

## PROLOGUE

# The end arrangement always comes first

**T**his outrageous opportunity that had unceremoniously arrived swirled in her mind as she waited for the call. For the last three days she'd reviewed all the information sent to her from one known only as Mephisto. It was both intriguing and intimidating, plus she'd lost more than a few hours of sleep as she had picked the information apart. When the encrypted file had appeared at the designated location, with no way to trace it back to the sender, she knew she had met a technical better. The combination of the contact, method of file delivery, and the actual file contents were fascinating and more than she had ever imagined as close to feasible. This could change the balance of power in the cyber warfare game.

After she launched the embedded program file on a clean laptop, it had taken less than a day for the code to morph and to complete the stated routine before it simply disappeared. Even her elaborate trace files that she had established to capture the activities of the program were wiped clean. She'd filmed the screen with an external camera, in addition to watching the screen as the event occurred. Had that not been the case, she

would have reviewed the laptop and sworn that nothing happened at all. Simply stated, she would have categorically argued that the program had failed. Yet it hadn't. The goal had been accomplished with no trace left behind.

As she'd mentally explored the potential uses of such a program method, she'd found that the targets outlined were only the tip of the iceberg. It seemed clear she was at the ground floor of a disruptive technology that could change the world. The feeling of such power surged through her veins and created a natural buzz. To keep her end of the bargain in this arrangement, she had to accept the high risk potential of imprisonment.

She'd unsuccessfully tried to penetrate to the code level and determined it just wasn't possible. That left her frustrated at being unable to steal or copy the information to use on her own. Her frustration reminded her that their group was only a ragtag band of hackers dropping ransomware code onto unsuspecting Internet surfers, encrypting all their hard drive files, then black-mailing them for digital currency to unlock their machines. This new offer, however, was intoxicating and dwarfed her group's technical efforts. Her role in this arrangement would be high risk and hypothetically could result in high monetary gains. Her decision point was whether the remuneration exceeded the risk factors. This was a very tough decision. If she agreed to the arrangement, it would give her more time to study and capture this unique code.

Questions screamed through her mind. "Why had she been contacted?

"Was she really prepared for the first set of insertions requested?

"And who was this group that created this type of code?

"What were their long-term goals?"

For her, this was a blatant seduction that she would have accepted for far less money than suggested. The code names being suggested were from Mephisto, and she suspected they held some meaning to him, meanings that he would likely never share. Honestly, she didn't care about a name. She had been forced to play many roles in her life.

Today would be the third and final call in their planned discussions before the contract would be finalized, or they parted on friendly terms. If she accepted the contract, then she had to fulfill a commitment cancelled only by her death. She was reasonably sure that Mephisto would insist on helping her keep that end of the bargain if she screwed up. She wasn't permitted to tell anyone of the details, the targets or the timings. She only needed to provide the access points, introductions, and then walk away. Success or failure was to be monitored and then conveyed to her by Mephisto. The phone rang and she answered mid-ring, then chided herself for being too eager.

The man on the phone softly chuckled as his rich baritone voice suggested, "Ah, I see that you were ready for the call. That is good. For our arrangement to work we need communications between us to be prompt and succinct. All too often people in this business forget their customer service manners, which only sours a relationship.

"I saw that you retrieved the package. May I presume you completed the actions as requested?"

"Yes, sir, I did. It performed as advertised. I don't quite understand how, but it did."

"Let me be perfectly clear," he warned, "you do not need to understand the how in any of this. Your role is to deliver what I provide to you, where I say, and convey the information requested within the time frame for each test. Any attempts to copy, decode, or penetrate the program will be tracked and result in immediate

forfeiture of the contract with the ultimate penalty. Just as I know you tried with this code as it was being monitored. That, my dear, is not negotiable. Is that understood?

“I have a great deal of patience for my work but almost none for people who don’t follow instructions. This will be the only time we go over this particular rule.”

His deep voice had a malevolent edge to it that made her feel like she was about to be punished. It took all of her mental and emotion strength to resist the physical chill she was experiencing that threatened to make her teeth chatter.

With a few deep breaths to bolster her mental acuity, she responded, “I understand.” Along with everything else, she now had to check her anger at being caught. She shifted the discussion. “I believe that I have outlined the way to effectively enter the first group of scenarios. Do you need that detail?” she asked.

