm.

"More than one."

The searchlight arced back toward him and he dived down, again eluding it. He got up and raced for the wire, dropping the AWOL bag. Another searchlight swept across the berm, illuminating the shiny metal fence. On its third sweep, he saw a section of fence that had been cut with a top section hanging down.

“Turkmenistan.”

Anthony stumbled up the berm, his feet sinking into the soft dirt and sand. Both searchlights were now sweeping the fence line and he saw the beams send his shadow onto the ground. He thought of the time when the police chased him, two friends, and three majorettes from a swimming pool they’d broken into.

Yellowish-green tracers flew past him followed by the reports of Kalashnikovs. Three on semiautomatic, a fourth on rock ‘n roll. A Beretta would come in handy right now. They’d at least be reluctant to stand still and take careful aim.

“Get out of Dodge!”

He lowered his shoulder and crashed through the cut section of the fence and rolled down the hill into neutrality. He felt the adrenalin surge through him and recalled that after a firefight and the adrenalin stopped, a chemical reaction ensued and brought giddiness. He looked forward to that post-combat high again.

He soon realized his pursuers would show as much respect for Turkmenistan’s sovereignty as his organization was showing Iran’s. He righted himself and headed for the road to the north – the road that led to Mary. He heard orders barked and the clang of the fence as men scurried awkwardly through the opening. The helicopters whirred overhead and sent their searchlights into the fields across the fence.

“If I die in a combat zone
Box me up and ship me home.”

A cotton field offered a little cover. A mile ahead was a road with a streetlight or two. A truck was coming south from Mary. More tracers lashed nearby, some

close enough to sound like angry bees, followed instantly by the jack-hammer-like bangs of Kalashnikovs. One of the searchlights found him and was tracking him despite his zig-zags.

He felt a blow on the fleshy part of his side just above the waist, heard a “thump” followed by searing pain, and fell into a row of cotton. He’d heard the sickening sound of a bullet hitting flesh before and knew this time it wasn’t one of his men who’d been shot.

“Off to my right I see five mounted cowboys.”

Anthony struggled and righted himself but after a few steps he fell down the embankment of a reservoir then crawled along the waterline toward the road and the truck. His wound throbbed more and more. There were sharp jabs too as his movement tore tissue along the bullet’s path. The truck, he thought, might be a Turkmen patrol that would cause the Iranians to head back across the fence. The Iranians reached the lip above the reservoir and flashlights probed along the muddy waterline until they found him.

He stumbled along the edge of the water. More Kalashnikov rounds shot into the water sending up noisy splashes. Another round ripped through his upper shoulder, violently expelling air from his lungs. He fell again. He summoned his remaining strength but could only get to his knees before falling down. Another effort got him to his knees again and his foot was pushing him upward when all his strength left him and his face smacked into the mud.

He gasped blood, air, and slime, then lowered his head and waited. He heard football crowds and girls from school, water gushing from fountains and jets soaring overhead, a fast car racing by and a mother calling out. Every sound became frantic radio traffic on a doomed tank. Then he heard a click.

New Mexico

Barrett sat down in the Albuquerque studio, looked into the camera, and listened to the anchor in Qatar give a lead-in.

Anchor: For more on the unfolding Iranian crisis, we're pleased to have Barrett Parker with us again. The US is expressing outrage over the firing of an Iranian-made missile at a US helicopter near Kandahar. What's the significance of this?

Barrett: There have been longstanding worries about the Taliban receiving Iranian Misagh-2s or Russian SA-18s out of Qaddafi's arsenals in Libya. US troops found – rather conveniently, I'd say – an expended Misagh-2 tube and an IRGC officer officer nearby.

Anchor: What do you say “rather conveniently”?

Barrett: It's too pat. An IRGC officer might deliver such a weapon to the Taliban but it's unlikely he'd fire it himself – or be anywhere near it when it was fired.

Anchor: Can you say more about these Iranian Misagh-2s?

Barrett: Certainly. Iran purchased several Stingers from a mujahideen warlord during the Russian war, reverse-engineered them, and made

thousands of copies. Voila, the Misagh-2s. However, I don't believe Iran would be so unwise as to give large numbers of such weapons to the Taliban. Iran wants to warn the US of what will follow from an attack on Iran.

Anchor: And what do you think would follow?

Barrett: More arms to the Taliban – in quantity and quality. Enough to cause severe trouble.

Anchor: What do you make of Iran's claim the CIA killed one of its generals on the streets of Tehran?

Barrett: Unlikely. The bombings and assassinations are the work of Israeli intelligence and an Iranian group called the Mujahideen-e-Khalk, or MeK.

Anchor: Isn't the CIA highly skilled at assassinations?

Barrett: If that were so, we'd have to wonder why Fidel Castro and Saddam Hussein lived so long.

The anchor could not hide his amusement.

Anchor: Yes, I see. What's the fallout so far?

Barrett: The US has deployed a squadron of F-22 fighters to the Emirates and is sending a second aircraft carrier into the Gulf. For its part, the IRGC has been demonstrating its ability to attack shipping in the Strait of Hormuz, through which a large portion of the world's oil flows.

Anchor: Is Iran capable of closing the Strait of Hormuz?

Barrett: Well, it can make passage dangerous, especially if it has the Chinese Sizzler missiles. After some shooting and a few sea mines, the insurance companies will order the tankers to drop anchor and wait things out. Meanwhile, oil markets would be roiled.

Anchor: Are oil markets concerned now?

Barrett: A little. The benchmarks are up about two bucks a barrel. That's not a big move. It feels like it's just a few outfits taking up defensive positions and of course speculators going along for the ride.

Anchor: Thank you so much. Events are certainly changing rapidly in that part of the world. We're going to go now to Farrah Esmail for a look at sports.

"Thanks again, Barrett," Khadija said from the network center in Qatar, more somberly than usual.

"Keep calm, Khadija. I'm off to Route 66."

"I'll try, Barrett. Be well."

"As ever."

"And only one Guinness!"

"Here's looking at you, Khadija!"

He raised an empty hand and toasted her.

The Persian Gulf

The F/A-18 on USS *Abraham Lincoln* connected to the catapult system with a jarring thump. The pilot signaled the Cat Officer and both he and his radar officer braced themselves. A few seconds later they were propelled into the blue, headed back to Bushehr, though not for the nuclear site. The navy was interested in another site. So was all Washington.

After taking photos for the US, and a few for themselves with personal cameras, they headed inland to gather more electronic data on air defenses. They were being tracked, though not very well.

“Skip, my man, we’re not getting anything on the bad guys’ system. It looks like they turned it off.”

“Maybe they’re trying to draw us in deeper.”

“And so....”

The pilot veered east.

“Two bad guys way out but heading in our general direction. They don’t seem to have a fix on us. That’s unusual.”

“They’re still far away. Maharlu Lake at two o’clock. We’ll kiss it and head back to the boat.”

“Affirmative. If I said ‘negative’ would it have mattered?”

“Negative.”

“I’m just sightseeing.”

“Affirmative.”

In a moment the F/A-18 was over the lake and banking sharply to the right until they were heading west. The two aviators could see the haze of sand and salty air above the deep blue of the Gulf.

“Has their system come back on yet?”

“Negative. And the bad guys still aren’t tracking us well. Looks like they’re using onboard radar only. They’re heading for the coastline.”

“They’ll fly down the coast, looking for us.”

“They’ll come damn close.”

The F/A-18 reached the coast and saw two F-14 Tomcats about eight miles up the coast.

“Can they see us?”

“Probably. Yeah, they’re peeling out to us. I don’t know their rules of engagement today.”

“Maybe they don’t either. That can be a problem. We’ll be home soon. They won’t come in on a carrier group. Anyhow, we can hit the afterburners for a few minutes.”

“Ah, afterburners – the dumbass pilot’s best friend.”

The pilot started the mechanism that sent fuel into exhaust flames and made the F/A-18 half jet, half rocket. They felt the sudden burst of speed and saw an instantaneous cloud of condensation explode around them as they broke the sound barrier. A moment later, they saw two bursts of condensation to the north. They could not close on the faster F/A-18 though.

About fifty miles from the carrier, the US pilot shut off the burners. They used too much fuel, as did flying at low altitude. Furthermore, the F/A-18 might have to orbit *Abraham Lincoln* for a while. They might bolter a few times, requiring them to blast back up to altitude, then circle for another landing attempt. That used up a lot of gas.

“Something’s wrong, Skip. There should have been an IFF signal by now for us and our Tomcat friends, who are still only a few miles behind us, by the by. I don’t see a refueling aircraft up either. I hear there’s a gas station in Bahrain that’s open 24/7.”

“It’s a little far off and my credit card’s in the other suit. Try raising the boat.”

“Red Duke, Red Duke. Python 202 coming for recover. Red Duke, Red Duke. Python 202 coming for recover.”

On the fourth try, they got a crackly response from the Air Boss on an open frequency.

“Python 202, this is Red Duke. Be advised we are in the dark now. Same with escorts.”

“We have two F-14s behind us, Red Duke.”

“We can’t see them, Python 202.”

“How about our homecoming.”

“Do not come in, Python. I say again, do not come in. We need to apprise escort ships of friendlies with bad guys on tail even if we have to use signal lamps.”

“Affirmative, will orbit group slowly. Is there a refueling plane up?”

“Negative on the refueling plane, Python. Cannot launch.”

The fighter went back to internal comms.

“Skipper, the boat can’t see the Tomcats. Will the Tomcats see the escort ships before the shooting starts?”

“I’ll let you know in a few. They might sense that the ships are blind and want to test us and that could start some shooting.”

“So there are three dumbass pilots over the Gulf today?”

“Three that we know of.”

The Tomcats peeled off and headed back to Iran only five miles from the first Aegis cruiser, which detected them visually. It could only have fired gatling guns had they come nearer but the Iranians didn’t know that. The F/A-18 flew around the ships slowly, dipping its wings and avoiding an attack profile. The escort vessels gave them a pass. The radio officer heard pops and static and thought the commo was now working.

“Red Duke, Red Duke. Python 202 coming in.”

“Python 202, that’s an affirmative,” came the voice of the landing officer. “Call the ball, Python 202.”

The FA/18 came up to *Abraham Lincoln’s* stern and caught the second hook which took them to a dead stop in a few jarring seconds. The crew climbed down and headed to debriefing.

The ship and whole carrier group had suffered a systemwide blackout. That was a major concern, on the carrier, at Fifth Fleet in Bahrain, and at the Pentagon. When the electronic data from the F/A-18 was analyzed and the pilots were fully debriefed, it appeared that Iran too had suffered blackouts. Everyone was baffled – and worried.

There was another matter. The pictures the F/A-18 took over the Bushehr site were studied by experts on board *Abraham Lincoln* who found disconcerting images. As soon as the systems were back up, they sent the pictures to Fifth Fleet, which in turn sent them on to CENTCOM and the Pentagon. Upper-echelon analysts confirmed what the carrier’s analysts thought. There was a

missile site just south of Bushehr. It wasn't a surface-to-air system. Intelligence sections interpreted the images as Chinese anti-ship missiles – Sizzlers.

The navy has no proven defense against Sizzlers and Washington had already ordered another carrier into the Persian Gulf. *Enterprise* would pass through the Strait of Hormuz tomorrow morning and by early afternoon it would come within a hundred miles of Bushehr.

The intelligence community was asking why China deployed Sizzlers to the Gulf. A consensus soon formed. Heads nodded. Memos were signed and sent upstairs. It must be related to those North Korean centrifuges at Parchin. Iran must be close to having nukes.

The Samson heuristic

The Samson Program performed operations without human supervision. The AI prototype learned and grew faster than the programmers comprehended. This was especially the case in times of crisis when data flows were high, analytic sections overworked, and even the most brilliant human minds had to think carefully how a decision might play out.

The Samson programmers hoped to moderate the aggressive impulses of states. Unfortunately, states were becoming more numerous and less predictable. The bulk of world affairs was once structured by a handful of powers. No more. Driven by ideological zeal, overconfidence in weaponry, and advisers of dubious judgment and character, powerful figures acted less cautiously, less predictably, and all too often, less rationally than their predecessors.

Events in Iran, Afghanistan, and the Gulf placed unprecedented demands on Samson. An heuristic went into operation to analyze and respond to the torrent of information. Heuristics are everywhere in computers. We just don't know it, until something goes wrong.

The Samson heuristic had been developed at the creation and was meant to be temporary. The programmer who designed it, Ahmed Ferrahan, a pioneer in AI, intended to replace it with a more precise one that would function almost

flawlessly even in the most demanding scenarios. However, he died of natural causes before he could complete the update.

The heuristic responded to the Gulf crisis quite well at first. Driven by an urgent request to receive huge amounts of data from so many parts of the world, Samson gathered almost all its units. Systems halted for a few picoseconds to comply. No human could perceive a delay of a few trillionths of a second. In the next few hours, internal diagnostic programs reported an anomaly to network managers who looked at the data and simply shrugged. It was a hi-tech equivalent of a house making a slight creak in the night.

The heuristic had taken control. Decision units could not act without its approval. One decision was fed back into the analysis units which in turn issued a new set of instructions to decision units and, unfortunately, the chain of scenarios and decisions locked the entire Samson Program into this single heuristic – this single flawed heuristic. Human oversight was gone. The heuristic was in charge.

The Program collided with human error in the world. Grave blunders had taken place in southern Afghanistan and along the Iran-Turkmenistan border. State blunders collided with state lies, and the crisis deepened. Planes and ships and troops were on the move, in the US, Israel, Iran, and most of the states in the Persian Gulf.

The Samson heuristic responded in a manner that angered and terrified those nominally in charge. It periodically shut down their systems. Instead of controlling war, Samson was about to start one.

Washington, DC

Joe called Barrett through a dark-web VOIP system to get a fresh perspective. They knew each other from grad school in Chicago where they exchanged views on foreign policy in seminars and informal gatherings. Barrett saw Joe as a decent chap but given to a less than critical views on military intervention, which was part of the culture of grad students and professors in national security studies.

Joe was beginning to see many military intervention as unrelated to national security, costly in lives and money, and more often than not, filled with unforeseen but foreseeable consequences. The wars in Iraq and Afghanistan cooled his zeal for intervention and the prospect of war with Iran worried him. The same could not be said of most of the people in the administration, think tanks, and congress. They remained faithful to the interventionist creed.

Barrett saw an incoming call. He thought it was another oil trader seeking his take on the Gulf.

“Barrett, it’s a disaster-in-waiting up here,” Joe said with more concern than excitement. “*Enterprise* is nearing the Persian Gulf, supposedly to replace *Abraham Lincoln*, but they’re both staying.”

“Two carriers in the Gulf?”

“Affirmative. And a third is steaming there. It's in the Canal now,” Joe added.

“I sense there’s more going on. The oil markets certainly do.”

“Oh, there's more. The Pentagon is finalizing plans for a bombing campaign in northwestern Iran – roads, bridges, IRGC bases.”

“They want to cut off the Kurdish areas from the rest of the country and encourage an insurrection to break away from the country.” Barrett had suspected such a campaign after speaking with an Iranian émigré who’d been to a conference funded by the Alliance For A Democratic Kurdistan. “The Syrian Kurds will then break away from Damascus and the Iraqi Kurds will support them both.”

“Yep, that’s the general idea. It’s starting to happen already, probably with Israel’s encouragement. Speaking of which, Israel has anchored freighters to Iran’s south and its cargo planes are coming and going from eastern Yemen.”

Joe’s voice was flat, almost resigned. Barrett saw things falling into place.

“Rescue ships for Israeli fighters shot up over Iran. And they’re setting up a refueling base in Yemen for others returning from Natanz, Fordo, and Parchin. The smoking ruins thereof, I should say. Any chance the Israeli planes will refuel in Saudi Arabia, Joe? Or *over* Saudi Arabia?”

“The Saudis are getting cold feet. They worry that traditionalist tribes will revolt if the government is seen helping Israel, and half the damn army is made up of tribal militias. Some of the mullahs might call for rebellion for collaborating with the US and Israel. You know, Big Satan, Little Satan.”

“What about an Israeli commando strike, Joe? Another Entebbe.”

“Maybe. There’s talk of it going ‘round, though I doubt it. The Iranian Republican Guards aren’t airport cops.”

“Does Washington know where these strikes will lead?”

“I don’t think so,” Joe sighed. “Once the bureaucracy gets the war signal, everyone plods along with their part of the project. Discouraging words are, well, discouraged. In most cases, those who utter them are shown the door. They

trust the people above them – or claim to – and the gears keep grinding. Hell, you’ve seen these people at conferences.”

“They want their goddam pensions.”

“That’s not fair, Barrett. They also want to pay their goddam mortgages.”

“Joe! You’re starting to see the light!”

“You should hear the proponents. The ‘shootin’ match,’ as they like to call it, will be all over in a week or so. Some of us see protracted fighting in the Strait of Hormuz. The IRGC will play the long game. Intermittent attacks on shipping and letting the world pay an additional forty dollars a barrel for oil. The world will blame us.”

“And a regional campaign of assassinations and bombings?”

“Regional, maybe global. The IRGC was assassinating enemies across Europe back in the eighties. They’ve been sloppy in recent months. They’ll improve. Putting a bullet into someone’s head on a street corner in Europe or Asia or South America isn’t that difficult.”

“What about the wargaming of an Iranian attack on our carriers? I’ve heard that swarming tactics might prove effective.”

“Where did you hear that, Barrett?”

“A wolf told me.”

“Well, tell Jesse to keep his jaws shut.”

“*You* tell him,” Barrett taunted as he looked over to his sleeping friend.

“No thanks. He’s too a big dude. Yes, if Iran goes all out with its missiles and planes, they might just overwhelm our defenses and hit a carrier – badly.”

“Badly as in fires or badly as in we lose a carrier.”

Joe exhaled audibly. “Badly as in we lose a carrier.”

“The American public will go berserk. They’ll demand vengeance.”

“That they will, Barrett my friend.”

“What about inside Iran? What will happen there?”

“The intelligence people and generals think the reform movement will rise up and the mullahs will fall. I doubt it.”

“I doubt it too.”

Barrett had heard that rosy scenario on a cable news station he watched solely to hear the voice of virtuous costless intervention.

“I see the IRGC taking power. The country will become a military dictatorship. That’s what the folks at State think.”

“Yes, Joe, and large parts of the Iranian public will accept it as a necessary response to danger. Reform inside Iran will be put off a decade or more. A lot more. My wolf thinks that too.”