“No. My dear, if you agree to be my Callisto, you will have the freedom to choose how to inject each of the programs into the targets.” His voice tempered as he encouraged, “Be creative. This is a task I want you to have fun with, as long as you provide the entry information and adhere to the time frame prescribed.”

She laughed nervously and asked, “I gather there is no traditional user acceptance testing needed? User testing based on your scenarios would be hard to track.”

He chortled as he replied, “That is not a critical factor from your contract perspective. Meeting the performance criteria is the responsibility of others and not your concern. I did like your joke though.

“So, do we have a deal then?”

She paused to form her question carefully. “I’d like to know, how you knew to contact me? I’ve worked to maintain a low profile. Protecting myself is as important to me as protecting yourself is to you.”

“Callisto, if I may be permitted to test how it sounds in our discussion, you were recommended a long time ago for detailed and discreet work by someone who is no longer of this world. I kept this information to myself until the right opportunity for your talents was presented. I did not wish to squander someone such as yourself for mundane and routine assignments. In addition, I was assured that you never broke your word once given. I recognize you learned that lesson the hard way. Furthermore, I know you are and have been relentlessly ruthless in pursuit of your stated objective, and I have that need in my line of work.

“I believe you are the one true Callisto for me. Shall we complete our arrangement? Ten thousand Euros for each of the first group of tasks, payable upon successful time and placement as outlined. Fifty thousand Euros to be paid to your bank account electronically for our finalized agreement. The next series of payments will be determined when those scenarios are identified.”

The answer wasn't the one she had wished for, but his vague reference to her past hit home. She had no desire to dig up her history, and this arrangement was one she felt able to control. Funding her other projects required this type of money. Her confidence rose as she reflected upon her goals and desires. Her fears subsided as this venture's possibilities flamed her imagination.

Callisto then suggested, “The cash payments you are offering are attractive, but it occurs to me that they might be dwarfed by what you intend to do with the code after your trial period is over. I would suggest you consider that I be brought in as a junior partner for a percentage of what you think you are going to get, in exchange for just covering my expenses? You said yourself that I have value beyond a simple series of transactions. My female intuition tells me there is much more value to both of us if I receive a percentage, Mephisto.”

Mephisto paused slightly and, with a chuckle, replied, “I prefer to rent rather than buy my resources. It is why I am still single. I can pay more for the pleasure of temporary companionship with none of the long-term burdens of ownership. I will consider your offer only after your performance on my designated tasks. Prove your value and worth during the upcoming exercises and perhaps a partnership of sorts will be considered for more than a few gratifying transactions.”

“Mephisto, I am not looking for a full-time relationship, but I am interested in a percentage of a larger piece of any future action, and you have agreed to consider my offer. So yes, we have an agreement. Each subsequent group of scenarios will be negotiated for a fee after I review the targets, correct?”

“Excellent, Callisto, we are agreed. This first group will be completed over the next four weeks at the targets indicated. I will provide you a minimum of three days advance notice as to the due date for each of these. The first is due in four days from today and the code for that target will be in the prescribed location with a link to the location for the next source code for target two. The locations will not be repeated. You may work on your plans of how to deliver my information to each source to help prepare you for the targets on the list. No event should occur except on the prescribed due date.”

She assertively replied, “As you wish, Mephisto. I will not fail.”

“We will not fail, my dear.”

As he disconnected the call, an uncomfortable tingle rose up her spine. In that moment, she knew her acceptance was a one-way trip to an uncertain end that she had to control.

## CHAPTER 1

# Which yields better results: Brute force or brute thinking?

**J**acob's palms slapped the desktop on either side of the keyboard as he watched the screen in frustration and shouted, "Dammit!"

He stood abruptly, sending the wheeled chair back five meters at a high velocity, and started pacing as he watched the idiotic character hop around the screen. The character he'd nicknamed She Devil probably had laughter as well, but the laptop was set to mute for his concentration. This personal animated coach, delivered based on his logon credential, was annoying enough, but the real insult came from the box in the lower right hand corner.

Ha, Ha, Ha!

You missed, JACOB. Do you want to try again or is it time for milk and cookies?!

He reached over and pressed a key combination that removed the annoying creature his coworker and alleged friend, Quip, had inserted for entertainment. His pacing continued as he mentally replayed the steps of his program for this stage to see what he might have missed. The whole purpose of his efforts was to create a deflect program that morphed faster than the

base code that a random hacker had created. As he shortened his pacing track in front of the monitor, he randomly ran his fingers through his thick, wavy hair before he stopped, retrieved the chair, and retook his seat. His blue eyes would have pierced the screen, if that were possible, to get past this step in this program. The latest program being dissected was open, and he reviewed it until he reached the point where he'd inserted his changes.

This program and the associated logs were part of the information detective hunt that Quip and Jacob had gathered from multiple sources across the Internet. The programs, logs, and information they'd gathered seemed to have the running theme of changing code that resided at the root of the system. It was like an extremely vicious virus with a mind of its own. How it was activated, deactivated, and sometimes vanished was his focus. The maddening part of the exercise was that he had no clean example to work from but only residual pieces of code and a few overlooked log files, along with his imagination and experience. By all reports, this program was one that was lifted from the onboard computer of a very high-end smart car.

According to the information in the blog posting of the driver, this was from someone who had recently purchased a luxury vehicle. The driver and his wife were taking the new vehicle for a leisurely weekend drive. Jon and Carol Shaw, named as the owners of the car, hadn't expected the random smart car behavior they had experienced with less than five hundred kilometers on the odometer. Driving along a scenic road near Tuscany, the driver had modestly set the cruise control at the posted speed limit rather than risk receiving a ticket from the automated Italian speed traps. For half an hour or so they chatted and took in the countryside, which was awash with summer color and dotted with various animals on the hillsides.



It was quite a pleasant road trip until the accelerator started to increase and then abruptly decreased before the driver could respond. From the report, controlling the steering wheel seemed to be the driver's focus as the brakes completely disappeared. Then the wheels seemed to lock up before the vehicle came to a stop. According to the post that had accompanied the smart car downloads, the driver had barely missed a head on crash with a Braunvieh, who had been calmly chewing her cud as she'd swatted flies with her tail, just before the vehicle crashed through a fence.

The Internet posting became a bit more interesting when the Shaw couple was issued a reckless driving citation by the police. The police maintained the driver had foolishly set the cruise control, expecting the car to drive itself, while they had a *gripe and feel* in the back seat of the driverless vehicle. The Shaw couple vehemently denied the allegation that they were too stupid to ride in a smart car believing that it would drive itself while on cruise control. The police maintained they found no faulty onboard computer code and no mechanical anomalies to explain the accident. The Shaw couple had taken their complaint to the social media ranks to see if anyone else was experiencing the same kind of issue.

Jacob had recovered a portion of the program from the hidden registry files, recreated the scenario, and had found another thread in the puzzle he'd been assembling. There was no real code residue and no log activity to check against as the program file was gone. However, on his closer inspection, the logs containing time and date stamps looked odd, so Jacob opened them up to compare them to each other during the questionable time frame. He noticed they were all identical. Something had indeed run on the smart car onboard systems, replaced actual logging files with manufactured ones, and then deleted itself, thus giving the impression that nothing had been done in the onboard

computer. Regardless of how phony the logs were, there was no real proof that rogue code had been executed on the smart car.

He had a partial tendril print from the programmer. It contained the same characteristics he'd isolated from the other incidents and pointed back to portions of the *Grasshopper-loop* he had unraveled, be it nearly too late, from the former Professor Su Lin. He had his suspicions, which was why he continued to poke at the problem from each of the odd incidents randomly revealed as he and Quip trolled for data. This was what he measured himself against in this sixteenth scenario. He was on the verge of completing and confirming a similar tag in the strings he was trying to connect.

He was further annoyed as he and Petra had both looked at this type of vehicle to purchase for their travel while in Europe. After studying this series of events, he was beginning to lean towards more traditional options rather than this new trend toward smart cars which could be readily hacked. He sent off a quick email to the poster of the incident to verify if the onboard systems had received any automatic downloads and, if so, when, in relationship to the events.

The door to the machine room tweeted as someone entered. Jacob looked up to the monitor that showed the live feed to the operations center entrance and smiled as he saw Petra enter. She was not only his coworker but the love of his life. She was short and petite with her long blonde hair tied up in her work bun, as he liked to think of it. Beautiful.

In her lyrical voice, Petra gently asked with the amusement reaching her dark brown eyes, "Honey, should I ask what the score is or presume the crazy new hairdo is due to your doing calisthenics while waiting for the program to compile? Judging from the amount of tissue under your fingernails, I'm guessing your scalp is kind of tender," she added with a grin. "I'd hate to

think I couldn't run my fingers through your hair later if the urge struck."