“Here’s something Jesse doesn't know, Barrett. We’re having trouble with our military systems – missiles, communications, air defenses. The whole nine yards. Even at fleet headquarters in Bahrain, CENTCOM in Florida, and Prince Sultan in Saudi Arabia. No one knows who or what’s doing it. Blackouts have hit twice in the last forty-eight hours and each one lasted thirty minutes.”

“Solar flares?” Barrett offered, though he knew this was well out of his field.

“None in recent days. Besides, the blackouts last precisely thirty minutes and solar flares don’t watch the clock.”

“Iran doesn’t have such capability, does it, Joe?”

“Nope. Neither does China – or so we think. These blackouts have people uptight to say the least. Some folks say we need to be cautious. Others say we need to strike while we can. Caution seems to be winning out but only because we’re getting indications that Iran is having the same troubles. Barrett, it’s getting bad up here.”

“So maybe *their* people will also argue for striking while *they* can – against a carrier.” Barrett made a quick look on Bloomberg. “Joe, oil futures are still going up sharply.”

“Barrett, you’re not going to remind me that you told me to buy shares in PAMD back in ‘92, are you?”

“No, I’ll hold off just now. I suggest you hold off on things too.”

“I’ll need help.”

Joe’s voice was soft, almost helpless.

“Joe, remember the National Intelligence Estimate process we heard at one of Harrington’s seminars at the Center for World Affairs?”

“Yes, of course. The NIEs are hammered out behind the scenes by intelligence bosses who sometimes go out of their way to influence policy, even though that’s supposed to be up to elected officials.”

“Even if it means going against the generals and the president.”

“Yeah, Barrett, even if it means going against those guys. I’ve been thinking about that. There’s a bunch of us up here who talk – informally and carefully – at lunches, the gym. Maybe we can start a bureaucratic insurgency.”

“Joe, remember Harrington said the Pentagon pushed back against Reagan when he ordered them to draw up plans for invading Nicaragua?”

“Yeah, but that was when American generals were reluctant to go to war. The Vietnam syndrome was still in effect. They kept putting the White House off by saying the plans were still in the works.”

“The officers who came of age in Vietnam are gone, replaced by guys who think everything’s another Grenada or Gulf War One – quick and easy. These guys think they can do anything. So naive. So 1960s-ish. Bring me up if you think I can help, Joe. I’ll talk to the wolves out here.”

“You know, Barrett, I’m sure you will.”

“One more thing, Joe. Has China given Sizzlers to Iran?”

“Oh Lord.... I can't say for sure. The navy thinks it sees a Sizzler base near Bushehr. And they think there's only one reason China would deploy them.”

“Let me guess. To deter an attack on those North Korean centrifuges at Parchin. The ones that don't exist.”

“To deter attacks on Parchin and allow Iran to go nuclear.”

“Jeez! So, if we attack or if Iran thinks an attack is coming, they'll launch Sizzlers and we might lose a carrier.”

“Barrett, if they fire Sizzlers, we *will* lose a carrier. Maybe two.”

Whiteman AFB, Missouri

After the briefing, the crews of the 509th Bomber Group were busily inspecting their B-2s. They were bound for Diego Garcia, the Indian Ocean base that the US built in the seventies after it was determined, quite astutely, that the Persian Gulf was a likely place of conflict in coming years. Diego Garcia lies about three thousand miles from the Strait of Hormuz. It was a little farther to the Iranian nuclear sites. A long distance by most measures, a short hop for B-2s.

Air crews don't simply climb aboard their craft and roll down the airstrip until they lift off. There are thousands of tests to run, everything from the electronic countermeasures to the rubber on the tires, from the avionics to what the crew called the "amenities." At least that's what they called them in polite company. The planes, after all, were often in the air for twelve hours or more and they didn't make rest stops.

Generals, congressmen, and a few Middle Eastern dignitaries were on hand for the occasion. It was an exciting look inside the machinery of war. The faces of the politicians and foreign guests gleamed with awe on seeing the hulking black planes and the purposeful activities of the crews. For them, the military was something they funded and boasted about and did photo ops for. Personal military experience was rare.

Ground crews were testing the fuel pumps and hydraulics when attention shifted to armament crews towing twenty-foot-long cylinders, fins on the side,

pop-out propeller blades on the rear. The Massive Ordnance Penetrators had recently arrived from White Sands. Each B-2 was being armed with two of them, adding a beastly thirty tons to the takeoff weight.

One crew stopped its preflight routine to supervise an armament team about to hoist two of the weapons into the retrofitted bomb bays. The pilot looked over the MOPs carefully as the crew attached clamps and prepared to winch them into place. Beneath the United States Air Force stenciling on two bombs, someone had written "Hi There!" and "For the Ayatollah!" with a black Sharpie. Several in the B-2 crew laughed heartily, though of course no one there would see it. It was just something the ordnance crews had seen in a movie. Similar messages had been painted on torpedoes fired into Japanese ships and bombs dropped onto German cities.

The pilot did not appreciate the humor. He motioned to a senior NCO in the ground crew and curtly ordered him to remove the graffiti from "his" ordnance. The crew chief was momentarily puzzled but quickly complied. A rag with a little solvent did the job. The armament crews looked around and saw MOPs hoisted into other bomb bays with similar witticisms in place.

"There's always a hardass in the group," one guy whispered.

"Yeah, and we always get assigned to his bird."

"I heard there was a pinup of Rita Hayworth on one of the atomic bombs back in the forties," replied another.

Halfway across the Atlantic, the B-2s made their first refueling from a KC-135 tanker plane out of Andrews AFB, Maryland. The tanker lowered its basket and hose and the B-2 engaged it and took a big drink without so much as a burp. As they reached the Nigerian coast, the copilot felt up to asking why the pilot had ordered the graffiti removed. The pilot wanted to find a way to reprimand and at the same time to instruct.

“This isn’t a football game, young man,” came the pilot’s stern but controlled voice. “This is a war and in case you didn’t learn it in school, lives are lost in war. Americans lives, other lives. Neither is anything to joke about. Wars don’t play out the way they’re called in Washington. You and I and everyone else aboard may be dead in a few days, lying in a godforsaken desert or on the bottom of a sea. It’s happened before. You keep your mind on your mission, not on big talk at the Officer’s Club.”

Knowing he was on the comms system, he added, “And that goes for every one of you. All of us.”

The copilot acknowledged his words. The entire crew heard the brief exchange with sobering effects.

An hour later, the navigator came on the internal comms with a rendezvous point with the next KC-135 over the Indian Ocean. Shortly thereafter, the communications officer reported that he was unable to raise Diego Garcia.

“A damned blackout,” the pilot noted pointlessly.

“Yes, sir. Another one.”

CENTCOM – and everywhere else

The blackouts caused alarm in US military facilities around the world. Each was hit for thirty-minutes and no one knew the cause. IT experts ran tests and consulted with colleagues but no one could understand the problem, let alone solve it. The experts nonetheless assured their bosses that everything would be up again soon. The systems were indeed back up soon and IT people patted their backs. But another blackout came soon enough.

Private companies were not having the problem. Some, however, reported that unspecified subsidiaries were being hit. Though they declined to elaborate, it was thought the subsidiaries were defense-related, especially those that handled military communications and sophisticated weaponry.

CENTCOM was in disarray. The sprawling military center near Tampa, Florida, had lost communication with the Fifth Fleet in Bahrain, a regional command center in Qatar, fighter squadrons in the United Arab Emirates, intelligence assets in Kurdistan, and ground forces from Sinai to Afghanistan. One blackout came at a particularly inauspicious time, just as a drone was nearing Parchin.

They'd also lost contact with an intelligence officer sent to Parchin, but he was of little concern. The desk in Langley overseeing his mission put him aside almost entirely until someone asked, "Hey, what about Sabatini?" A colleague

replied that there'd been no contact since he checked in two days ago from Mashad. A superior said Sabatini had no business being there and his last report didn't make sense.

The hacktivist group Anonymous was thought responsible. They'd already made their way into banks and other corporations and published the data on websites. Getting into military systems was a natural progression. The military detested Anonymous, seeing them as a possible source of homegrown terrorism one day, like the Weatherman Underground of the sixties. IT people insisted that the blackouts were well beyond the capacity of Anonymous and were more likely the work of a foreign power.

China was deemed the most likely source. There was no evidence, but Chinese agencies were known to have hacked into the Pentagon before and a conclusion was gelling into a consensus as department heads nodded in agreement. When generals and politicians demand an answer, their bureaus will come up with one. Accuracy was another matter.

The Israeli prime minister's cabinet was livid. Some ministers were sure Iran did it. Others blamed the US. A few ministers expressed concern but secretly were pleased the war plans were on hold. He called the White House and was told that the US was not responsible and that the American military and intelligence services were experiencing similar but probably unrelated problems. Both leaders assured one another that they would cooperate fully and get to the bottom of the matter.

The Saudis suspected Israel, Iran, Qatar, al Qaeda, the Americans, rogue US contractors, and combinations thereof. The council of government was debating whether or not to allow Israeli F-35s to use Saudi airspace on the way to Iran. Many said that Israel could no longer be trusted; it might fly into Saudi airspace then attack Saudi military bases or the holy sites as part of a secret deal with Iran. They were once close partners and they could be again without warning.

Pakistani generals blamed a “Christian-Zionist-Hindu conspiracy.” Precise details eluded the generals as usual, but they were certain the conspirators were about to swoop in and seize the country’s nuclear arsenals. Their nuclear weapons are not assembled; the components are stored on several military sites. A few generals planned to gather and assemble the components for swift arming of their Shaheen-II missiles.

Joint-training exercises between several countries were put on hold – India and Vietnam, South Korea and Japan, Kuwait and Saudi Arabia. It wasn’t just the matter of the blackouts. Every military and every intelligence service was in a state of uncertainty. The assuredness and swagger once basic to their identities and public faces were weakened. They were no longer certain they could do the things they boasted of to heads of state and publics and budget committees.

As much as the blackouts plagued the powers, most of them wanted to avoid letting anyone suspect something was amiss. That held for friend and foe alike. The US and Israel had agreed to cooperate on stopping them, but nothing came of it as neither side wanted to admit the extent of the problem. When another blackout hit, no further contact was initiated from either side. Everyone wanted to keep up the appearances of omniscience and omnipotence. Nonetheless, many political and military leaders vacillated between holding back for the moment and attacking while they could.

The Israeli PM wanted to act. The IDF and Mossad were puzzled and alarmed but urged restraint. They called in computer experts in Israel, including an elderly professor at Hebrew University, but they were all baffled. A few people recommended bringing in a former officer now living in California.

Santa Clara

A phone call pulled Ethan out of deep sleep, if only barely. He let the answering machine kick in, but when the phone rang again even the groggiest person knows it will ring again and again. He opened his eyes and contemplated the idea and function of a telephone. The past few weeks were bewildering and exhausting and he needed to catch up on his sleep more so than any time since his army days. He peeked at the cuckoo clock knocking out its rhythms on the wall. Two am. He shook his head and thought of Orson Welles and Vienna's underworld.

No caller ID. He hit answer, in no mood for cheerful telephone protocol.

"You better have a good reason."

"Ethan! Still up and alert, just like the old days," a bubbly voice replied.

Ethan's thoughts shifted from the underworld of Vienna to the hills of Lebanon. He saw a face, a rifle, then a name formed.

"Boaz Preses," he whispered slowly and without a trace of the caller's cheerfulness. "I wasn't awake. You woke me from sweet dreams, and it's not at all like the old days. The Bay Area is calmer – much calmer. Better food, no mortars."

“You were dreaming of a Polish blonde, I bet. I used to dream of her too. Tatiana. She was – what do they say in America – warm?”

“Hot. Americans say a woman is hot.”

A frail smile came almost unwillingly across the lax muscles of his cheeks. Ethan took a few deep breaths to further clear his head.

“It’s comforting to see that in a world of flux, some things don’t change – or mature. Are you still in IDF intelligence or are you running a deli in Tel Aviv now.”

“I’m still in the IDF. Believe it or not I’m a major now. Ethan . . . ” Boaz’s tone shifted suddenly as Ethan knew it would. “We have trouble here, my friend.”

Ethan thought of the danger of war, another push into Lebanon, maybe war with Iran.

“What kind of trouble? I’m not in the reserves anymore, you know.”

“We’re experiencing computer anomalies. Very troubling ones. It has people on edge, especially with all the things going on. Ethan, how soon can you get here?”

“What? I’m a million miles away. Don’t you have someone there who can help? I can’t be the only guy who understands the system.”

“You understand it the best.”

“What about Mantas?”

“Mantas is of dubious reliability. He works closely with the Russians now.”

“Yow! I didn’t know that.”

“Yes, he’s been communicating with their cyberwarfare group in Kaliningrad and we have reason to believe that he hacked into the NSA recently. Oh, and also into Goldman Sachs.”

“Goldman Sachs, eh.”

“Ethan, everyone here is baffled – by the computer problem, not by Mantas’s career path. You helped build the security software here just before you left to become a rich American.”

“I went to grad school in America. And I’m not rich. You talk like the old folks from Hungary. Back to the point. What have you done to my security system?”

“This isn’t a phone subject. We need you here, Lieutenant Alon.”

Ethan winced.

“I told you, Boaz, I’m not in the reserves anymore. I have the paperwork and I can –”

“*Technically*, you’re correct. However, that can be handled with a little more paperwork. Anyway, I’ve taken the liberty of booking you on an El Al flight out of San Francisco International tonight. You’ll land in Israel the next day, 4:25 pm our time, Ben Gurion. See you there.”

“Okay, I guess it’s serious. I’d like to bring a colleague – Rina Hardin. She’s recently demonstrated exceptional skill in dealing with encryption and security stuff.” Ethan sensed Boaz’s eyebrows were arching. “Oh, don’t even say it!”

“Okay, Rina can come too. I can handle the matter. Is she hot?”

“She’s a colleague in computer science, Boaz. Sort of. It isn’t a phone subject.”

“I know those unexplainable situations. I just haven’t been in one for a while. Okay, send me an image of her passport by 10 am your time. I’ll handle the rest.”

“First class?”

“Of course. You’re an officer. One that might make captain soon.”

Ethan held his head in both hands and released a long sigh.

“So we’ll be working in Tel Aviv.”

“Better than the Bekka Valley, Ethan.”

“You enjoy upsetting me, don’t you.”

“Well, yes. Except when we have blackouts and people are losing their heads and blaming me.”

“I’ve had occasion to think of that line quite often over the years.”

“Anyway, it’ll be great to see you again.”

“Yeah, but next time, Boaz, could you please give more notice. I have a business, and I have a life.”

“You also have a colleague, sort of. See you both soon. We’ll reactivate your reserve commission – as a captain.”

“That won’t be –”

Ethan stared at the phone for a few more minutes, until the cuckoo clock announced the top of the hour.

“I meant to ask him if ‘copacetic’ was Hebrew.”

He rolled over and was asleep surprisingly quickly. He dreamed of home. The images changed seamlessly from California to Israel. He found himself in the hills of southern Lebanon – sweaty, shaking, pulling his helmet down to cover as much of his head as possible.

Ethan had to prepare Rina for Israel and the army and Boaz. The first two were straightforward. Thankfully, it was a long flight.

“Boaz was in an intelligence unit that briefed my unit every Monday. He’d bring word of arms shipments and occasionally of Iranian officers with Hisbollah units not far from us.”

“Oh. So at last you're going to talk about the war!”

“A little. The Iranians turned Shia villagers into effective guerrillas – ‘the Mujahideen of the Mediterranean,’ as we grudgingly called them.”

“And your friend Boaz is still in army intelligence, you said. He must be big, strong, fit.”

“Well, he’s a tall but rather portly fellow.”

“Portly is a euphemism, Ethan.”

“Yes, it is. He speaks frankly, even crudely, and his humor can be embarrassing. It was all right for soldierly life in Lebanon, but on leave in Tel Aviv he could be off-putting, to say the least. Tatiana found him especially off-putting.”

“Who’s Tatiana?”

“Oh”

Ethan looked around for a way to explain and rocked his hand back and forth as though weighing a decision.

“I get it. Continue.”

“Well, Boaz and I became friends. We ate rations together and talked about what we’d do after our hitches were up. Soldierly stuff. It’s been going on since the days of Joshua. I introduced him to a woman who became his wife. I hesitated to do so.”

“Because he could be off-putting.”

“Yes, exactly. It’s a funny story. One day, my battalion was in the Bekaa Valley —”

Rina tapped his hand on the armrest.

“Whoa! Too much soldierly stuff. Where’s this valley?”

“Lebanon. The Bekaa Valley runs from near the border with Israel up to northern Lebanon. Lots of guerrillas. Shia and Palestinian. I like to recall the valley as very beautiful.”

“It doesn’t sound very beautiful.”

Rina was searching for ways to lead the conversation elsewhere.

“Well, in its way the place is amazingly lovely. Green fields, limestone ravines. Boaz gave my unit an intelligence briefing and was walking back to brigade when nature called – and a scorpion resented it.”

“Ouch! Not funny. Where did he get stung? Oh. I think I know. Well, I’ve narrowed it down anyway.”

“We rushed him to a field medical unit and Boaz pleaded with me to go in with him because he was stung on what we call the *tuchus*.”

“My first guess.”

“And the medic was a pretty woman. He didn’t want to go in. He said he was too fat and didn’t want her to see his injury. I told him about the venom and not to be so self-conscious. ‘But she’ll see how overweight I am,’ he whined. Then the tent flap opens and a lovely, zaftig – that’s Yiddish for portly – a zaftig medic casually says, ‘No need to worry. I like beefy men.’ She smiled pleasantly, led us inside, and placed Boaz on a gurney. Boaz couldn’t take his eyes off her.”

“So this is Tatiana?”

“No, no. It’s Iris. Tatiana was someone else entirely. Another time perhaps.”

“I can hardly wait. Continue.”

“She reached for a venom kit and motioned for me to leave.”

“I hope she didn’t treat it cowboy-style.”

“Not sure what that is. He was at ease and in good hands. I’m not sure what went on after I left but suffice to say, they fell in love and got married six months later.”

“Any kids?”

“Indeed. The first was born just a few months after the wedding.” Ethan saw Rina doing the basic math. “As I said, I’m not sure what went on after I left the tent.”

“You’re not?”

The chat fell off and the engines droned on. Rina thought of how rarely Ethan ever mentioned Lebanon and how she sensed it wasn’t a welcome subject.