"Sweetheart, you can, but all that will do is remind me to be pissed off again.

"Actually, I'm sure glad we broke these program forms into steps. I can see they are related based on the tags from the programmer. The style is similar, although it shows as less complete with each event. I believe it is the same programmer growing their skills over time. It is much easier to feel a small taste of success with each of the scenarios isolated. Out of the fifteen or so steps for this phase, I have twelve completed. They do seem to build upon the maturity of those programs we broke apart before, as we suspected. I just cannot find a definitive link, though I am tracking some inconsistencies. It is a time thing. I have confirmed the replacements of the registry files and creation of hidden ones and some rootkit-like behavior.

"How are you doing with the enhanced encryption for hiding these beasts? We need to understand how these buggars are introduced so that we can understand how we introduce the cure."

Not only were they friends and lovers, but they were a powerful programming and encryption team. Petra was foremost in the encryption field and constantly pushing the limits even further, as with this effort. Jacob was the lead programmer and system tester. They were talented enough to switch tasks when needed but very adept at their specialties.

"I have a new modification that takes my high-end standard into the 256-encryption method and then leverages in a multi-form factor authentication. It looks promising, and heck, my She Devil scored a ninety out of one hundred. Not perfect, but at least in the good range."

Jacob frowned and asked, "I don't get it. Why does my She Devil Layla count points, which, by the way, is Jacob – zero and

Layla – twelve, instead of giving me a score for my effort? Quip, with his toys and warped sense of humor, is really getting annoying. Argh!”

Petra laughed. “I guess Dad just likes me better than you. But I didn’t come in here to gloat, my darling,” she emphasized as she rubbed his shoulders briefly, “Dinner is in a scant hour, and you asked me to remind you. We leave in five minutes, please, so get it compiled and let’s head out.

“Quip sent me a text that he had uploaded the latest ‘net noise he captured from the Asia Pacific region, and ICABOD is analyzing the consolidated data. He’d like to discuss it before dinner.”

Jacob briefly reflected on the changes that had occurred since he had found Petra and was invited into the family business. Petra was the daughter of Otto, one of the former key members of a group created during World War II with a charter to preserve individuals’ wealth and protect them from governmental tyrants. Jacob’s grandfather, Wolfgang, was a second key person in the group, who focused on the financial aspects of this family organization, fondly referred to as the R-Group. The third leader of the R-Group was Quip, who had taken the reins from his grandfather less than a year ago. Quip specialized in leading edge technology and maintained the *Immersive Collaborative Associative Binary Override Deterministic system*, or ICABOD, as it was fondly called. Quip was also considered the project manager for problem projects.

“Sounds good, sweetheart. I’ve about had it for today. Yep, some progress, but not there yet.”

They closed down the unnecessary lights, locked up and headed to Petra’s car. Jacob figured they’d have time for a quick shower, together of course, before drinks in the library.

## CHAPTER 2

# It's just one dam project after another

**P**avan, the hydro operator, was completely absorbed in his book and failed to notice his supervisor headed straight for him. As Pavan read, he absentmindedly pulled off pieces of his sandwich and munched on them, oblivious to his rapidly approaching, red-faced plant supervisor.

The slightly winded, overweight supervisor startled Pavan into focus when he demanded, “What did you do? Why do you have the gate locks wide open and the turbines on max while you are at lunch?”

“No one has requested that we boost the hydroelectric output. Plus, with the drought situation, we need to conserve all the water we can. Again, what the hell are you doing?”

Jolted back to reality, Pavan stared blankly and blinked several times, then responded, “Here in Brazil, union rules clearly state that I get my full hour for lunch without a supervisor hunting me down or swearing at me. Now unless you want yet another union grievance to address, I suggest you calm down and try to make some sense. What are you talking about?”

The supervisor was seething and angrily replied, “Don't you feel the turbine vibrations or hear them whining at their high

revolutions per minute? What did you do? Did you decide to launch everything on a mass destruction setting so you could come back and save the day after finishing your comic book?”

Pavan was incensed as he insisted, “It is NOT a comic book! It’s a graphic novel, expertly written and flawlessly drawn to achieve...

“Hey, wait a minute! What’s wrong with the turbines? They sound like they are ready to take off and leave the solar system.”

“That’s what I have been trying to tell you, Pavan! Come on. Let’s get back to the SCADA controls and try to reign in this looming disaster!”

They double-timed back to the master control area that housed the supervisory control and data acquisition (SCADA). Pavan stared in disbelief at the settings and then the output gauges. He’d worked at the hydroelectric plant for over three years and really knew the equipment, despite his cavalier attitude of a few minutes ago. He’d worked hard to earn the trust and respect he had at this critical operations area. Pavan was extremely proud of how he contributed to the businesses and people of this region of Brazil.

Pavan clarified, “I personally set all of those turbines on low RPM levels based on the minimal water flow we agreed to this morning.

“These settings are...boss, I can’t even get the settings this high through the SCADA terminal! How in the hell did the settings get amped up to one hundred twenty percent? Every gate is wide open, and the turbines are set to maximum output, which will destroy their bearings if we don’t immediately bring everything back under control!”

Pavan frantically logged into the SCADA master control terminal, only to discover that the terminal wouldn’t accept any commands. Then, some words appeared, painted across the screen, sending an icy chill down both their spines:

Ghost Code Patent Pending

The supervisor grabbed up a desk phone to make an emergency alert call only to find that the phone system failed to connect to dial tone. He reached for his cell phone. The hardened bunker holding the turbines made it nearly impossible to get any bars.

He looked at Pavan imploringly as he suggested, “I’m going up top to try and get reception to call in an emergency alert. You stay here and keep trying to login to the SCADA terminal to see if you can get the gates closed.”

Then the circuit breakers started tripping. Pavan looked slightly relieved as he mumbled, “At least the downstream power stations won’t start melting from all the extra power being pushed onto the grid.”

The phones were obviously back on, as one suddenly rang. The supervisor picked up the inbound call which, as it turned out, was from the home office.

An angry voice on the other end shouted, “What in the hell is going on up there? We got people downstream screaming that water levels are rising way too fast. The people upstream want to know if the drought is over based on all the water we are cutting free. The power division wants to bill us for all the sponges they have to buy and use to clean up their melted power and switching stations!

“If it’s not too much trouble, can you stop screwing around up there and bring this mess under control now?”

Just as the frantic supervisor was about to scream help, Pavan looked down at the SCADA terminal with its familiar login prompt. He accessed the system and began corrective actions.

The supervisor watched the activity and saw marked improvement as it occurred with each command Pavan entered. He witnessed the catastrophic pitch of the hydroelectric dam as it started to respond to the entered terminal commands. Slowly, each of the systems was brought back under control. Their pulse rates in turn slowed as well. The supervisor almost calmly recounted the situation to the headquarters' caller. It would take a few hours to restore everything to the pre-event operational levels, but they were past the danger point.

Then, as system diagnostics were begun, Pavan's SCADA screen cleared again and another message was displayed that read:

The Ghost Code exercise has completed.  
Please gather up all your possessions and leave by the nearest exit. The theater management hopes you enjoyed the show.

The screen cleared and displayed a shadowy smiley face that dissolved after a few seconds back to the regular command terminal screen. Astonished, Pavan turned around to check that the supervisor had also witnessed the event.



## CHAPTER 3

# It's like playing with half a deck of cards

**Q**uip contemplated several different things over his drink as he watched the others slowly gather and make their own drink. He could sense that both Petra and Jacob were tired. After weeks of trying to determine the full solution to the code issue and gather all the available information, the team was no closer to a solution to any of the code issues. Even though the R-Group was highly effective at information gathering and analysis, this problem seemed to have many isolated yet related tendrils. There was no home source that they'd been able to identify. Episodes were occurring randomly. The only thing they could honestly say was that the events seemed to be increasing in scale and yet the locations were random, as were the affected industries.

Quip was a unique man, with his untamed hair, yet elegant demeanor when he stood to his nearly two-meter height. Tonight, he was well dressed in that casual, finished manner that only a born and bred European seems to pull off readily. Most times he was dressed in jeans and casual shirts. If it weren't for his advanced degrees in applied mathematics and physics, combined with the ability to speak six languages, he could easily be mistaken for

a typical computer geek. As the project manager and keeper of the R-Group infrastructure, he was responsible for providing direction to the group.