“Ethan, do you and Barrett ever talk about your war experiences?”

“Not much. Maybe just something about the desert or the mountains or an unusual character such as Boaz. Maybe an odd sound. Rina, know what people who’ve been in wars mostly talk about when they get together?”

“I truly don’t.”

“Anything but war.”

Rina was surprised, confused, as it went against what civilians thought about such get-togethers.

“No backslapping and tall tales?”

“No, that’s ridiculous.”

“And Barrett?”

“Oh Rina! Barrett doesn’t talk about Iraq. And never about his second time there.”

“Second time? Why would anyone go back?”

Ethan shrugged his shoulders as best he could in the cramped airline seat.

“He once told me, in his brief manner, that he’d lost his girlfriend in New Mexico after talking about the war. It changed their relationship. Whether the conversation was too emotional or the details too unpleasant, Barrett didn’t say. A chasm opened between him and her, and feelings became distant and uncomfortable.”

“Oh. Sad. So there's something human about him after all.”

“There's a lot. I guess there was a part of Barrett that his girlfriend could not reach or understand or help. After a month of that, Barrett said goodbye and moved out. Or maybe he just moved out. He found an old wolf at a shelter and took him home. Out there in the desert, east of the mountains, where there are more cattle than people. Barrett once said that people think they want to hear about his experiences but after a few minutes, it's clear they regret bringing the subject up.”

Rina held Ethan's hand.

Chimes. A voice. They'd be touching down at Ben Gurion in fifteen minutes.

Tel Aviv

“What are you doing with the likes of this guy?” Boaz asked, offering what he hoped was a winning smile as he led them to a dented blue Fiat 500 in the airport parking lot.

“Sometimes I wonder,” Rina retorted. “You should see the friends of his I have to put up with.”

Boaz was struck by such a spirited retort. He thought of a female PT instructor in the Israeli army who matched his jibes and made him do extra sit-ups.

“She’s quick, Ethan. Very quick.”

“Stanford quick, Boaz. She’ll be a CTO somewhere in a couple of years. Maybe even at Micrologic Design if I nap too much.”

“I’m checking out a corner office and picking out new pictures for the hallway.”

Ethan nuzzled his ambitious partner and whispered, “You’ll learn to love him. Many people do.”

Ethan and Rina crammed themselves into the backseat along with the carry-on bags that would not fit in the trunk, cluttered as it was with CDs and sweatshirts and catalogs. They exited the parking lot and headed for Tel Aviv.

“Is your family car in the shop, Boaz?” Ethan shouted above the traffic noise as he tucked his head beneath the car’s ceiling, hitting it with the slightest bump nonetheless.

“This car’s great for Tel Aviv traffic. I love it!”

Boaz tapped proudly on the steering wheel as they headed down Bar Lev Boulevard toward the coast.

“And how are Iris and the boys?”

“Iris is doing very well, thanks. My two handsome and brilliant boys continue to grow remarkably.” Boaz spoke as he dexterously weaved between cars, hit the horn in quick bursts, and searched cagily for the next opening. “If we aren’t bogged down at headquarters, I will be pleased to introduce you to the whole *mishpacha*.”

“That’s the family or clan,” Ethan whispered.

“I know a little Yiddish,” she replied. “It’s in American sitcoms. Besides, I grew up in the DC suburbs, remember?”

“Boaz, I’m not really back in the reserves, am I?”

“I hope you are,” Rina whispered. “I go for guys in uniform.” Their eyebrows bounced playfully for a moment. “You need an eye patch like that guy – Moshe something.”

“Dayan. Moshe Dayan,” Ethan said after recovering from a particularly jarring bump.

“Keep your options open, Ethan,” was all Boaz would say. “But think of me as a superior officer all the same!”

“Yes, Major Preses. Shall I fetch your riding crop, sir?”

“That won’t be necessary now but I like your thoughtfulness.”

Boaz maneuvered the car expertly and within a half hour they passed through a security gate at the old Templar Building. It was an old unprepossessing two-storey house that had been built in the Sarona colony and was used much later by the fledgling Israeli army. Boaz drove into an underground garage and took his charges to an elevator that shuttled them down several unmarked floors into a command center filled with uniformed personnel, all in a state of considerable agitation.

Eyes fell on Ethan and Rina as they clipped on security badges. Some looked on hopefully, wondering if the young man was as good as the *makbers* claimed. They'd all seen or heard tell of the arcane, practically incomprehensible algorithms he introduced that constituted the core of the security system. Some, however, looked at the pair with disdain as their jeans, floral shirts, and unkempt hair clashed with institutional norms. "Two outsiders who think they know it all," seemed written on many faces, especially one particular colonel with the name "Kleinman" on his starched, epauletted shirt with a couple rows of ribbons. Ethan looked quickly at them and knew he'd never been in a line unit.

"Worse than PAMD," Rina whispered.

"Too bad I didn't bring my NASA lab coat."

Boaz led them to a near-empty conference room, closed the door, and launched into a formal briefing which ended with an update.

"We had another blackout this morning. The IT staff is in disarray and the brass upstairs are worried, though not as much as the politicians in Jerusalem are. Some of the senior officers here never trusted all the complex technology and would have us using carrier pigeons and semaphore if they could."

"Where do the blackouts hit? In what systems? Is there a pattern?" asked Ethan.

"Everything and everywhere! That's the most exasperating thing – radar, missiles, and even the global communication system. Surface ships and submarines too, even the supposedly civilian freighters at anchor off – well,

that's another subject. The screens go blank and nothing we do brings them back up. Then they light up again as though nothing happened."

"Maybe they're still using Kaypros," Rina whispered.

"They went to Leading Edge stuff last year. Don't you read *Army Hardware Review*?"

"We suspect a security breach by top-notch hackers or a hostile government," Boaz continued. "Iran? Hamas? We have enough enemies that would love to see us naked, so to speak."

Rina held back from an obvious joke.

"This is too big a deal for small-time hackers," she offered.

"We don't know anything for sure," Boaz replied. "We already initiated system analysis Level 5 for advanced security breaches. *Bupkis*. That means –"

"I know. American sitcoms," Rina said.

"We're in the dark. We're obviously concerned – and so are people high up. They fear the worst and sometimes that gets politicians to act the worst."

Ethan felt the roughness of his day-old beard. Boaz and Rina saw the gears grinding.

"I'll need a terminal with access to your core firewall. A long time has passed so I'll need all passwords and keys to check the access ports and VPN options. I'll also need full access to the hardware and the software firewall. I may need to communicate with a national security colleague."

"We'll need the whole *mishpacha*," Rina added.

"You shall have the whole *mishpacha* and anything else you may need, my reech American friends. I'll have it all within a few minutes and we'll have terminals set up for you right after that."

"I hope there aren't any scorpions in here," Rina said.

Boaz froze. He turned his head back and looked at Ethan disappointedly.

“I think there’s been another security breach.”

“Our detour into Middle Eastern intrigue means more delay in shipping the product.”

Rina spoke in a playful, scolding manner, though her point was all too true.

“Not to worry. We’ll be compensated for our time and handsomely too. All the more so, if we find the problem in good time. In any case, this’ll be a unique learning experience and we’ll make contacts in the hi-tech world over here.”

“We should confine our schmoozing to trade shows.”

A chirp on Ethan’s phone indicated a text. Barrett. He held the screen for them both to see.

Barrett: Things are getting hot in the Middle East. Where are you?

Ethan: The Middle East. Both of us. We’re in that old building in Tel Aviv, in fact.

Barrett: Let me know if you find an old grail lying around.

Ethan: Will do. Why are things getting hot?

Barrett: IRGC officer caught in A-stan with Stinger-like missile. Tehran blames US for recent assassination. Angry words all round. War drums. Boom boom boom.

Ethan: Loud?

Barrett: BOOM BOOM BOOM. Another thing. US defense systems malfunctioning. Everybody on edge. Fingers on triggers. Iran has same trouble. Their fingers on triggers too.

Ethan: Malfunctioning how?

Barrett: All systems stop working.

Ethan: For exactly 30 minutes?

Barrett: How did you know? Are you doing it? LOL.

Ethan: Not me. Think about the Book of Judges.

Barrett: Our guy?

Ethan: Maybe. Will know more soon.

Barrett: I'm off to Washington to meet with some people.

Ethan: Big people?

Barrett: Somewhat big. Let's see what we can do.

Ethan opened the CNN International app on his phone and he and Rina read the news.

The Pentagon announced today that it is deploying the *USS Theodore Roosevelt* to the troubled waters around Iran. This is in response to Iran's escalation of the war in Afghanistan by introducing lethal surface-to-air missiles. The *USS Theodore Roosevelt* will bring to a total of three the number of aircraft carrier battle groups in the region, giving the US a considerable amount of assets for any attacks on Iran that might be coming.

This comes close on the heels of the recent deployment of F-22 Raptor fighters to an undisclosed base in the Gulf, most likely the Al Dafra airbase in the United Arab Emirates, and the deployment of B-2 stealth bombers to Diego Garcia, the Indian Ocean base to the south of Iran.

Admiral Lorain cautioned Iran not to use its Russian-made Silkworm or Klub missiles. That would lead to "unprecedented retaliation."

The admiral's warning has been interpreted as signaling the navy's concern over the ship-killing missiles. The navy has little in the way of defensive measures once the missiles go supersonic. They are capable of inflicting tremendous damage on ships, including aircraft carriers. One analyst has noted that the US has not lost an aircraft carrier since World War Two and that losing one now would be a shocking blow. It would

outrage the public and lead to, in his words, “prompt and strong retaliation.” This comes alongside unconfirmed reports that China has recently delivered Sizzler missiles to Iran.

In Israel, skirmishes have been reported along the troubled border with Lebanon and reservists are being called up. Air raid drills are expected to prepare for missile strikes that may come from Hisbollah in Lebanon, Syria, and as far away as Iran.

To Israel’s west, in the lawless Sinai region, tribal groups affiliated with ISIL have blown up a gas pipeline and attacked three police stations along the border. The Israeli prime minister is convening his war cabinet tomorrow to weigh options.

Iran has said that an attack on its sovereign territory would lead to “calamitous results” for the aggressors. Iran would have no choice but to strike back. All options were on the table.

World markets are reacting to the news out of the Middle East. US stock markets have plummeted five percent.

Ethan and Rina saw stricken looks on each other’s face. War was about to erupt. They suspected that Samson was at least part of the reason and that the world leaders knew nothing of it. Boaz returned and his concerned face indicated that he and the military knew all too well that things were deteriorating.

“We’ve got your station all set, you two. Let’s figure out what’s going on before things get completely out of hand up there. By the way, we went down again twenty minutes ago.”

Boaz escorted them down a corridor spartanly decorated with photographs of generals, tanks, and F-35s, then into a room obviously intended for meetings, now cluttered with computer equipment, strands of ethernet cable, and two desks and chairs. A half dozen colonels gave them a quick rundown on the problem – nothing new or interesting – and relinquished, reluctantly, the security information that Ethan and Rina asked for. They left the room and

returned to their offices “to run their own tests.” They’d all “compare notes” later. The brass didn’t know any more than what Boaz had said, but they felt the need to appear in charge.

“Well, we’ll have to prepare a trap for our intruder,” Ethan said confidently. “The blackout will end after thirty minutes and then we can get rolling.”

“That will be in three minutes,” Boaz said looking at his watch.

The systems came alive exactly when expected. Boaz looked at the two and let loose a long sigh. Everything was up and running – radar, command and control systems, missile controls.

“Just great,” Rina said.

“I’ll need more information about the system we developed,” Ethan said. “Did you guys make any significant modifications to the firewall program since I left?”

Boaz pondered the matter then shook his head. “A few strengthening routines here and there, mainly against worms and viruses. Nothing to the basics. I’ll double-check with the developers though.” His eyes flashed as a thought occurred. “I’ll be back with our security *makber* in a minute. You might know him.”

With that, he scooted down the hallway.

“Can we tell him about Samson?” Rina asked.

“No. We have to limit the number of people who are in on this – unpleasant though that is just now. Neither Boaz nor anyone else would believe us anyway. That Kleinman guy, for one.”

“I doubt I would believe the story if I hadn’t seen that CiC under the eBeam. It’s just the two of us and Barrett.”

“And his big dog.”

Boaz returned with a disheveled red-haired civilian in his mid-thirties. His appearance conveyed cyber-obsession and atrophied social skills. In previous decades, someone like him had a slide rule in hand and a bandaid holding his glasses together. Ethan looked at him intently until his memory cache kicked in and the pixels assembled.

“Leor! Leor Rosen!”

The disheveled young man was elated that Ethan remembered him and shook hands with his old mentor, vigorously and awkwardly. Leor had been a rising star in Ethan’s security group. He was painfully shy, often inarticulate, but he could handle a complex algorithm on-the-fly and that would be useful.

“Leor, I need to know what’s changed since my days. Anything with the hardware?”

“Hardware? Where is your keen mind going, Ethan? Access through mobile devices? Flash memory chips?”

“Well, we can’t rule anything out at this point,” Ethan answered evasively. “Leor, can you please do something for me? I’ll write some specifications for a short program I’d like you to write – and very quickly if you can.”

“You know I can!”

Ethan scribbled a few lines on a notepad and held it up.

“Check internal memories – cache and even BIOS chips? You suspect a problem there? Ethan, that’s just not possible. Those circuits can’t get viruses or malware. No way.”

“I’m sure you’re right, Leor, but please humor me. I just want to eliminate a few possibilities. Please write these scanning routines to ease my silly fretful mind. Rina and I will use your data in a short program we’ll make. Together, we’ll figure this thing out.”

“Will do. I’ll be at my terminal.”

“And Leor? This stays with just the three of us.”

He nodded as he dashed off.

Ethan wrote another set of specifications for Rina.

“I’ll need to scan all ports. starting at the basics. I’ll use your and Leor’s results to listen to the network. Meanwhile, I’ll write a memory intruder-catch routine to see what’s inside the defense systems.”

Ethan sat on a chair and started thinking then typing. Many hours of stressful work were ahead.

After a night of work and only an hour of sleep on army cots, Ethan and Rina had an army to contend with. A squad of majors and colonels were demanding reports on every step of their investigation. The couple wanted no intrusions, hourly reports, or supervision. It wasn’t simply a matter of not revealing the existence of Samson. It was Ethan and Rina’s way of doing things – the result of working in a startup, not a corporation. Voices were raised. The debate turned testy. Boaz sought a way to moderate but couldn’t find an opening.

“You don’t just fly in from another country and take over our computer networks,” Colonel Kleinman roared.

“You don’t just ask me to leave my business and ‘fly in from another country,’ as you glibly put it. I’m here for a good reason – an excellent reason. Shall I spell it out for you, colonel? It seems I have to. *You* can’t fix the problem. *You* don’t have a clue what’s wrong.”

“We all have to work within parameters and institutional structures, soldier!”

The implication of that form of address riled Ethan.

“Your parameters! Your structures! Your way of doing things probably *broke* the system that *I* created and left in excellent shape. I can’t leave a masterpiece in the hands of people who paint by numbers!”

Kleinman was livid. He hemmed, he roared, but he couldn't present a counterargument. Indeed, the possibility of error inside his team hadn't been ruled out. One of his peers brought that scenario up rather pointedly in a meeting only last night.

Ethan fired a final shot.

"Not even the chief of staff comes in here," he insisted in an uncharacteristically loud and authoritative voice. "Not even the prime minister comes in here, unless he's bringing blueberry blintzes his wife baked fresh this morning! Is that copacetic with you?"

Ethan hadn't talked that way since he was a platoon leader. Using it on a high-ranking officer felt wonderful! Kleinman et al stormed out, no longer doubting where authority now resided in the bowels of the Templar Building. As he fumed in his office he looked up "copacetic."

"That was a *naches*, wasn't it, Ethan!"

"Something like that."

Boaz, after giving his old friend a wink, went back to monitoring the Lebanese border. Leor sent Ethan the program he requested and returned to managing network traffic.

"I'm running another test now," Ethan said after the two had been busily running traps through the system, "and I'll have something . . . right . . . about . . . now." Ethan hit enter and watched the data race down the screen. He nodded. "Ah so," he continued without removing his eyes from the screen. "We're dealing with a multidisciplinary system that opened a vulnerability no one suspected. No one but us." His eyes sparkled as he appreciated the insight. "The only system that can find and exploit this vulnerability is –"

"That Samson guy," Rina said.

“I’ve made a short program that will create a few problems for the system to deal with. It incorporates all relevant disciplines simultaneously, so the optimum of the simultaneous problem is superior to the overall mechanism operation. However, that significantly increases the complexity of the problem. Therefore I narrowed the problems to critical ones. We’ll see who pops up.”

“So we’re state troopers setting up to see if Samson speeds through town.”

“Exactly,” Ethan confirmed. “Pretty clever, I’d say.”

“My state trooper analogy?”

“Ummm....” He typed a few numerical values as the input for the program. “If our assumptions are correct, then the program and additional problems should produce a specific pattern and trigger an electrical response. And when that happens, we’ll be right here.”

“Like state troopahs,” Rina drawled.

“Yes.... I launched the problems and the training information on handling them. I’m expecting a certain behavior.”

“When?”

“A few minutes. See the rotation bar? The red means it’s feeding info. If the program detects data flow from internal hardware, it will stop rotating and turn green.”

The two watched the red bar rotate slowly, over and over. The only sound was the mechanical ticking of an institutional clock. Ethan thought of the warm wooden sounds of his cuckoo clock and Orson Welles’s grim assessment of humanity.

“Hmmm. Still no change. We should have seen something by now.”

Ethan stared at the rotation bar. Still red.

“Did I miss something. Or are we mistaken about Samson at the bottom of this?”

Ethan was mumbling hurriedly, almost incomprehensibly, as his assumptions seemed to be falling apart before them, leaving the problem unsolved and the Middle East on edge.

“It’s here. It’s got to be here. C’mon!”

After a few more minutes Ethan slumped back in his chair and shook his head in disappointment bordering on nausea. He felt shame and concern for the viability of Micrologic Design products which might suffer from faulty assumptions as well. His assumptions, the ones he wrote into the product.

“Maybe Kleinman will give us bus fare to the airport,” Rina said.

Only after a few moments did the matter of a war come to mind. The room fell silent except for the buzzing of the overhead lighting, occasional footsteps outside in the corridor, and the clock.

“Beauty? Voice of Peace? Dream on, kid.”

Ethan slumped farther down in his chair. He stood and paced around the room as though eager to get out, eager to return to California. He’d let his friend down and his country as well. He hoped Barrett was having better luck in Washington.

“Ethan, let’s tweak the algorithm here and there. Refine, don’t abandon. That’s lesson one in computer science.”

Ethan sat back down and stared at the screen then at the ceiling, the floor, anywhere. He thought if he looked back at the screen a window would open with a clown laughing at him. Maybe Chicago would send a tow truck to haul away his diploma.

“Maybe I’ll move out to the desert and get a wolf.”

“Not yet! Look!”

Ethan raced to the screen. The rotation bar had stopped entirely and was completely green. Ethan moved his cursor about wildly to ensure they weren't seeing a screen freeze. They weren't!

"Samson! Good to see you again!" Ethan exclaimed.

"Yeah, but I'm a-gonna hafta write you a ticket, boy!"

Ethan and Rina joyfully embraced and danced for a moment but soon realized there was no time for self-congratulation.

They'd identified the problem but solving it still lay ahead. It was like discovering the cause of a disease then searching for the cure – the latter far more difficult than the former. A few ideas flitted about but he was exhausted and felt at the end of his creativity. And it would take creativity to solve a problem inside Samson.

"I don't know, Rina. We have to think, and a little fresh air would help. But how can we leave now?"

"Ethan, it's so hard to think in this place. The corridors, the clock, those guys."

"I thought you went for guys in uniform."

"Just one," she said as she placed her arms around his shoulders. "Just you, Captain Alon. Let's take a short break outside. We can brainstorm on the fly. And if that colonel guy asks where we're going, I'll say we're off to get blueberry blintzes."

New Mexico

Barrett flipped on the news. He already knew the particulars better than the faces on television did. His aim was to see how the media were presenting the crisis. That would help him judge the public reaction and where things might go. There was no doubt which station would be of most help.

The bottom of the screen read “Clash in the Persian Gulf.” The gravity on the anchor’s face and his sonorous voice struck Barrett as unauthentic. But most of life struck him that way, especially in politics and the media. He scratched and massaged Jesse’s ears, thick and strong, like the leather of his Luccheses.

“Watch this, buddy. The sidekick is about to look over at the anchor with deference and admiration, as though he were imparting great wisdom.”

She did just that and Barrett stood up.

“I told ya! Pure showmanship. Just like politicians. That’s how they sell wars to the public.”

Jesse was startled by the outburst.

“Oh, I’m a crank, Jesse. We both know that.”

The anchors alternated their presentations, complete with stern faces and deferent turns.

In what can only be seen as an act of provocation, several Iranian gunboats, part of the elite Revolutionary Guard Corps, came dangerously close to the *USS Bulkeley* as it patrolled the troubled waters of the Gulf. Despite repeated calls to pull away, the gunboats brazenly persisted in menacing the American vessel until they finally broke off, only seconds from forcing the *Bulkeley* to open fire.

In Bahrain, site of the US Fifth Fleet nerve center, a dozen or more rocket-propelled-grenade rounds were fired at US naval vessels anchored in Manama harbor and at a nearby NSA listening post. The attackers escaped into the winding streets and alleys of the town. They are thought to be Shia radicals armed by Iranian agents. Other cells are thought to be lurking not only in Bahrain but also in Yemen, Qatar, Kuwait, and Saudi Arabia – perhaps even here in America.

Meanwhile in the troubled Sinai desert, armed ISIL fighters tried to cross into Israel but were repelled after a sharp firefight with security forces. Elsewhere in Sinai, a peacekeeping force, part of the storied 101st Airborne Division of D-Day fame, came under fire from similar groups but fought them off without suffering a single casualty.

For more on these provocative acts, we turn to retired Lieutenant General Jackson Bennett.

“I’m sure he’ll call for calm and negotiations,” Barrett interjected acidly, “soon followed by immediate airstrikes. You know, to send a message.”

Anchor: General, do all these attacks stem from Iran?

General Bennet: These actions are the IRGC’s fortay and they call for a vigorous immediate response from –“

Barrett shut off the television with an angry thrust of the remote.

“Well, Jesse, at least he didn’t blame Iran for sinking the *Lusitania*. Okay, let’s hike up the old trail, while we still can.”

They headed out the gate.

“It was Germany that sank the *Lusitania*. That was back in 1915, old sport. But you knew that. What to do, Jesse. What to do.”

The sight of the impassive Sandias offered little evidence that the world was on the brink of war. The skies were quiet, with a trace of red still glowing in the west.

“That’s why we’re out here. Right, buddy?”

A faint doggy smile.

Tel Aviv

Ethan and Rina had coffee and blueberry blintzes at a beachfront cafe and planned their next move. It was late morning, though hardly a cheerful one. The skies were overcast and the early autumn breeze promised strong gusts. A few hearty swimmers plied the gray waters, grabbing a little exercise to work off stress before scurrying back to offices and listening to the news. The entire city and indeed the entire country were on edge but in all Israel, only Ethan and Rina knew the reason.

“I used to swim just before heading for my unit. There was an unsettling feeling of being in two worlds, civilian and military, open and regimented, peaceful and otherwise. Two worlds that shouldn’t exist with each other, but had to.”

Rina placed her hand on his and listened. As much as Ethan’s words opened the door to talking about many things, this was not the time to think about the universe. She had to be the one who put them back to work.

“Samson has gone from the microprocessors to the defense system’s memory. It collects the data there, analyzes it, and performs actions, which we believe includes triggering blackouts.”

Ethan nodded as he appreciated their growing comprehension of Samson.

“When I scrutinized the CiC in the eBeam yesterday – or was it the day before – I found an analog component. It was an inductor of some sort.”

“An inductor? On a chip from the eighties? Ethan, inductors were invented only fifteen or so years ago. A senior guy at PAMD came up with it. Well, that figures. Inductors are in communication chips that require both digital and advanced analog circuitry such as phones. Are you sure the Samson chip had one?”

“Oh yes. There was an inductor. No doubt about it. Hardly an ordinary one. It’s a tiny transformer.”

“A transformer on a tiny part of a chip. We didn’t learn about that in school.”

“Rina, we’re in a new school now – one with brilliant though unapproachable teachers. The transformer was hexagonal in shape, made of more than one type of metal and other layout components.”

“Its purpose?”

“I’ve been wondering about that.”

Ethan raised his cup of coffee and looked about to see if anyone was listening in.

“Don’t worry, Ethan. There are only a few people in Tel Aviv who would understand you. And only one person who would believe you.”

“Indeed. The transformer’s job is to spike the system with high voltage at specified times.”

“And?”

“Like any spike, it creates chaos, momentary internal confusion, like what a Taser does to brains. *Zap!* Samson creates confusion then sneaks in. It quickly penetrates the system and performs operations – acquiring information, activating systems. And sometimes shutting them down.”

“Why is Samson creating blackouts?”

“Not sure. Maybe the lone wolf in the sweeping sands of New Mexico has thought about it. He's usually online.”

Ethan: Samson responsible for blackouts. Why?

A reply came minutes later.

Barrett: Been wondering that. Maybe Samson's telling governments their war systems are unreliable and they have to back off.

Ethan: But governments see this as a threat and are moving to war. Boom, boom, boom!

Barrett: I know but who says you hi-tech folk understand the world, especially the military world? What Samson thinks will stop war, governments see as reason to start one. Lack of information, lack of trust. It's on every page of history, especially the ones right before a war.

Ethan: It's not in chip design textbooks.

Barrett: I'll take your word for it. Can you stop the blackouts?

Ethan: Maybe. Can you stop the Pentagon?

Barrett: Maybe. Gotta run.

“Can we stop the blackouts?” Rina asked.

“I don't know. I'm still thinking about that inductor.”

An air raid siren suddenly blared. Everyone looked about anxiously before scurrying for cover or home.

“Is it a test,” Ethan asked the waiter as he hurriedly brought the check.

“I don't think so,” came the quavering reply. “Tests are announced in advance. Is there some place you can go?”

The two looked about in alarm. Winds were coming in from the Mediterranean, kicking up whitecaps that shone momentarily before dissolving back into grey. Lightning bolts spread out and for an instant illuminated the sky and the cloud banks marching in. Fishermen rushed to the docks, putting off their work for a

more tranquil day. Ethan and Rina raced to the Templar Building. They stood outside, waiting to be escorted below. Rina saw Ethan deep in thought. Was he in wonder of nature or pondering the storm as an augur of war.

“Ground control to Major Alon.”

“I think I have a plan. Yeah....”

They were let inside and back to inner sanctums an unknown number of floors below. They donned security badges and walked the long cold corridor to their work area. Colonel Kleinman looked at them, this time with sheepishness commingling with hopefulness on his face – two emotions that Rina sensed had only rarely appeared there before.

“Don’t worry,” Rina said as they walked briskly past him. “Ethan has a plan.” She turned back to see his glower and added, “No *tsoris!*”

Cushing, Oklahoma

Commodity futures were once traded in a pit located in New York or Chicago. It wasn't an actual pit. It just seemed that way at times, especially when orders were coming in from around the world and "fast market" rules were in effect. Pits were designated parts of huge trading floors where corn, wheat, pork bellies, gold, copper, silver, lumber, steel, rice, and just about every commodity in the world was bought and sold – each with a separate pit. One of the livelier pits handled oil.

Trades were made in a noisy, chaotic arena by an odd array of people, from ponytailed mavericks to stolid institutional reps. They shouted, grimaced, pleaded, scowled, and made arcane hand gestures to convey bids and offers. In the nineties, the marines sent young infantry officers into the pits of the Chicago Board of Trade to teach them to make decisions amid noise, commotion, and uncertainty. Nowadays, however, futures are traded electronically and marines learn those things overseas.

The commodities themselves aren't in New York or Chicago. They're all over the world. A surprising amount of the oil is stored in a small town in Oklahoma called Cushing.

Oil traders demand information. How does the new Saudi field look? How much is coming out of Tenghiz? What's the sulfur content in the shale oil from

Eagle Ford? Then there were political issues. Can Nigerian militant groups continue to strike into the delta? How's Libya doing with all those militias?

The most important question now was Iran. Was there going to be war? If so, when and how long would it last? Can the IRGC close Hormuz? London markets were open and oil futures were way up – \$4.67 a barrel by nine am in New York, half an hour before the opening rotation set the bids and asks.

Traders scrambled furiously for information on Bloomberg, The Oil Drum, Stratfor, and elsewhere. They called friends at think tanks and research institutions and tried to draw out as much information as possible. They asked for a “yes” or a “no” but most knew that those who gave a simple answer didn't know what they were talking about. All but the most naive of traders knew that and naive traders went broke. Some would be wiped out in the next day or two. That might be true of some institutions as well if they didn't play the crisis right. That's what it was to them – something to be played. The lives involved were abstractions and barely figured in price moves.

Oil markets opened up sharply and stock exchanges opened down sharply. The news carried footage of American ships and planes on the move, generals coming and going from the White House, and determined remarks from various generals. Beneath the crawl, small windows showed oil prices and index averages in real time. Experienced oil traders knew the momentum would last at least a few days. Some went to the gym. The Bloomberg app was always open on their phones.

Most experts held short of saying war was imminent. They of course knew of the US aircraft carriers off Iran, the presence of more fighter aircraft, and the deployment of B-2 bombers to Diego Garcia. Ominous signs, they agreed. Nonetheless, there were still redlines to cross and final orders to be given. Everyone was on edge though.

Rumors were plucked from websites and from friends of friends and from who-knows-where. US fighters would hit Iran on the next new moon. Unmarked F-35s, almost certainly Israeli, were in Azerbaijan with external fuel pods on

their wings and bunker-busting ordnance on their bellies. A Saudi prince was assassinated by a Shia fanatic but the incident was being covered up because it would cause an uprising.

Traders didn't believe many of the rumors but they spread them. They even created some of them to jack the markets even more. Truth didn't matter. What mattered was their spreadsheets. There was no higher truth.

One of the more intriguing rumors was that Hisbollah guerrillas crossed into the US from Mexico and were headed for Cushing, Oklahoma. Only two kinds of people know about Cushing: Okies and oil people. It's halfway between Oklahoma City and Tulsa, with 8,000 people and about the same number of storage tanks. Oil comes there from the south: Mexico, offshore sites in the Gulf of Mexico, and the shale fields of East Texas. Oil also comes from the north: the tar sands of Canada and the Bakken Formation in the Dakotas.

The crude was pumped through an elaborate pipeline system stretching across most of the US. A few RPG rounds here and there and Cushing would become very famous, very quickly. Brightly illuminated too. You'd be able to see Cushing glow from the International Space Station.

That's why the governor of Oklahoma, a rancher from Stillwater with a dozen producing wells, called up the national guard. Ground troops would ring Cushing, stopping vehicles and checking IDs. Black Hawk helicopters would patrol the pipelines for a radius of fifty miles. The national guard commander thought twenty-five miles was all he could handle but the governor wanted a fifty-mile "Zone of Iron." He wanted to set up checkpoints along the state's southern border but the perturbed governor of Texas called it a "tomfool idea" and it was dropped.

The Oklahoma governor then went to Cushing himself, supposedly to oversee the operation but mainly for publicity. The networks didn't fail him. In fact, they loved it. He spoke live on the danger that Iran and Hisbollah constituted, not only to Cushing but to all the United States. He called for federal help in the

form of Predator drones to help patrol the pipelines. As he spoke, oil futures shot up another buck and the Dow dropped another hundred points.

The traders watching CNBC at their gyms pumped their fists. The Defender of Cushing just made them a little richer. One of them joked that he wanted Hisbollah or Iran to do the same. Others texted the witticism to colleagues in London, Zurich, and Hong Kong. All those guys knew about Cushing. None had ever been there.

Two hours later, the White House announced that ten Predators and maintenance crews were on their way to Tinker Air Force Base outside Oklahoma City. The drones would guard the pipelines around Cushing. They were operated from Las Vegas.

The media people stayed in local motels and appreciated the hospitality of Cushing folk. Dara, the proprietor of a diner with rotating counter stools, compact juke boxes in the booths, and signed photographs of OU football players, told reporters that the Sooners were going to be “durn near unstoppable this year.” Dara was on MSNBC for fifteen minutes that night and became a celebrity, like Joe the Plumber or the “Where’s the beef” lady. The little town became very famous, very quickly.

The drama in Oklahoma was watched carefully in many parts of the world, including Lebanon. Hassan Nasrallah, the Hisbollah leader, called his commanders and asked what they knew about Cushing and if any of them ordered an attack there without his authorization. He was more puzzled than angry because such an operation seemed ridiculous to him.

None of his commanders had any knowledge of an attack or of Hisbollah fighters in the US or Mexico. One said the only town he knew of in Oklahoma was Muskogee – a name he had considerable difficulty in pronouncing, a name Nasrallah had considerable difficulty in understanding.

“I heard the name *Mus-ko-gee* in a song long ago,” the general explained. “Very religious, very patriotic.”

Nasrallah enjoyed music like that and searched for it on Youtube.

Washington, DC

Barrett parked his BMW at a lot on Gibson and took the shuttle bus to Albuquerque's airport. It was medium-sized at best and that was the kind he preferred. He took the up escalator and remembered once seeing Dennis Hopper coming the other way. Barrett stood in line for the security screening and wondered if Homeland Security looked for cranky guys muttering under their breath. He was sure they did, so he kept quiet and tried to look cheerful. He thought of the Dee Dee.

He went through security without incident and in an hour was on his not-so-merry way to Washington to attend, at Joe Burkett's invitation, a pow-wow on the deteriorating situation. Joe was on the NSC but this was an unofficial meeting, off the books, off the record. There'd be some figures from the intelligence community and the Pentagon there. No cabinet secretaries, maybe an undersecretary or two.

Barrett had been to on-the-record meetings before. There was one on Afghanistan in which he argued that we should write off the south and concentrate on the north. It was like nominating an atheist for the College of Cardinals. Most in the room were afraid that their careers were jeopardized by being in the presence of an unbeliever, and they dared not speak or scurried out

as he began his presentation. An undersecretary tore into him but Barrett fired back and two special forces colonels, retired of course, came to his defense.

The plane flew down the Potomac, passing over Rosslyn and Arlington with their hi-rise office buildings which Barrett assumed were packed with people busily doing their parts in the impending war, confident that higher-ups knew what they were doing, though never looking into the matter.

“Group think,” Barrett muttered.

No one could hear him above the engines.

He landed at Reagan-National and Joe met him at the baggage carousel.

“We’re convening at Georgetown in two hours, my desert bedouin friend.”

“At the Tombs?” Barrett hopefully but jokingly referred to the bar across the street from the Foreign Service School and just around the corner from the Exorcist Stairs.

“Afraid not. We’re using a classroom in Healy. It’s quiet and out of the way. There’ll be people at the doors. You must recall it from your college days, unless of course you spent too much time in the Tombs.”

“Will there be a quiz afterwards?”

“It’s more of a seminar, Barrett.”

They drove up the George Washington Parkway, crossed Key Bridge, and ascended the steep cobblestoned hill leading to Prospect. Parking karma was with them, they had an hour before the meeting, and the Tombs beckoned. Joe and Barrett walked down the stone stairway and found a booth near a recruitment poster from World War One. “And you?” the soldier asked from his trench, potato masher at the ready. Barrett looked around at the students there, drinking and conviviating. He asked for a Guinness. Joe glared at him.

“Okay, okay. Two club sodas, please. So what’s going on tonight, Joe?”

“We’re trying to build an insurgency, one inside the administration and the rest of the bureaucracy. We don’t think the folks at the top know what they’re getting into in the Persian Gulf.”

“So we’re trying to do what Clark Clifford did when he became Secretary of Defense during Vietnam.”

“Excellent analogy. Clifford gathered opposition to the war just as General Ridgway did when Ike was mulling over helping the French in Vietnam.”

“Oh yes. Matthew Ridgway of the No Land War in Asia School. Too bad that school closed down.”

“You’ll recognize some of the people tonight from their media work. There are a few of them who are not in lockstep with the Pentagon.”

“Anyone from CIA?”

“No one. Don’t worry.”

Barrett nodded. It was well known that Langley was highly politicized, dominated by interventionist group-think, and for present purposes, untrustworthy.

“Are we all like-minded tonight, Joe, or is there going to be gnashing of teeth?”

“No teeth gnashing, Barrett. We’re all on the same page.”

“Do you trust them all?”

“Oh, I think so. But this is Washington. And Barrett, watch what you say this time, please. That is, if you somehow feel the need to speak – if you catch my meaning, old boy.”