Admittedly, he'd found himself somewhat distracted since his current love, Eilla-Zan, or EZ as she was more fondly referred, had arrived in Zürich as the team had begun this project. He was getting that brief respite he knew the others needed as well. The team's attempts to identify and troubleshoot the recent events was not a short-term activity or contract. This was for much longer term and far higher stakes. He knew this, without a doubt, to his very soul.

Quip had been delighted when EZ had arrived in Zürich, groomed, and perfumed with a touch of sass, to find out where their fledgling relationship might go. It was his first real adult relationship. Until she had entered his life, he had spent his time on his education, learning the family business, and adding huge layers of technology for the organization's use. Currently, Quip's distraction with his long, wavy red-haired goddess, EZ, was such that he'd limited his work time, but the recent uploads were necessary to keep abreast of the traction this rogue code seemed to be getting.

EZ was a pretty, intelligent southern belle from Georgia who was related to one of the R-Group's communications subcontractors. Quip was making daily trips back and forth to her Zürich hotel or spending the night and calling in or working remotely when EZ was sightseeing. Bowen, Wolfgang's long time butler, had agreed to help show her the sights as well as act as her personal driver. Since EZ was really not part of the current family business, Quip wisely restricted some of her exposure to the operations and locations. Tonight, Bowen had been dispatched to pick up EZ and return her to Wolfgang's chateau for dinner.

The chateau was quietly elegant with furnishings that were rich and tasteful in that older European style. It was immense and included several bedrooms, allowing most of the family to reside there when in town. Most of the larger rooms, including this study, had fireplaces that burned warm and inviting in the colder months, which was the majority of the year. The gardens of the property were heavily laden with roses in summer and had beautiful walking paths with minimal nighttime lighting. The property was inviting at any time of the year.

Wolfgang was the current patriarch of the R-Group and held one of the voting rights for overall direction and projects worked by the R-Group. His specialty was financial matters, and he had an instinctual ability to correctly follow the money to the source. He was a tall, elegant man, a little under two meters, with salt and pepper hair and blue eyes that could flip between piercing and focused to twinkling with merriment. He was a patient man who had lost his daughter but gained a relationship with his grandson, Jacob, through the tragedy.

The chateau had been the family home since it was acquired during World War II as his family escaped Poland. He was always delighted to share his insight of the war, honor, and the family business beginnings. He was thrilled to have this group so close after so many years of no family.

Quip had the second vote, having succeeded to his position when his grandfather had passed away. He'd been immature when he received this elevation, but Quip was coming into the position quite nicely with guidance from Wolfgang.

Petra and Jacob currently shared the third voting right because Otto, the former third and final voter, had recently stepped aside for health reasons. Otto was father to both Petra and his adopted daughter, Julie. Julie was a master at cyber identity remodeling for the team and the targeted people they protected. She was quick-witted, yet professional from head to toe.

Quip, Wolfgang, Petra, Jacob, and Julie reviewed some of the issues they had faced during the week, hoping to spark ideas on the avenues that needed to be pursued. They had begun some positive discussions in the chateau's study.

The chatter was interrupted when Julie stopped speaking to look at the screen on her cell phone. After catching the number from the screen, she looked up, flashed her smile, and explained, "Please excuse me. Continue your discussions, but I think I need to take this call. I'll be back shortly."

They nodded at her as she turned and went out of the study, shutting the door as she left. Each of them refreshed their drinks and sat down again to collect their thoughts.

Wolfgang suggested, "Do we need to look a little closer at the new advanced computer arms race that China just took the lead in? We know that they have been pouring money into a program to build the fastest supercomputer in the world and they have made their goal. Their *Nuclear Asymmetric Binary Operational Ballistics* system, or NABOB, as we are calling it, is now the fastest supercomputer among the sovereigns. However, internally the Chinese refer to it as the IQ 5678 supercomputer. The United States, by all appearances, is taking a really critical look at their technological capabilities.

"But, unlike the other developed nations that are using these massive processing monoliths to predict climate change, or map the human genome, or correctly identify the sub-atomic components such as the God-Particle, the Chinese have kept their agenda a secret. We believe that their secret project has to do with what Jacob received from Su Lin via an email account used by Daisy."

Quip stepped into the discussion as he added, "After we found Su Lin's unauthorized hack into ICABOD, we also discovered she used it to then penetrate the cyber wall around the Chinese's

NABOB. Jacob and I both suspect she went nosing around, as we found some log files that were missed when she was cleaning that link into NABOB. She must have found some fairly interesting routines because of what she had built.