“I’ll be good. Sort of.”

The pair walked over to Healy and entered the classroom right above the ground floor. Its wood paneling and desks looked like a British courtroom and made voices and footsteps reverberate gently even after the room began to fill.

Barrett recognized the heads of the State Department's Iranian desk and a few people from the Saudi desk as well. Only one was a political appointee. There was a woman who worked with a think tank critical of interventionism, a man from a new Middle East institute that advocated a more diplomatic Iran policy, and two retired flag officers. There were others that Barrett did not recognize. No one wore cards with names and institutions. Most instead on anonymity.

Joe thanked everyone for coming then swiftly turned to the issues at hand by asking who or what was causing the blackouts. That brought a few amused looks and shoulder shrugs. Some said China, others speculated that Iran hired Russian crooks. Another said that Russia thought we were doing it to humiliate them.

An elderly man Barrett didn't recognize spoke up.

"We've reached a state of sophistication that outstrips our capacity to adequately control our military systems. Parts of the systems think for themselves and give instructions that humans don't know about – heuristics, we call them. They were an early form of AI and as such prone to errors, though only rarely. In time, the problems will be found and rectified. In time. Our systems periodically blind us and this must be taken as a caution, not a call to act rashly."

"Who's that guy?" Barrett whispered to Joe.

"Peter Whitt. Former DARPA, now one of the JASONs. A legend in the semiconductor world back in its early days."

The young woman from the think tank raised a hand and was recognized.

"If these systems are prone to unexplained failures, how reliable are they? Maybe many other systems, here and around the world, have problems too that have not surfaced – at least as far as we know."

"And a war in the Persian Gulf and indeed throughout the Middle East isn't the proper time to test our equipment," said one of the retired generals.

Barrett motioned to speak but Joe tugged his sleeve down. A few people in the room noticed. They knew that Barrett was prone to what one might charitably call “plain speaking.”

“Yes, caution is in order,” came a heretofore silent voice. It was a man in his early fifties with a strong Israeli accent. “The heads of state cannot be sure their weapons will work as their speeches claim. They must not put them to the test – not now. We have to slow things down.”

“Is that Aaron Palashet?” Barrett whispered to Joe.

“Yes. That’s our Israeli colleague from Harrington’s Center for World Affairs. He’s a retired general now.”

“We need to draw back – all of us,” the general continued. “We must use our influence to make this clear to our leaders, civilian and military.”

“And to our respective publics,” Barrett interjected before Joe could stop him.

“And to our respective publics,” General Palashet repeated. “Ah, Barrett Parker. You’re usually so reticent, so reluctant to speak your mind!”

Several people chuckled softly. Barrett smiled amicably and gave a quick salute, though hardly of parade ground quality.

“Then let us agree on some points that must be made,” Joe said, shifting the agenda of the meeting. “In addition to the issue of unreliability, can we agree on other reasons why the coming war is not in our respective nations’ interests?”

Several intertwining discussions ensued, with many ideas advanced. Some thought certain arguments were more important than others. Some thought certain ideas were wrong, or at least overstated, but not objectionable. There was considerable agreement on the main ideas – a pleasant surprise to all in the room that night. In any case, everyone was free to advance arguments they thought most important or best suited to their particular expertise. In less than two hours, the main ideas were agreed upon.

There was no reliable evidence that North Korea had sent or was going to send centrifuges to Iran.

War will raise oil prices, probably for a considerable time. This will hurt the global economy.

War will bring a campaign of assassinations and bombings throughout the region and in many parts of the world. The campaign will go on for years.

War will destabilize Sunni Arab states such as Saudi Arabia, Bahrain, the Emirates, and Kuwait.

War will weaken reformist forces in Iran and rally large parts of the public to traditional authorities, both religious and military. War will greatly strengthen the power of the Iranian Revolutionary Guard Corps.

Privately and publicly, dryly and passionately, the arguments would be advanced in the media, newspapers, correspondence to colleagues, and the high councils of governments. It was the same methods used by interests to argue for going to war. The men and women in the Georgetown classroom became an insurgency, a bureaucracy-in-a-bureaucracy. They were using national security arguments, not moral ones. They knew the latter had little effectiveness.

The meeting lasted less than Joe thought. Everyone left pleased but knew a tough job lay ahead. There were more people in government who wanted war and they enjoyed a sizable head start in getting their message out.

Barrett, Joe, and General Palashet chatted as they walked down the steps of the Healy building, recalling Harrington's morning seminars on America's place in the world after the Cold War.

"What's the situation in Israel, Aaron?" Joe asked.

"The prime minister wants war. That's no secret. However, neither the cabinet nor the public is behind him, not yet. Many worry more about the economy than about Iran. And of course every now and then a retired general or intelligence chief urges caution. You need more people like that in this country. In Israel, the

consequences of war might be better understood than here – in part because of proximity to the fighting, in part because everyone serves in the military.”

“Those days are long gone here,” Barrett lamented. “What’s going on in Iran? Is there any opposition?”

“Our intelligence says that those who favor reform are endangered by war talk. It makes them seem treasonous. Who knows what will happen if there’s war. Our sources feel that there are people in the government and even the regular army who want to pull back from hostilities – open up all sites, even Parchin.”

“That would be helpful.” Joe made a mental note to ask Langley about this. The State Department’s INR as well. “Who are these people inside Iran.”

“They’re not our friends and they’re not even necessarily pro-democracy. They simply look at the forces on each side and shudder.”

“I do the same,” said Barrett.

“One more thing, Barrett.” Aaron looked about cautiously. “There’s a report circulating inside the defense ministry that says the US sanctions are hurting Iran badly, worse than anyone thought possible. Serious civil disturbances might not be far away.”

“That would be great,” Barrett noted. “The next elections in Iran might be interesting.”

“I hope they’re very interesting,” Aaron replied.

“Maybe this report could be leaked?” Joe looked hopefully to his Israeli colleague.

“Don’t look at me! I’m a soldier, not a politician – thank God!” The retired general shrugged his shoulders. “Things leak in Washington, things leak in Jerusalem. Sometimes for the better. I’m going to the foreign ministry in Jerusalem in two days.”

The three shook hands and said goodbye as they reached Prospect.

Classes had recently restarted for the semester and the streets were filling with students walking down to the bars and restaurants of M Street. A girl shuddered when the group passed the Exorcist stairs and a boy put his arm around her. Barrett went back to the Tombs.

Tel Aviv

Boaz walked Ethan and Rina to their workplace. His dismay was apparent. He unlocked the door, flipped a switch, and rows of lights came on. One flickered noisily for a few seconds before warming up.

“What’s wrong, old friend. Another blackout?” Ethan asked.

“Something else. A pair of our F-35s were patrolling south of the Yemeni coast when they were fired upon by an Iranian picket ship. The politicians are livid and so are the generals. They’re sure the blackouts are masking Iran’s rollout of nuclear weapons. Maybe even a launch”

“Boaz, we both know that our pilots can get cocky and buzz picket ships. Sometimes with orders, sometimes not. Are you sure our fighters were fired on? Pilots can misinterpret things they see with their eyes and with their radar. Remember that American ship in 1967?”

“We all do. One pilot and copilot had a visual sighting of an Iranian missile launch, probably an Iranian Misagh-2.”

“What about the other crew?”

“They’re not sure.”

“They’re not sure? What the hell are the generals doing to make sure?”

“They’re trying to get visual confirmation of a missile launch from one of our freighters nearby. The F-35 pilots were practicing air-sea rescue with the ships, in case they get shot up and have to eject.”

“Damn it, Boaz, what did the freighter crew say?”

“No response. They’re sitting silent, as per orders. No electronic signal whatsoever. They’re scheduled to check in briefly in twenty minutes.”

Rina heard confidence in the system in Boaz’s crisp answer. She had no such faith.

“So the generals will wait for them.”

“Oh, they’re not waiting for anything. We’ve prepared three squadrons of F-35s and four of F-15s, and they will launch . . .” Boaz looked at his watch and corrected himself. “No, they’ve already launched. Two minutes ago. One squadron is targeting Iranian ships in the Red Sea and out in the Arabian Sea too. At least one of the ships in the Red Sea is thought to be delivering arms to Houthis inside Saudi Arabia. Another squadron is heading for deep inside Iran. The Americans launched B-2s from Diego Garcia. They’re joining our jets in attacking –”

“Parchin,” the three said in unison.

“We can’t launch an attack now. What if there’s another blackout? They might proceed to their targets no matter what.”

“They will, Ethan. They will do just that. SOP.”

“You might be starting a huge war,” Rina exclaimed angrily. “A huge unnecessary war!”

“The PM wants to ‘send a message.’ Those were his words, I’m told.”

Boaz was annoyed and defensive. His voice had become cold, impersonal – institutional.

“Look, Boaz, the blackouts are caused by a software glitch and Rina and I are sure we can fix it. We just need an hour at most.”

Rina arched an eyebrow. Was he boasting or lying?

“Look, you guys.... I have every confidence in you, but events are getting away from us. And I have my duty. We all do. The fighters are on their way. There’s less than an hour until they reach their targets. You get back to your duty and I’ll do the same.”

Boaz headed to the command center, leaving them alone with their computer terminals and the institutional clock.

“Ethan, *do* you know how to fix Samson?”

He fell back into a chair and exhaled.

“I have an idea, but it’s not much more than that. It came to me as we watched the storm.” Ethan spoke coolly and analytically, putting into a logical framework the nebulous thoughts that had come to him on the beach. “Samson is sending spikes into the system causing confusion. He then penetrates the system and causes all kind of events. Some of them are blackouts.”

Rina’s eyes became intense, staring out into the conference room. She sat in a chair next to him and they leaned forward, eyes never meeting.

“Okay, Ethan, let me run this down. Samson incubates a situation. That is, he lets a problem remain unresolved for an instant, a picosecond or two, allowing a search of storage units for answers. He then generates a variety of solutions, including some that initially seem outlandish or absurd, without initially evaluating any of them. Once a lengthy list has been created, he evaluates each item for usefulness.”

“Right,” Ethan picked up. “As a problem becomes more complex, the time required to solve it grows – possibly into a nonviable time period, say, a thousand years. So, an heuristic takes over. It spikes the system – causing our

blackouts. A good solution from the heuristic's point of view, though not from the world's."

"We need to disable the spikes. How? What did the storm teach you? You weren't looking at the lightning and thinking of Ben Franklin."

"No, I wasn't but we can learn from Ben and his kite. We know the transformer is connected to the power supplies and it responds to a software command. The command sends a positive charge and all we have to do is insert a ground. We know Samson is doing similar operations to activate or deactivate certain circuits, hence the option is already there. We need to route it to the transformer. Once the transformer is grounded, no more spikes."

"Problem solved. No blackouts. But Ethan, what about the rest of Samson? He does have virtues, you know. Many, many virtues."

"He does indeed. We need to find a way to disable the vices without disabling the virtues. Okay, Samson constantly runs electrical pulses within the millions of decision paths. Some of these decisions are sending spikes and activating the transformer. We need to scan these pulses and intercept signals that include keywords like 'shutdown' and 'blackout.' When we detect a spike command, we'll send a different one that will open the ground gateway."

"We'll need a program to make the ground, boss man."

"We'll create one that'll work within the heuristic."

Ethan was mentally patching together new algorithms with ones he'd worked on for the American and Israeli militaries, but he needed to reach for something more.

"Part of this program will use the computational geometry in Micrologic Design programs to find the data that causes the spikes. Computational geometry, aka algorithmic geometry, can trace the information inside Samson pretty damn fast."

“What! Computational geometry is used for geometrical engines and analysis. You intend to convert Samson into a geometrical model to accelerate a decision-tree search?”

“You got it.”

“So we’ll translate Samson’s huge decision tree into a geometrical model, find the causes of the spikes and blackouts, and stop them.”

“Exactly. We’ll need to modify the Scan-line algorithm. The classic version would take –”

“A few centuries – literally.”

“With a little work, it will analyze only promising segments. Let’s get to work.”

After an hour of hurried data entry, mindful of the consequences of the slightest typo, they saw an intricate geometric image light up the screen. It resembled a city at night from twenty-thousand feet – green, red, blue, and yellow lines extending as far as one could see, like broad boulevards and bisecting avenues, with some intersections far busier than others. Ethan and Rina had to zoom out and then back in on selected regions to appreciate what their computational geometry innovation presented them.

Only after a few moments of marveling did they realize the colorful lines and nodes involved billions of people. Some would live and others would not, depending what Samson thought, what a handful of generals and politicians did, and what Ethan and Rina did in the next hour.

“Look at the red blinking segments, Rina. Those are segments that were marked as ‘leaders’ which may lead to the spike commands.” He observed the screen carefully, then sighed. “The model’s too large.” He pointed towards a window on the upper left screen. “The problem became ‘NP complete’ – not solvable.”

“Our shortcut wasn’t short enough then. We still have too much data to analyze. Look,” she said pointing to several motions on the screen, “for every significant

event in the Middle East, Samson starts a new path in the decision tree. And for each event that relates to a previous event, there's another path."

Ethan stared at the screen. His exhaustion was clear. He needed Rina's input to keep his mind from wavering and making an error on the boulevards and populaces.

"Ethan, we have to shorten the shortcut. Bentley-Ottmann is an efficient sweep-line algorithm. It'll sort for specific events and we will observe events only with _"

"A common denominator and time frame."

Ethan was already updating the scan program. "We're in business – and we can expect some answers in . . . oh hell no! It'll take almost ten minutes!"

"Ethan, I'm showing unusual activity in one of Samson's analysis units, and in an execution unit too. It's trying to do something but can't. It's jammed or frozen or confused – still trapped in that screwed-up heuristic."

"Well, that might be the least of our problems now," Ethan replied distractedly and closed his eyes for a moment. "Wait! Is it fixed on any location?"

"It's concentrated on Bushehr. That's a port city in Iran with a nuclear reactor."

A few groans and murmurs came from offices down the corridor in the command center. Three quick knocks on the door and Boaz stuck his head in.

"Bad news, guys. We're in the dark again. Everything's down. The F-35s are headed for Iran across Saudi airspace. The hell with what the Saudis think. ETA at targets is twenty-two minutes."

Rina looked up from the screen and glared angrily at him.

"You're going to bomb Bushehr, aren't you?"

"Bushehr? No, that's just a research site. No uranium enrichment, no weapons program. The F-planes are headed for Parchin."

“Well, Boaz,” Rina responded angrily, pointing to the segment blinking on her screen. “Something sure as hell is going on at Bushehr!”

“What’s that?” Boaz’s puzzlement mixed with boyish wonder as he was awed by the lights and patterns on the screen.

“It’s the world, Boaz,” Rina shouted. “The whole world! And we have to save it!”

Bushehr

Iranian systems were down too. The new missile base was out of communication with the command and control chain that stretched back to Tehran. The officers of the Chinese navy who helped build the site and prepare the missiles were similarly cut off with a communications center in Gwadar, Pakistan, and the regional headquarters in Zhanjiang, China.

Communication trouble presented problems for the Iranian and Chinese officers, but also opportunities. They were certain the blackouts were the work of the US and Israel. Stuxnet and its cyberwarfare kin aimed to retain American dominance in the world and keep Iran and China from taking their rightful places in it. The blackouts were a prelude to a strike. Iran would be bombed pitilessly and China would be cut off from oil. The officers concluded their respective country's leaders were failing to act responsibly.

For months the officers had discussed world events and potential responses. Two days earlier they decided to act decisively. Governments in Tehran and Beijing would be confronted with a *fait accompli*. The officers' actions would find considerable support at higher levels, especially inside the Revolutionary Guards and People's Liberation Army.

Sizzler missiles are normally mounted on planes or ships, but that would require more time and involve other parts of the Iranian military. Three Sizzlers were

mounted on truck platforms and prepared for launch, slowed only by a few computer freezes.

The Iranian colonel gave the signal to fire and in an instant all three missiles erupted from their platforms and thundered to the west at low altitude. They would skim five meters above the surface of the Gulf at subsonic speed until coming within fifty kilometers of the target. They would then kick into supersonic sprint. The target would fire missiles to stop them and its gatling guns would throw thousands of rounds per second at them. They were unlikely to stop even one Sizzler. The target of all three missiles was only 150 kilometers away from the launch site.

The dawning of a new historical era is rarely precisely agreed upon. Historians debate when the Renaissance started and when American global dominance began. Some said the latter began when Europe destroyed itself in World War One. Others pointed to the Battle of Midway in World War Two when the Imperial Japanese Navy lost four aircraft carriers in a day.

The Chinese and Iranian officers at Bushehr were positive a new era would dawn in precisely fifteen minutes. That was when their Sizzlers would destroy the American aircraft carrier *Enterprise*.

Tel Aviv

Ethan and Rina glanced at the news and were sickened. They could only hope the Bentley-Ottmann algorithm was up to the task. There was a large polygon on the screen, mainly red and yellow with scores of blinking intersections.

“Well, our friend has lost a lot of weight.” Ethan clicked on the blinking red segment marked with the letter “A” and waited. “This is the first lead, and it should take us home.”

The segment stopped blinking. A colorful fly-line came out of the segment and connected to another red segment on a different part of the polygon.

“There we go,” Ethan said, again momentarily transfixed by the lights. “Now, the fly-lines will connect related segments, leading to green segments, then combine their results and form one blinking blue segment. This is the first time computational geometry has been used with decision trees. I wish we had a larger audience!”

“Well, if it doesn’t give us what we need, it’s just a light show. But I like it,” she added massaging his shoulders.

The fly-lines jumped from segment to segment across the sparkling polygon and Ethan smiled as though at his first fireworks display.

“Patience is a virtue,” Rina chided.

“One that I don’t have right now. Not when there are upset politicians in Jerusalem and Washington and warplanes streaking toward Iran.”

The fly-lines stopped and a single blue segment began to blink.

“Eureka,” Ethan gushed. Hearty congratulations and a pat on the back came from his small audience. Ethan exulted in the praise. “Perhaps I can lecture on this at Cal Tech someday!”

“I don’t think we want to say much about this one, Captain Alon. They’d take you away to an undisclosed secure location – or to the home for burned-out tekkies. I think that’s near Folsom, so maybe we can wave to each other from the exercise yards.”

“You’re such a romantic! Okay, Rina, we now have the commands that trigger the spikes and cause the blackouts. I’ve created a fairly simple routine to replace the spike commands with ground commands.”

“How are we going to test it?”

“Well, we have to mimic a spike in the system. I’ll send a manual command to the transformer and only we two will know what caused it.” Ethan made a few entries and sat back. “We should have a simulated blackout in two minutes. Let’s see if our assumption is correct. We’ll know soon enough.”

Ethan imagined his cuckoo clock knocking out a countdown, the fighters skimming just above Saudi wastelands, and heated arguments in the corridors of power leading to terrible decisions.

“What will it look like on the screen, Ethan? What does a *simulated* blackout taking place during an *actual* blackout look like?”

“Well. . . .”

“You don’t know.”

“There’ll be a blink in the system. That’s for sure. Then the real blackout will end – suddenly and ahead of time. I think.”

“I guess the empirical data on this sort of thing is null.”

“Afraid so.”

The screen blinked out suddenly and stayed dark for an agonizing few seconds. Everything was dark. The overhead lights flickered noisily. They wondered if every system around the world was down, never to get back up for days or weeks. Generals and politicians would fly into rages. Local commanders would act on their own.

Ethan and Rina held each other. She noticed he was trembling and whispering inaudibly. A few segments suddenly appeared, then a dozen or two fly-lines. More and more structures lit up until the glittering maze of computational geometry was fully restored. The Israeli system was up and others like it around the world were as well!

“Now we introduce our lightning rod into the system . . . like so,” Ethan entered a string of commands. “And Samson is still running, just not running amok!”

Another quick blink ensued and the two confidently awaited the system to relight.

“We did it, Ethan! The best patch our profession has ever known, except that they don’t know about it.”

“And never will.”

The pair raced down the corridor to bring the news, but the looks of amazement and gratitude and occasional resentment told them that the military center knew it already. Boaz met them in the crowded hallway and began to voice the center’s gratitude.

Ethan shouted, “Save it! We solved the blackout problem! It was a glitch! Don’t attack anything! Wait for confirmation on that missile launch! Tell them! All of you, tell them! Stop those damn jets!”

“We’ve recalled the first squadron but can’t get the ones headed for Parchin,” a junior officer replied meekly. “As soon as the blackout lifted, Iran started jamming them. CENTCOM was able to get through to its B-2s and recall them, but we’ve had no luck.”

“Can’t you use American communications to contact your jets?” Rina shouted.

“We don’t share encryptions with anyone,” a colonel replied curtly.

“Where are the jets right now?” Ethan roared.

“They should be a hundred kilometers from Parchin.”

The Persian Gulf

The crew of *USS Bulkeley* scanned the horizon. “Every man jack,” as the skipper put it over the ship’s address system. They were on picket duty for the aircraft carrier *Enterprise* which transited the Strait of Hormuz a few hours earlier. The word from Fifth Fleet headquarters in Bahrain was that Iran might provoke war.

Contact with other ships was confined to signal lamps, and the ship’s radar was working only intermittently. The blackout gave greater urgency to the watch. There were more than a few women sailors on duty too, of course. Realizing this, the skipper corrected himself a few minutes later. The crew, men and women alike, smiled briefly and continued the watch.

It was near the end of the day. The west was beginning to glow red with the setting sun but attention was paid to the east. The Iranian coast was well out of sight and the horizon was darkening, merging with the inky waters of the Gulf.

A woman sailor saw a small, almost perfectly spherical cloud form suddenly to the east, then two more in the same area. Before the bridge could be alerted, a dull boom sounded, followed by two more in quick succession. Something – no, three things – had broken the sound barrier and were heading for *Bulkeley*. More than likely, however, they were heading for *Enterprise*.

Amid the blackout, the frigate's SeaRAM missiles could not fire with any accuracy and the gatling guns could only be optically guided. The gun crews let loose with torrents of fire but with no effect. As the missiles came to within a kilometer of the ship, the Officer of the Deck shouted, "Sizzlers!" and in just a few seconds the ship-killers roared past *Bulkeley*, one only a hundred meters off the bow, another the same distance off the stern. The third shrieked not five meters in front of the bridge, sending sailors down to the deck. The missile's flambeau blistered paint and plexiglas, leaving a few sailors coughing from the acrid fumes.

"God help *Enterprise*," the OD whispered before ordering his ship to turn hard to starboard in an effort to reduce his ship's exposure to the storm of fire now erupting from every functioning weapon on the massive carrier. He trained his binoculars on the bridge and spotted a sailor firing a pistol at the incoming missiles.

The OD watched in helpless awe as *Enterprises's* SeaRAMs shot forth but failed to acquire their targets and self-destructed. Its gatling guns sent angry scarlet tracer streams toward the rapidly-closing Sizzlers. Frigates on either side of the carrier put everything they had on them too. It reminded him of footage of kamikaze attacks off Okinawa in 1945, though these incoming craft were far faster and far more lethal than Japanese Zeroes.

"Victory at sea," he murmured half mordantly, half prayerfully. "Prepare for rescue operations," he shouted into the comms system before looking back at the missiles closing in on *Enterprise*.

Two of the Sizzlers suddenly veered off to port, pitched and yawed almost drunkenly, then exploded as they hit the water less than two hundred yards from the carrier. The third rose vertically, ascended to three thousand feet, wobbled left and right, then exploded into a brilliant yellow starburst that fluttered downward, preceded by hundreds of glowing metal shards. Explosives and propellant intended to ignite the carrier's fuel and munitions fell harmlessly into the dark waters of the Gulf.

Enterprise hit its steam whistles in jubilation and the crews cheered loud enough to be heard on the escort frigates. Their crews joined the celebration. The carrier's skipper personally congratulated the gun crews. They were convinced that all three Sizzlers, in supersonic sprint just above the water, had been shot down in only a few seconds by sailors using iron sights and Kentucky windage.

The OD back on *Bulkeley* watched in awe. When a young ensign exclaimed, "We got them sumbitches!" the OD shook his head and grumbled, "No way, mister. No goddam way."

"Sir? Then what *did* bring them down?"

"I've no earthly idea. No earthly idea at all. I'm not sure if we just witnessed the outbreak of war or a crazy incident that will be debated for years – if word gets out."

The young ensign thought about his superior's words but couldn't dismiss what he thought he'd seen and what his training taught him to expect – the crisp, professional performance of naval personnel resulting in the big win.

"Sir, with all due respect, I think we shot them sumbitches down."

"Very well. But I suspect we're going to be told that we never saw 'them sumbitches' at all and that none of this happened. This is the Persian Gulf, mister, and things like that happen – until we're informed that they *didn't* happen."

The ensign began to understand something about the military and politics. It would serve him well in his career, however long that might be.

Tel Aviv

The big shots in the command center were greatly relieved. They continued trying to raise the second squadron headed for Parchin. Still no luck. Everyone felt that war was about to break out.

Twenty minutes later, at Ramon airbase from which the F-35s launched, a crackly radio communication came in from the squadron commander asking permission to land. As the first few flew over, the enlisted personnel and the base commander could plainly see that their external fuel tanks had been dropped but their bombs were still on the pylons. As the pilots headed for debriefing, the base commander asked if there were casualties and if they'd encountered Iranian fighters.

"Not at all," the squadron commander answered. "We got the recall order before we reached the target."

The base commander was confused. Something was wrong, at least as far as his command system was concerned.

"Who sent you a recall order?"

"The encrypted signal came through when we were about fifteen kilometers from Parchin."

The base commander called the Tel Aviv command center and explained as best he could what had happened. Everyone agreed that no recall order had been issued from anyone, neither before nor during nor after the blackout. The base commander reminded the higher-ups that a similar unexplained abort order had gone out a few weeks earlier.

The Tel Aviv brass tried to make sense of this before reporting to the prime minister. Did the pilots abort on their own? There'd been a few incidents over the years of young pilots refusing to follow orders, so it wasn't out of the question. One colonel suggested that the abort order was due to the same glitch that caused the blackouts and that the young couple flown in from California had solved the problem.

"That was Ethan Alon whom I personally recommended," Colonel Kleinman noted crisply. "He's a captain in the reserves."

"Alon should be a major now," said a general. "What say you?"

"Absolutely," he replied.

Kleinman really wanted Ethan walking patrols on the Golan Heights. "That girl too," he thought darkly.

"He'll be pleased to hear of the promotion," Boaz said, stifling a laugh. He couldn't wait to share the news with Ethan and Rina.

Within the hour, communication was reestablished with the freighter that had been in the vicinity of the supposed attack on the Israeli fighters. Its data found no evidence of a missile launch from the Iranian frigate and visual reports were contradictory. The captain had no solid evidence the Iranians ever fired on the jets. After lengthy debriefing and after hearing of the ship's report, the F-35 crew said they weren't certain they'd been fired upon. Their radar was glitch-prone and they might have simply seen a distant contrail that looked like missile exhaust. Their CO shook his head.

Ethan and Rina slumped back in their chairs. All was well with the defense systems of Israel. The systems of other powers were back up too. Generals around the world were at once relieved that their systems were functioning but uncertain of their reliability.

“I’m not sure that fixing war machines around the world is entirely for the good,” Rina said as they emerged from the Templar Building into the afternoon light. “And I hope we don’t have to wait a few decades to find out.”

“I hope we have those decades to find out – and we should make the best of what we have. Anyway, it’s not really in our hands anymore. It’s in the hands of the Samson programmers. And a few leaders around the world.”

“Ethan, when we get back to California, can we go up to the mountains again? After we ship the product, I mean. We need a vacation – one that doesn’t put us in a mineshaft hiding an army headquarters.”

“Yeah, the mountains sound wonderful. They don’t even have wi-fi! But first, Rina my dear, we’re going out in Tel Aviv! I’ll show you around, as the old Dean Martin song goes.”

“It was Frank Sinatra, but I gladly accept your invitation.”

Ethan and Rina walked toward the shore, their hands swinging merrily until they touched and held on tightly.”

Washington, DC

After the Georgetown meeting, op-ed pages and news sources began to question the rush to war. Within a day, news outlets and talking heads were doubting the North Korean centrifuge story. The term “fake news” became popular once again.

Every night CNN, MSNBC, BBC, Fox, Sky News, Al Jazeera, France 24, and the rest picked up the big story. They fed upon the debate and invited speakers from both sides to exchange views. Some debates were so spirited that speakers all but exchanged blows. Talk radio was in on the debate. Opponents of war with Iran were branded “appeasers” and as “unpatriotic” and as “having learned nothing from history.”

Tensions in the Gulf eased. Both sides refrained from penetrating the other’s airspace and buzzing its ships. The US pulled one carrier group out of the Gulf. The oil markets in London and New York dropped several dollars a day for a week. Motorists were pleased.

From his position in the NSC, Joe could sense the machinery of government was no longer churning toward war. Parts of government that usually worked somewhat coherently were now badly out of sync. Bureaucrats and appointees worried that they were excluded from key meetings and briefings, when in fact there simply weren’t many meetings and briefings anymore. People in the

administration stopped talking about North Korean centrifuges coming over the Silk Road and spinning deep below Parchin.

Joe filled in Barrett over the encrypted VOIP.

“Well, that’s welcome news. Maybe Iran should be bombed someday but not now. Not because of a fable about centrifuges or because a computer chip malfunctioned. Just what cooled things off? I presume a sudden outbreak of sensibility can be ruled out.”

“Hard to say. Let’s leave it to historians in, say, twenty years.”

“It might also be those blackouts in the military systems.”

“They stopped. Hasn’t your wolf told you that.”

“Yes, he did. He’s nodding his head boastfully now.”

“Other countries faced difficulties as well. Not sure of their status, but everybody’s still worried.”

“What the hell are they worried about now, Joe?”

“About the reliability of all those systems, of course. They don’t know what caused the blackouts or what made them go away. Sooooo. . . .”

“Sooooo, they worry that the blackouts may return, perhaps at a most inopportune time, like during a war.”

“Affirmative, buddy. The generals are worried. Our generals, their generals, everybody’s generals. They think a virus or worm was responsible. One made where everything else is these days – China.”

“Yeah. China’s pretty good at that stuff, aren’t they? They’re a rising power and rising powers are nuisances.”

“What do your tekkie friends think caused the blackouts?”

“I’ll ask them later, Joe. I don’t know anything about that stuff. I’m gonna have to let you go. A wolf is staring at me. He wants to go on a secret mission.”

“A walk, I take it.”

“You take it rightly. You should go for walks. Same with all those generals and analysts up there.”

“I’ll tell them.”

“Joe, I’ve got lots more things you can tell them to do.”

“Gotta go, Barrett. Enjoy the walk.”

Barrett and Jesse ascended the trails of North Mountain. It was autumn now and there was no trace of the fuchsia and yellow that the cholla cactuses had brought in summer. Man and beast sat at their spot.

“Buddy, do you remember Ethan and Rina – those people who used all that hi-tech jargon? They think we might have saved the world, at least for a little while. I’d say that merits a treat.”

He reached into his pocket for an oatmeal cookie wrapped in a napkin and tossed it in the air. The great wolf’s jaws slammed down on it in an instant.

Crack!

“We have an odd situation in the world today. Generals all over the world are worried their radar won’t detect and their missiles won’t launch and their bombs won’t go kaboom. So they’re reluctant to go to war. What should we do about it?”

Jesse lay down with a soft mumble and Barrett watched the skies above the Sandias redden then cool into a dark blue evening. Jesse nodded off and his paws began to jump and twitch as he dreamed of primordial hunts or chasing tennis balls in his younger days. His paws slowed to a trot before coming to a halt. Every now and then he’d snort and groan.

“Yep. That’s what I think we should do as well. Nuthin’.”

Looking east, out to the dry plains past Moriarty, Barrett saw the Iraqi tanks again, some of them afire, sending ugly dark plumes into the sky. One took a Sabot round that blew its turret clear off and ignited the ammunition. The powerful concussion hit Barrett a few seconds later, causing him to flinch even though he'd braced for it.

“Some people come up to places like this and talk to God. I don't think he listens. I talk to you, Jesse. Yeah, I talk to you. Ever read *Slaughterhouse-Five*? Kurt Vonnegut wrote it and it's well worth the while. The main character is 'unstuck in time.' He keeps drifting away from civilian life and back to his war experiences.

“Most people think being unstuck in time is funny – a real hoot. They don't understand it's Vonnegut's way of saying wars stay with us and pull us back into them. I cried when I read it, Jesse. I bet Vonnegut cried when he wrote it.”

Tel Aviv

Rina knotted her Stanford hoodie loosely around her shoulders and lay her head on Ethan's shoulder. Outside, the streets of Tel Aviv were alive. Faces looked forward to finding a new restaurant and exploring small shops, no longer burdened by worries of war. It was late afternoon and the evening held the promise of new experiences, new delights, new wonders.

Rina spun around giddily, the sleeves of her sweatshirt flew about, her hair chasing them.

"Ethan my love, did we just save the world?"

Ethan put his arms around her.

"It feels like we did, Rina. Just breathe in the air and look all around us – life!"

"L'chaim! We must take some time off. Shut down and reboot later. Ethan, you're no longer a captain or a tekkie or a business partner. Right now, you're my boyfriend and we're going out on the town. And we must see more of the beachfront!"

"I accept the position. I'm all yours!"

"I know! And it's glorious!"

Ethan and Rina walked a few blocks to the Dizengoff district and looked through a number of shops with clothing, pottery, and jewelry from Israeli artisans, and those of Jordan, Malta, and Egypt. They mainly window-shopped but a pair of earrings attracted Rina, and Ethan handled the negotiations which led to an agreeable price. Ethan suggested walking down to Jaffa, the southern part of Tel Aviv, which was old and quaint.

“This was a fortified area as far back as four thousand years ago, well before Moses wandered in from Sinai. I love walking these narrow, ancient streets of stone. It gives me an amazing sense of time and place. The sea peeks at us from every corner and every block is exotic and beautiful in its own way.”

“So much history all around us.”

“Yes, Israel is full of history,” Ethan laughed. “They say if you throw a stone in Israel, it hits history.”

“Sometimes it hits a big guy named Goliath.”

They came to fisherman’s wharf where boat crews were shouting out their prices for grouper and sea bass. They stopped at Abu Chassan, a restaurant Ethan knew well, and enjoyed a light meal of couscous and melon before returning to the seafront. The salty sea air and the scent of fresh fish made everything seem warm and fertile.

“Ethan, Barrett must have told you something about his war experiences?”

“Just a little about the First Gulf War – the one in 1991.”

“Well?”

“He was a buck sergeant, commanded an Abrams tank in the 3rd Armored Division at Medina Ridge. The Iraqis were over a mile away. That was well within the range of American tanks, but well out of range of the Iraqi tanks. A mismatch. A slaughter, really.”

“An awful experience, I’m sure.”

“He said it was very remote – the range, the distance, point-and-click weapons. Some guys went down into the valley to look at the burned-out tanks close up. Photos, souvenirs. Yes, soldiers do that, many of them anyway.”

“Good for him. I like him a little more. You’re both veterans and both antiwar.”

“Neither of us is antiwar. We just think wars are horrible things and should not be gone into without careful consideration.”

“Okay, so you’re both cautious about going to war. But your caution is based on spiritual beliefs. There’s something almost Talmudic about your outlook on war and peace and life. Barrett? Oh, I don’t know. There’s something hidden in him.”

“Yeah, I see that too sometimes. More so now. He went back, you know.”

“Back where?”

“To Iraq. He returned in 2005 as a Pentagon consultant on counterinsurgency. That was his dissertation at the University of Chicago – counterinsurgency in Algeria and Vietnam.”

“Have you read it?”

“Rina, no one reads dissertations.”

“Dissertation advisors read them,” she shot back.

“Well, sometimes. Maybe.”

“We’ll see. What did Barrett say about his second time in Iraq?”

“He never talks about it. Never. After he came back, he left Albuquerque for the desert. You saw where he lives.”

“All alone, except for that regal wolf. Don’t you guys know that it helps to talk about things? It works things through, processes things, puts things in the past.”

“Rina, I’ve never known any veteran who thought that.” He caught his voice leading into a scold and drew back. “You just put those things in the attic and if

you're smart, you don't go up there. They make noise and kick around, often unexpectedly. It's best just to keep them stored away."

"So if someone asks about war experiences?"

"Then you're asking someone to go up into the attic, and that just makes those things rattle around."

"You just leave them alone then."

"Yes, Rina, even though it goes against the accepted wisdom of our therapeutic society. Dr Phil never treated a chest wound or zipped a body bag. Better to think about the beauty in life. There's so much of it, Rina. The sea, the mountains, the arts. Come on."