“We also believe Su Lin, or Master Po as she was known then, headed up the framework for NABOB with her former colleague Professor Lin at her Cyber Warfare College in China. We presume that he took over much of that college and associated projects when Master Po was removed from the scene.”

Jacob nodded, then suggested, “The foundation of the Pi-R-Squared DP logic was apparently one of the more interesting things Su Lin created when she ran the Cyber Warfare College. The logic is currently in use by NABOB. We had never seen anything like it before. I have also confirmed that it is what Su Lin used to build the kill-switch inside the Grasshopper-loop code, which we still have not been able to completely disable or repurpose. Annoying, but there it is.”

Petra added, “All good points, and some of the blanks are filling up though far slower than we’d like. We received that email from Daisy, which she was instructed by her professor to send to us after she returned to finish her studies at Texas A&M. We presume it is the last email from Su Lin on the subject we are investigating and the erratic behaviors we are finding.”

Looking at her tablet, Petra read the email contents.

*Dear all,  
Thank you so much. I am sorry I am not with you, but I'm fairly sure I don't want to face what you will have to resolve. I gave you all the tools you will need. Jacob, you are probably the best warrior at winning the contest. You will need what you have learned from our training sessions and the Grasshopper-loop to combat the people who are pushing the*

*NABOB system to build and launch genetically engineered vanishing code.*

*The premise is that if you had taken the amino acids found in the Earth's earliest primordial soup of an ocean and mapped them to present day life, one could build their own synthetic type of life in a digital construct. In theory, with enough processing power one could build their own self-aware digital army to attack their enemies' informational driven society. It should begin showing up soon, but I am not certain of the format.*

*Focus on the possibilities totally outside your normal frame of reference. There is little time to dwell on what could have been. I am dismayed at what I have seen my old students creating that will wreak havoc on whole societies. Please believe, as quickly as I could, I delivered all the raw tools you should need to win in the coming conflict. Take care, my young ones, as you have much to offer each other and the rest of humanity. I know you can correct this problem that I fear I started, my friends.*

*With true affection, Su Lin"*

Quip stated, "I agree that these are the pieces we need to use as our starting points. What is our best guess as to who we are up against in this race against the NABOB?"

Petra offered, "I can't tell you exactly why, but some of this has a lot of Chairman Chang's fingerprints on it. So far, his mode of operation has been mostly money laundering schemes. It could, however, be other sources from the Iranians or Russians which could have begun with cyber thievery. I want to see if I can get Julie back in here. She may have some insight as well."

"Of course," said Quip, as he grinned, "go ahead. We'll just keep working and take notes for you girls."

Petra and Julie returned a short time later, deep in conversation as they approached the gentlemen. Julie finished her thoughts to Petra quietly, and they both looked up as they joined the circle.

Flashing her megawatt smile, Julie apologized, “Sorry for my delay. I needed to finish a conversation with Juan before he went into a meeting. Petra brought me up to speed with today’s findings from both her efforts and Jacob’s.

“I’d have to agree, it sounds a bit like Chang, but his teams have been doing identity and money laundering. This would be a new avenue if his team was involved with advanced programming, especially with Master Po out of the mix. How much background do we have on her second in charge, Professor Lin?”

Quip answered, “That is a very good question, Julie. I know that he was good and studied diligently under Master Po. How much progress he could have made with what Master Po left behind would be a guess. We know during her training with our team she did access some of their systems. Jacob believes that was why the email warning was important to her.”

Everyone nodded. Then, they launched into discussions about the pros and cons of the different groups currently doing advanced hacking. The rumors of the Chinese supercomputer and the team’s deep knowledge of the former cyber warfare college in China seemed to give credence to some of the suppositions.

Jacob quickly summarized his current verifications of each of the code elements he had pieced together and the possible signature characteristics he’d assembled. Bottom line was they needed some additional firsthand information to supplement their data gathering from the posts and blogs, possibly through extensive in-person interviews. They agreed to continue the discussion after working through the other promising examples that had been located.

The door to the study opened as Bowen announced the arrival of EZ. She entered and greeted everyone with hugs and handshakes. Bowen announced dinner would be in half an hour as he closed the door behind him.

EZ asked, “Do I have time for a drink before dinner?”

Quip responded, “Of course, honey. What can I get you?”