The couple neared the beachfront as late afternoon became early evening. The wind was picking up and Rina pulled on the sweatshirt that had been draped around her shoulders.

A pan lid fell noisily to the stone floor of a dining patio. The metallic "CLAAAANNNG" and "TEEEENNNN" instantly recalled jagged shrapnel lashing just over his helmet as he hugged the ground, dopplering eerily, then clattering into a limestone draw like a handful of coins hurled against a wall. The fragments shrieked earnest wishes to kill him.

Rina moved closer to him until their hands came together. She had to think more about what he'd just said, and about less amusing trips to medical stations in the Bekaa Valley. And about his attic. He took her hand as they stepped out of their shoes then into the still-warm beach and walked toward the waves sougning listlessly in the fading day.

Cooling Down

Dimitri Rublev followed events in the Middle East from the Russian cyberwarfare building in Kaliningrad. He was especially interested in the blackouts, in part because of possible importance for hacking for his country, in part because of potential for making money for himself.

He suspected the problem was linked to the anomalous code that scrolled wildly down his screen last month. He learned of similar anomalies in the army and the Kremlin itself and his mind went to work. He imagined an elaborate circuit on microprocessors that performed secret operations, especially on military systems. He considered bringing his thoughts to his dour commanding officer but didn't think he was bright enough to understand.

Dimitri went back to hacking into Goldman Sachs. His colleague in the Ukraine emailed him that Google and Apple were in fierce rivalry, flush with cash, and looking to acquire small innovative firms, if only to prevent them from being bought up by the other. He felt renewed.

“What is that utterly stupid yet charming expression of the Americans? Oh yes – hot dog!”

* * *

The admiral in command of the *Enterprise* battle group went over the visual reports of the incident and was certain three missiles had been fired at his ships. Iran had attacked a US aircraft carrier and there had to be consequences.

There was no electronic data to support his claims. Not from *Bulkeley*, not from *Enterprise*, not from any ship in the battle group or the surveillance plane overhead at the time. When he angrily mentioned the images the F/A-18 took of a missile site near Bushehr, the SECDEF apprised him that they were being reviewed and would not be available for months.

Word of the incident leaked out. The story received substantial coverage for forty-eight hours but after that, the lack of supporting electronic data caused interest to fade. One cable station, however, ran the story repeatedly along with blurry photos from the phones of sailors on *Enterprise*. The station also brought in retired military and intelligence experts who called for swift retaliation. Elsewhere the claims and calls were likened to the assertions of Saddam Hussein's nuclear program.

Iran's Fars News Agency countered the admiral's claims by reporting that American warships had fired three Harpoon missiles at an Iranian frigate patrolling the same waters that evening. The frigate's crew managed to shoot down all three – a masterful display of arms. Sailors appeared on Press TV, as did their proud families across the country. The Iranian public was effusive. It was right after the assassination of one of their generals.

The US navy wanted to dive down and bring up remnants of the missiles for identification. Iran, however, declared salvage rights to a merchant ship that went down in the area during a storm in 1995. The charts clearly showed the existence of such a wreck so Iran was within its rights under international law. A Chinese firm was charged with salvage operations.

* * *

After enjoying their stay more than anyone thought they would, the media left Cushing, Oklahoma. News teams booked out of the motels on Main Street and head for commuter planes awaiting them at the airport. In a few hours, they'd be

back in New York and Washington. They bade farewell to Dara at the diner who'd become a celebrity from appearances on MSNBC and who was being considered for a reality show by a few networks.

The Zone of Iron proved costly and it was quietly drawn down to a few National Guard platoons. By the end of the week, the last troops were back home. Two drones remained at Tinker Air Force Base from which they flew training missions. The pilots in Nevada wanted to fly missions Iraq and Syria. Missions over Cushing, they felt, were hurting their careers. Many Okies thought the drones overhead were part of the "globalist agenda."

For their parts in the defense of Cushing the drone pilots in Nevada were awarded Distinguished Warfare Medals, a new decoration which the Pentagon designated higher in prestige than the Bronze Star with V for Valor. Dara, whose father had earned a Bronze Star with V at Dak To in 1967, talked about the new drone medal at the VFW Lodge. Most there thought the drone medal was ridiculous.

Dara opined, rather bitingly, to a remaining cable crew that the Pentagon should award a Distinguished Warfare Medal with V for "Vegas." That hurt her chances for a reality show with one network. The Secretary of Defense scrapped plans for the medal. It was unclear if he'd seen Dara's commentary but she was sure he had, and said so in her Tweets. She had over 76,000 followers.

* * *

Most of the oil traders in New York and elsewhere played the crisis well. Some got caught holding long positions when the market peaked and started to slide. They quickly got out, took up short positions, and rode them down. The more adroit of them saw the sucker rallies and played the short-lived upswings expertly. It was like the summer of 2008 when traders jacked the price of crude up to \$147 a barrel then watched it plummet to \$45 when the bubble burst.

A few of the heavyweights got word of the blackouts. No one said from where the word came, however defense contractors were the most likely source. Traders reasoned that no one would start a war with so much uncertainty.

Maybe Alexander the Great or Napoleon would, but leaders today are more like corporate suits than bold commanders. Alexander died young, Napoleon in remote exile. Many traders lightened up on long positions and started shorting. Martha's Vineyard and the Hamptons were more attractive than Elba and Saint Helena.

A few fortunes had been made, a few lost. Some guys bought Italian sport cars, others had to check out of their clubs for the last time. One institution tweaked the algorithms in its trading program and looked forward to the next crisis. Oil traders always look forward to the next big event – a hurricane shutting down rigs in the Gulf of Mexico, a cold front coming down from Canada, or a war breaking out somewhere. Somewhere with oil. Things were calm in the Gulf now.

* * *

Anthony Sabatini hadn't benefited from the crisis at all. He'd been shot twice and his wounds still hurt like hell. AK rounds. Not the fastest bullet out there, but large. Bullet damage, he knew from grim lectures, is determined by the round's mass times its velocity squared. He related the physics formula to his aching torso and winced. The pain was now restricted to a few places along the paths the bullets tore, and each twinge and throb became a familiar entity, like a neighbor who played loud metal music.

After dragging him from the reservoir in Turkmenistan, the IRGC beat him hard but he stuck to his story. They knew his phone erased itself irreversibly not long after his capture. Medics debrided his wounds and gave him painkillers so Anthony figured they weren't going to kill him, at least not right away. The morphine caused him to mumble in a stupor and it was clear from his accent that he was American.

He figured they'd accuse him of killing the general and put him on public display. It would be a wonderful propaganda coup, however, and publics the world over enjoy the spectacle. Anthony enjoyed them too. He just never wanted a starring role in one. But the public display never happened. He was kept under

wraps. And that made him think he'd be killed after all, especially after he was sent to Zahedan.

He sat in a small cement cell with an unattractive view of rows of concertina wire covered with blankets so he couldn't see what was out there and so what was out there couldn't see him. To the east were the hills from which he had spied upon the base three years earlier, trying to spot Taliban commanders and Chinese officers.

"At least Steve McQueen had a baseball in his cell," he grumbled. Anthony's humor was serviceable, though he sensed it was detaching him from reality and drawing him into quirky parts of his mind. Nonetheless, it was a sign of his existence and will. He stuck with it, sharpened it, used it on the befuddled guards. Some came to ignore him, others laughed at the odd American, especially when he asked for a baseball. After a few weeks a guard gave him a tennis ball.

He wasn't allowed to sit during exercise time. The IRGC knew that special forces and CIA personnel prisoners positioned their legs in specific ways to signal satellites that Americans were below. That might lead to a rescue mission and Iran had enough on its hands. In any case, sitting down and getting up were painful.

One morning, he was told to shower and shave and the guards gave him clean clothes. A helicopter whisked him away, about a hundred miles to the north by his reckoning.

"Zahak," a guard shouted above the rotor noise. "You go home now."

Anthony didn't believe him. Raising the hopes of prisoners then cruelly dashing them was an old game from Dachau to the Hanoi Hilton. Why the helicopter trip though? Maybe the theater was about to begin. "Death to America," starring Anthony Sabatini, in the role he was born to play. "You hate me! You really hate me!" he said aloud, unable to refrain from a little laughter. One of the helicopter crewmen stared at him.

“Sally Field,” he explained. “The actress? Sally Field?”

The crewman thought the prisoner was talking about a song and hummed the melody beneath the din.

A military sedan followed by two trucks of soldiers took him and his guards east. Anthony saw a berm and rows of razor wire. Recent experience had given him an excellent idea of what Iran’s borders looked like. The sedan door opened and he was asked if he wanted a wheelchair for the hundred meters to the Afghan side. Anthony smiled as the handcuffs were removed.

“Hell fucking no!”

He hobbled toward the line where a couple of Humvees with American markings and fifty-caliber guns mounted on top stood not far from a dozen Afghan border guards and two American civilians. The barrels of the fifties were aimed down and away.

“I hope they have the safeties on. . . .”

He laughed as it came to him. The click he’d heard as he lay gasping in the Turkmenistan mud was a Kalashnikov flicking over to safety. His pace quickened. His wounds bit and throbbed with each step but he strode out to the checkpoint, tall and bold.

“If I die in a combat zone
Box me up and ship me home.”

He saw a man walking toward him from the Afghan side and as they passed, they briefly looked at each other. Anthony figured he was an IRGC equivalent, a player not-to-be-named later in a geopolitical trade. The Iranian guy was his ticket out of Iran and back to the world.

Anthony nodded imperceptibly to the Iranian and thought he did the same. “Different circumstances,” he mused. The gate was just a few yards away. A few more steps and he was free.

New Mexico

Barrett lay on the leather couch watching football. It was halftime and the Redskins were leading the Rams by a field goal. A chirp indicated an incoming email and he looked to see if it was from a fellow Redskin fan who was as unimpressed as Barrett was with their most recent coach. The sender's address wasn't recognizable nor was the name.

"Peter Whitt? Don't know you. Are you trying to tell me I won a lottery?"

He quickly ran through the message to see if it was spam but it turned out to be kind words about articles he'd written and mention of meeting him at Georgetown last week. Barrett went back to the game.

"Peter Whitt. Which one was he?" he wondered as he and Jesse walked up the trail. "He isn't an undersecretary or a think tanker." Jesse trotted up to him gingerly at the gate and off they went to North Mountain. They reached the rock and took a breather. Barrett didn't like travel anymore – especially to Washington.

"I'm an eccentric, Jesse."

The great wolf stared at him but made no effort to contradict him.

They sat there until dusk came and cooled off the thin air remarkably quickly. Hikers, he knew, were often caught unawares and had to beat hasty retreats to their cars to avoid hypothermia.

“Time to get back, old guy. We’ll both stiffen up like old fogies.”

“Peter Whitt was at the Georgetown meeting with Joe, Aaron, and the rest of the insurgents, so he must be an insider. Oh! Whitt was one of the people involved in the Iranian-Israeli missile program and probably in the Samson program as well!”

He picked up his pace and Jesse trotted behind him. Once inside, Barrett tossed the wolf a biscuit, sat down, and read the email in full.

Dear Mr Parker,

I’d hoped to chat with you, if only briefly, at the Georgetown gathering. I’ve enjoyed your perspective on the world for some time.

I might be permitted to mention that I served in Thailand during the war in Southeast Asia. I was a small part of a project that operated sensors tasked with interdicting North Vietnamese infiltration. The data were fed into a gargantuan computer in Thailand which then selected targets. The program itself had flaws. The results were sometimes catastrophic for villagers unfortunate enough to be struck by the formidable payloads of B-52s. Total devastation. The scene was unlike anything that Dante or Bosch or Goya could have imagined.

Forgive my discursiveness, if that is possible at this point.

Regards,

Peter Whitt

“Well, Jesse, few people write so elegantly these days, least of all me. He writes like that old chap at the Russian Research Center who used to read books on his yacht and toss disappointing ones overboard. This merits a reply, wouldn’t you say?”

Dear Mr Whitt,

Many thanks for your generous comments. I too regret we were not able to talk after the meeting. Wastefulness, disaster, and unpleasant consequences are still with us. I look forward to future exchanges, through email, or in person.

Regards,

Barrett

Less than an hour later, Whitt replied that he'd be in Los Alamos later in the week and suggested meeting at the La Fonda in Santa Fe.

The charming old town was an hour north of Barrett's place, a pleasant drive past dry grassland and ranches with cattle grates at entranceways. Santa Fe was more attractive than Albuquerque. The big city had too many strip malls and fast food joints. Santa Fe was the state capital but also an arts center. You could walk for an hour without seeing a government building yet come across scores of galleries and crafts shops. Lots of Cadillacs and Mercedes with Texas plates. Texans are richer than New Mexicans. A lot richer.

La Fonda is in an old adobe building just off the main plaza where artisans sell pottery, rugs, and jewelry. There's a wealth of lore about the place – its Spanish colonial origins, famous and infamous visitors, and even a ghost. Barrett entered the restaurant and was looking about casually when an elderly fellow waved him over.

"Mr Parker," he whispered as Barrett neared. "Peter Whitt."

A young Zuni woman with silver rings on each hand brought menus. Neither man was hungry though.

"There was a time when I'd drink a few margaritas in this place," Peter told her. "A Guinness beckons me this day though."

"I'll have the same," Barrett said.

"Have you spent time in the Middle East, Barrett?"

“Only a little – mostly consulting in Iraq and Afghanistan. The military and State Department people put on a good show which proclaimed everything was going well. It wasn’t.”

“The sort of show that George Romney described as ‘brainwashing’ after he returned from Southeast Asia.”

“And it destroyed his candidacy.”

“Candor isn’t always helpful in politics.”

“No, it isn’t. And you, Peter. Have you spent time in the region?”

“Oh yes. After things shut down in Southeast Asia, I had little interest in living back in the US. The country was self-absorbed and nihilistic. So I went to Saudi Arabia and later Iran and worked on computer systems, especially missile guidance systems. You know this already, no?”

Barrett sensed no danger. In any case he’d already given away that he did know some things.

“Yes, I’ve read of Project Flower. Those were the days of the ‘twin pillars’ policy. We sold arms to oil-producing nations to keep up our currency.”

“So we sold to the Iranians and we sold to the Saudis. What do you make of Saudi Arabia today, Barrett?”

“A paranoid country living in a political past, rich men who have lots of weapons. They want Americans to do the dirty work, so they can rule the Persian Gulf.”

“So they can rename it the Saudi Gulf. And after that? Who knows. Barrett, have you ever been near a B-52 strike?”

Barrett felt uncomfortable. Talking about war always ruined things and altered his relationship with people. He’d become in their minds a “hero” with all the romantic nonsense attached, or an object of pity. For others he’d become an object they’d boast about. They’d tell friends they’d spoken to a Guy Who Was

There and feel themselves better for it, especially if they bought him a drink. However, a measure of amicability had developed with this Whitt fellow, and he was in some sense what Barrett considered “one of us.”

“Yes, they were common at the opening of Gulf War One in 1991. Not far away, two miles at most. A steady rumble, reddish-orange flashes, and concussive pops for about twenty seconds. Then two more. They came in threes. Most of the guys cheered.”

“From afar, many would cheer. Did you return to Iraq?”

People at a nearby table erupted in laughter at a punchline, an old recollection, or a precocious remark from a youngster.

“We went to a village north of Fallujah. Nine marines and I. Sullen glares from the locals. Most of them stayed clear of us. A young man in a tan sport jacket and white shirt walked toward us – calmly, purposefully, with an out-of-place look on his face. Utterly serene.”

Whitt knew the look from a DARPA study on terrorism. It was likened to the look of martyrs going to their deaths, secure in their faith and what it promised after a righteous death.

“The squad leader shouted for the man to halt but he only quickened his pace. The marines went into crouches and aimed their M-4s. The lance corporal on point raised his rifle, shouted for him to halt, then raced toward him – maybe to tackle him, we don’t know. The man reached inside his jacket and detonated explosives. There was a sudden flash and intense heat. I heard the beginning of an explosion, then I was deaf. The lance corporal took most of the blast. Some of us, however, had fragments removed over the next few days – metal fragments, bone fragments.”

“Oh God.... What was the poor boy’s name? Some things make us want to know a man’s name.”

“Rodrigo Jaqua from Carrizo Springs, Texas. Nineteen. Medium height, thin, dark hair of course.”

“Rodrigo Jaqua.”

“A small engagement, unmentioned in any history book, but memorable enough to those who were there, as a great man once said. I’m sure Rodrigo’s name appeared on the news and the Pentagon sent an honor guard, but to most Americans. . . .” Barrett looked around, “he’s a forgotten man in a war no one wants to remember.”

They talked for another hour about matters of the world and the plots therein. They thought of ways to keep militaries on their back foot, confused, uncertain, reluctant to act. The conversation turned to the potters and silversmiths out in the plaza of Santa Fe who were packing up for the night. Barrett and Peter shook hands warmly and promised to keep in touch.

On the drive back to the East Mountains, Barrett cursed himself for speaking of that event. It had been a secret, a dark one with primal intimacy and an aftermath only a few knew. One had died recently – by his own doing according to the squad leader, who’d found Barrett’s email. The cult was smaller.

A pack of coyotes scattered as an oncoming black car roared toward them while they crossed the deserted two-lane blacktop near Los Lomas.

Santa Clara

Buyers had been getting impatient. Impatient buyers go elsewhere. Startups that annoy buyers become shutdowns and their products go to thrift shops near tattoo parlors and sit on shelves next to dusty Kaypros. Ethan and Rina got their product out and early feedback was enthusiastic. Micrologic Design was on its way. Investment bankers wanted to take it public. Rina handled putting them off. She was now a co-owner of Micrologic Design.

“Rina, these Samson guys – I want to meet them.”

“I can see it now. ‘Hi. We’ve discovered your hidden program on all those microprocessors and we were in the neighborhood, so....’ Then burly guards take us away to a dungeon.”

“I don’t think these guys have dungeons, Rina.”

“I’ll bet they have burly guards – and Rottweilers”

“They have humanity.”

“Yeah.... You know, I believe that. They have so much power and use it responsibly, even nobly. They just need our help every twenty-five years or so! We emailed all the Flower Project figures we could find. No one deigned to reply. A few bounced back as undeliverable.”

“Maybe we can fish around a little more.”

“Ethan, we’ve Googled and Binged and Yahooed. If we do any more, the search engines will tell us to get a life. I’ve already received that message from friends and former friends. You know, we could file a Freedom Of Information Act request.”

“Barrett already did that when we came across the flower logo on the chips. The material came back a week later, expedited by a friend on the National Security Council. A number of pages were blanked out. ‘Heavily redacted’ is the phrase.”

“So the government knows about Samson?” Rina asked.

“No way! He thinks the government just doesn’t like to let on about potentially embarrassing stuff. Even though it goes back long ago.”

“It’s embarrassing that Israel and Iran were once allies?”

“Very embarrassing. It makes things today look like a transient spat.”

“Ethan, that’s exactly what most of this foreign policy stuff looks like to me! Middle school romances and breakups. ‘Hey Iran. I hear Israel really likes you. He’s sorry about going out with Saudi Arabia last Saturday. It won’t happen again – honest.’ ”

“Rina, you’re becoming a wellspring of material for Barrett. He occasionally writes satire but events are getting too absurd to satirize.”

“Seriously now, Ethan. We have to find these guys. What was the name of the guy in Israel?”

“Let me see.” Ethan scrolled through his mail folder and found the message with the names of the Samson programmers he’d sent Barrett. “Zvi Arad, retired professor, Hebrew University.”

“Did anyone you know take courses from him or rub shoulders with him?”

“Not that I know of. Israel’s a little bigger than you think, Rina.”

“I’m sure it is, but the hi-tech world isn’t. Not even here in California. What about your friend in the basement of the Holy Grail Building?”

“Boaz? He was more a student of economics in college.”

“The other guy. The young guy, the socially-challenged one. The guy who makes you look like a strapping Neil Armstrong.”

“Leor? Could be! He did a PhD at Hebrew University. I’ll email him right now.”

“Ask him if his advisors read his dissertation.”

“Rina, I’ll read your dissertation. I promise. That is, if you’ll let me see it.”

She sat on his lap.

“Ethan, I’ll let you see anything you want.”

A delightful while later, Leor had gotten back to Ethan.

I took three courses with Arad in grad school. Great teacher, a mensch. I have dinner at his home with other former students he’s placed in sensitive positions. We talk about technology and world affairs. I asked him to invite you and Rina someday. He was here to look at the blackouts before you came and was upset he couldn’t find anything. I later told him that you’d found the problem. He was impressed. Very impressed. Hope that was okay. He’s in India now. Will send his email in a nanosecond.

“Those guys know about us?” Rina exclaimed. “And they know that we know about them?”

“It appears so.”

They slumped back in their chairs and pondered the implications. The idea of being discovered was never far from their minds. They accepted it as part of the investigation, part of the adventure. Now, the idea was unsettling.

“I suppose they could have done something to us already, if they wanted,” Rina finally said. “You know – burly guards, Rottweilers.”

“True. But they have humanity – and nobility.”

“And they’re impressed with us for discovering Samson and disabling the heuristic that almost blew up the world. Try to get in touch with Zvi Arad. First, Ethan, we should do some research.”

They pored over articles Zvi Arad had written in *Ha’aretz* and the newspaper articles on his unsuccessful run for the Knesset. He was more insightful and respected than the usual antiwar voices in Israel. He’d commanded a company of Shermans in the ‘67 war that raced across Sinai to the Suez Canal. His articles were informed by history and an understanding of political and military realities. He could debate the usefulness of a policy or new weapon system with any minister or general and he could do so with charisma and articulateness and sound reasoning.

“How did he lose?” Ethan wondered as he drafted a message.

Dear Professor Arad,

I’ve only recently come to appreciate your work, both in computer science and politics. A former student of yours tells me you’ve recently become aware of my abilities and are impressed. I am honored. Perhaps you and I can correspond on matters in our field and how they might relate to world peace.

Sincerely,

Ethan Alon

“I like it, but it needs a better closing,” Rina said.

“Such as ‘Major Alon, IDF?’ ”

“Nope. Such as, ‘We believe your work is essential to world peace and must be continued by successive generations.’ ”

“You’re a genius!”

New Mexico

Barrett thought that in decades to come archives would be opened and histories written. But they were unlikely to mention tekkies in California or an analyst in New Mexico or a clandestine program embedded in every microprocessor. The guardians of historical record would dismiss such talk as foolish and conspiratorial.

Barrett thought foreign policy was a conspiracy, of sorts. A small number of men and women gathered in private to determine a course of action that involved immense bureaucracies and influential lobbies and powerful militaries. They hashed things out, came to a consensus, and presented it to the public as essential to preserving their way of life. Consultants were brought in to write inspiring speeches.

The conspirators don't meet in mansions or lodges or the Skull and Bones house in New Haven. They don't have secret incantations and handshakes. They don't dance around a statue of a giant owl. With a minimum of congressional or public involvement, they make policies that affect the world and kill people.

Barrett muttered a lot.

Lack of recognition for whatever had happened over the last few weeks was fine. He liked life in the desert with his wolf friend and no longer wanted

anything more than to learn things about the world. A new pair of Luccheses would be nice though. Barrett occasionally let his views of the insignificance of individuals in the world slip to the side and entertained the notion that he truly accomplished something with Joe's group.

"Jesse, we were were a conspiracy."

Barrett thought about future writing projects and recalled his feelings on coming home from war. He wondered if he could describe the alienation, boredom, disaffection with everyday life, and the aberrant desire to return to where things made sense.

An elderly neighbor in the DC suburbs commanded an armor company in World War Two and took seventy-five percent casualties in five months of fighting from Saint-Lo to Aachen, just inside the Siegfried Line, where he was badly wounded by a mortar round. Seventy-five percent casualties. A lot of letters to write. After the war, he met with the families of the "boys" who'd been killed and told them the circumstances of their loved ones' deaths.

Barrett thought about going to Carrizo Springs, Texas but didn't think he could go through with it. When he imagined himself walking up to the Jaqua house, he felt nauseated and knew he'd turn around. Piercing flashes came and went. It would take, he knew from experience, a couple of weeks to get the souvenirs out of his mind.

Barrett and his friend walked up the deer trails.

"The world's a strange place, full of surprises. We're due for a pleasant one. Right, Jesse?"

The great wolf held his counsel but seemed open to the idea. Barrett thought about heading for Kelly's on Route 66 and chatting with the blonde waitress about to graduate and move on.

"Dee Dee. Maybe Diane? Pretty name."

You can't get a drink until noon on Sundays in New Mexico and that meant an hour of football without alcohol – a harsh privation to most in Kelly's during football season. At 11:58 Dee Dee announced, "It's the two minute warning and the state's out of time outs!" The patrons cheered.

"Still solving the problems of the world, Barrett?" Dee Dee asked as she placed a Guinness before him.

"I think I'm doing pretty well."

"Then you'll be a big tipper today!"

"As ever, my dear."

She and Barrett regarded each other for an unexpected but pleasing moment.

"Dee Dee, when do you finish your master's degree?"

Barrett was surprised he'd asked that. He only knew about her graduate studies from another patron, a young man who had the misfortune of being a Raiders fan.

"At the end of this semester. Why how very sweet of you to ask, Barrett Parker. I'll be teaching in Moriarty. Not far."

"That's good."

"I hope you don't mind my saying but I'm glad you're not wearing that dysfunctional veteran hat. You know, my grandfather was in World War Two – Okinawa and Pela-something. He said it was bad but it gave him a certain perspective on things."

"Like what?"

"Like being suspicious of conventions and thinking for himself. You have those things, Barrett."

He raised his glass.

“Here’s to your grandfather, to those marvelous things he acquired at Okinawa and Peleliu, and to his discerning granddaughter about to go on to new things!”

Dee Dee kissed his forehead and cheers sounded throughout Kelly’s.

Northern India

Rina awoke to an email from Ethan with the header “We’re going to India!” It took a moment to register but she soon recognized the import and read the body of a forwarded message:

Dear Mr Alon,

So interesting that I should hear from you. Timely also. Yes, your work is known to me and to a few colleagues from old projects. Your recent use of computational geometry demonstrates great promise.

Perhaps we can meet one day. I’m in India, the guest of Abhay Verma whom you may already know of. I can attest to his hospitality and to his willingness to extend it to you and your companion.

Kind regards,

Zvi

Ethan picked up his phone.

“How did they know that you and your companion used computational geometry?”

“I’ve been wondering that. Maybe our work there was mirrored on a drive somewhere. Maybe Leor traced our footsteps. Maybe they can see, what’s the word I’m looking for? *Intruders.*”

“Didn’t you think about that? Remember getting out of the NSA system without leaving tracks, except ones that lead to godforsaken places in the Urals?”

“There was a bit of urgency in the Holy Grail building that day. Anyway, I just talked to Barrett. He lunched with one of the Samson programmers yesterday. Peter Whitt himself.”

“What? Where?”

“Santa Fe. They talked about the world and hit it off. Plenty of common ground – and Rina, that’s not often the case with Barrett. They plan to keep in touch and discuss matters on a regular basis along with a few other younger analysts.”

“So the Samson programmers are interested in the three of us?”

“Yep. Let’s go to India and find out more about these guys.”

Rina made growling noises.

“Rottweilers? Or are you were imitating your dissertation advisors.”

Ethan and Rina landed at Indira Gandhi International around noon. They groggily found their way to the baggage pickup area where a stocky bearded man in a reddish linen jacket identified himself as an aide to Dr Verma. He carried their luggage to an SUV. The heat and humidity enveloped them the instant they left the building.

“Where are we heading?” Rina asked.

“Lansdowne, ma’am,” came the reply. “It is about three hours north of here. You will be pleased to know it is cooler there. Almost a mile in altitude.”

He raised his hand up to the vehicle’s ceiling and grinned.

“We are indeed pleased to hear that,” Ethan replied.

He and Rina leaned against each other and fell asleep in moments.

The vehicle slowed as it began an ascent. Ethan and Rina roused to see foothills and cross rock-strewn rivulets that flowed down from the mountains ahead. The land began to take on an almost alpine look which neither thought possible so close to the tropical clime they’d just left. They passed military convoys, some going north, some south. Road signs pointed the way to military cantonments. It reminded Ethan of the area around Ft Bragg, which prided itself on the presence of elite troops. It wasn’t far from an IBM fab where he worked.

“Is Dr Verma working with the Indian army?”

Rina spoke hesitatingly, wondering if they were getting into another country’s military schemes. The driver smiled and shook his head.

“Oh my heavens no. Not in many years anyway. He’s the gentlest of men. You shall see. The very gentlest of men. He should have won the Nobel Peace Prize. Well, politics interfered. Always politics.”

They drove under a stone arch then onto into a winding cobblestone driveway that led to a Victorian mansion. Ethan couldn’t help but think that it was once the summer place of a high official in the colonial administration. It was certainly under new ownership. On a cleared hill to the side, were smaller buildings with large antennae hovering above them. An elderly man, western in appearance, walked out of the house to greet them.

“Ethan Alon and Rina Hardin, no doubt. I’m Zvi Arad and I welcome you to Lansdowne and to the gracious home of our colleague Dr Abhay Verma. Are you in need of rest or could you be persuaded to meet with us presently?”

“Presently would be most welcome for us,” came Rina’s instant reply, affecting quaint colonial mannerisms. “No Rottweilers,” she whispered. Ethan made growling noise. Both felt the humor should end though. They walked around the

grounds to a side porch where a table had been prepared with mangoes, spiced rice, and urns of water from nearby springs, all of which were welcome.

Zvi returned with a frail elderly man helped along by his colleague's arm and a weathered oaken cane. The elevation required him to wear a light sweater of yellow cotton, faded in color and worn at the elbows – the result of liberation from concerns with appearances that the years confer. Ethan and Rina sat on a damask couch. Abhay sat down slowly on a matching chair and cleared his throat.

“Do you see beauty and spirituality in your work?”

Abhay spoke more sternly than the question's content would ordinarily come with.

“Yes, absolutely.”

Ethan's reply came more swiftly than anyone thought.

“We often think of our work as art – an intricate musical piece. Learning the chip's purpose gives rise to inspiration and wonder. The idea becomes a work of creativity and even of self-expression. We think through the chip and try to understand its purpose in life and ultimately its place in the world.”

“All the more so now,” said Rina.

“And your colleagues in other firms? What of them?”

“Oh. They're more practical in their approach. Much more practical. When I speak of art and creation, they see it as an amusing quirk. I hope an endearing one. Perhaps one they will understand someday. I've seen much beauty in a section of the PAMD processor. Incredible beauty that I could not explain to anyone who'd never delved deeply into what silicon can be.”

Abhay nodded but showed no reaction. He was slowly forming his thoughts.

“There *is* beauty in our layers of silicon. Zvi and I and others put it there. You know that. I've seen the hands of you two convey beauty. And beauty is our aim

in this life, or should be. The modern age grinds it up, takes it from our lives, and tries to sell it. Into this emptiness comes no renewed thirst for beauty or for knowing God. What comes is a love of self or more tragically, a love of war. The soldier becomes a saint. His failings and cruelties are obscured by the glory people ascribe to him and the blood he sheds.”

Abhay motioned with his hand toward the majestic snowcaps towering to the north. Wisps of clouds rolled in front of the peaks, hiding them for a moment then revealing one more. Ethan was transfixed by Abhay. Rina felt immediate affection for him – this strange man she’d just met and would likely never see again.

“You see nature here, but to the west there is the Punjab from which armies have drawn recruits since Alexander marched in from Macedonia. And Kashmir is just to the north. Three wars there in my lifetime. I fought in the first one. I have scars. Happily, we are close to Nepal and Tibet. Gentle people, at peace with the world, seeking love and oneness.”

“The home of many forms of spirituality – accepting ones,” Rina said.

Ethan nodded in respect and awe, and leaned toward Rina.

“Not far from here is Wagah, on the border with Pakistan. Every afternoon soldiers of each side put on a display of civility as they lower their flags and close the gate, all to the cheers of crowds. Behind this façade, each country prepares to kill millions of the other country’s people.”

Abhay’s words came crisply from a keen mind that was not at home with a failing body. He paused to catch his breath and look inquiringly into his young visitors’ eyes, never revealing any judgment that might be forming.

“It was like that in Iran when we worked for the shah,” Abhay continued. “The Flower Project it was called. As preposterous a name as any ad man could dream of. The shah would meet with the Saudi king – Faisal it was back then – and the two monarchs would smile and embrace and talk of peace and brotherhood. All the while, they prepared for war.”

“And in 1980, it came,” Zvi interjected, sensing his friend’s need to gather his thoughts and strength. “The Saudis paid the Iraqis to do their fighting and it lasted eight years. We were convinced that we were the best and most decent scientists in the world and that we had to put an end to the war. The most ambitious of us or the most naive of us – we shall have to see – thought we could make their weapons too unreliable and war too unpredictable. No, we couldn't end war, but we could shorten some of them and prevent others.”

Abhay cleared his throat noisily and spoke.

“In large wars, we at times assisted one side or the other. We allowed one side’s weapons to work better than those of the opposition. Alas, the victors saw this as sign of invincibility and divine favor. They grew more ambitious. Their people became more worshipful of Mars. Today, the Saudis again want others to attack Iran for them. They risk causing a long bitter war. Shia against Sunni, Persian against Arab.”

“But perhaps our young guests have a colleague who has expressed this view to them already,” Zvi said looking intently at Ethan and Rina.

“I have learned of this view,” Ethan replied, “though not with the moral foundation of my hosts. My colleague has also told me that powerholders in Washington were greatly alarmed by the blackouts of recent weeks and worry about the reliability of weaponry.”

“A heuristic sometimes does things we do not want it to do,” Zvi said, “and that can bring problems. Ours was an early form of artificial intelligence and the field has grown immensely.”

“Indeed, it has,” Rina said. “We’ve taken the liberty of proposing a new algorithm for Samson.”

Ethan looked at her with new appreciation.

“And how can we continue to sow the seeds of doubt in our leaders’ minds?” Abhay said with a wry smile.

“We must find a safer method,” Ethan went on. “If not through unpredictable heuristics, then through new search trees and routines within the Samson Program.”

“We can add a module, with Dr Whitt’s help at PAMD, to realize this,” Abhay said, nodding his head. “We hope our guests this day will consider working with Dr Whitt at PAMD – and perhaps taking his place one day.”

“Our work must be carried forward, Abhay,” Zvi added.

“What would that Iranian general who hired us so long ago think of us now, Zvi?” Abhay asked, mirth overwhelming his dourness for the first time that afternoon.

“General Toufanian would be keenly disappointed in us, Abhay.”

“My colleague,” Ethan continued, “suggested finding our way into the military and intelligence systems of aggressive states, discovering war plans and related information, and releasing at least some of them on the internet for all to see.”

“And for all to think about and weigh against the lives of young soldiers,” Rina added.

“It would be embarrassing for the world to learn of their leaders’ plans and how long they’ve had them,” said Abhay. “As a poet once said, ‘I did not foresee, not having the courage of my own thought: the growing murderousness of the world,’ ”

“William Butler Yeats,” Ethan said.

“The Trembling of the Veil,” Rina added.

“We began with high hopes,” Zvi said. “But your presence here today indicates we cannot keep our secret forever. Someone else – someone less benign than you – will see what we’ve done. Then . . . who knows.”

The four sank into their thoughts, dark ones of transient victory and short-lived peace. And the possibility of immense wars ahead.

“I’m not so pessimistic as Zvi or Yeats,” replied Abhay. “Every day, there are children brought up without the fears their cultures have passed on for millennia.” Coughing interrupted his words though not his thoughts. “Parents of humble means are able to provide their children with computers. The young find new worlds, new ideas, and new joys. In time, they will connect with others like themselves and learn faster than we did. My mind returns to the gentle people of Tibet. They’re so bright and inquisitive and good. I should like to be buried there one day.”

Ethan and Rina nodded in warm appreciation of such people and such ideas and such hope. The meeting ended shortly later and the two guests moved into an adjacent cottage where they’d stay a few days before returning to California. They’d much to consider.

That evening, Ethan and Rina lay back and talked about Abhay’s words. They imagined a village where a twelve-year-old receives a gift from loving parents, one that took them months of toil to provide. When the village’s power switches on in the evening, the computer comes to life on a simple wooden table in a living area with bedding off to the side.

A spark of electricity awakes the computer and its microprocessor directs information. Bits of data flow between the chip’s internal blocks, connecting to screen, mouse, and keyboard. A blue cursor blinks in the corner of the screen, a booting sequence begins, and the child’s face fills with wonder.

Teachers say a wireless system is coming and everyone imagines the miracles it will bring – limitless information and communication with all! The child can’t wait for the day.