THE ENIGMA WRAITH

BREAKFIELD AND BURKEY

ACKNOWLEDGEMENTS

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Specialized Terms are available beginning on page 330 if needed for readers' reference

Other stories by Breakfield and Burkey

Enigma Series:

THE ENIGMA FACTOR

THE ENIGMA RISING

THE ENIGMA IGNITE

KIRKUS REVIEW – <u>The Enigma Factor</u>

… Breakfield and Burkey's novel is a thriller for the 21st century. Instead of drug or money mules, it features "information mules" who steal others' codes and work for organizations such as Dteam… A complex thriller with a hacker-centric plot and polished technological descriptions that may attract new fans.

KIRKUS REVIEW - <u>The Enigma Rising</u>

…latest techno-thriller, a group combats evil in the digital world, with multiple assignments merging in Acapulco and the Cayman Islands. … The story boasts strong characters: R-Group hacker Quip and JAC (both of whom are more pivotal to the narrative this time…

.. the story will hold readers' attention until its unsettling conclusion, which once again leaves plenty of room for a sequel.

KIRKUS REVIEW - <u>The Enigma Ignite</u>

… This time around, however, they've amped up the suspense, as R-Group has very little time to find Keith and EZ. There's also considerably more humor in this third outing, including a number of tongue-in-cheek acronyms (such as Su Lin's "Polymorphic Operational Programing of Technology to Aggregate Recurring Temporal Synergies," or "POPTARTs"). In one scene, government agent Arletta Krumhunter gets a reluctant ops team to do a job with the promise of Slim Jims and beef jerky, and in others, Su Lin's pig is shown to have just as much personality as his human counterparts. The authors continue their run of stellar villains with the returning Chairman Lo Chang, but they also add wonderfully unpredictable characters with unclear motivations. The solid ending could either stand alone or serve as a lead-in to a potential sequel.

A solid espionage thriller that adds more tension and lightheartedness to the series.

As civilization leaves the Industrial Revolution behind, humans are diving into the Internet of Things. As machines talk to increasingly more machines, a new digital predator appears on the landscape, much like the early carnivores did on the African Savannah. This world of technological interoperability we are immersing ourselves in allows for the launch of a new class of vulnerabilities. We are primed for the digital to strike out at the physical instrumentality in our lives. Now comes the helpless feeling in our physical world of phantoms attacking from within the digital realm.

…The Enigma Chronicles

THE END ARRANGEMENT ALWAYS COMES FIRST

This 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, as well as watched the screen as the event occurred. Had that not been the case, she would have reviewed the laptop and sworn that nothing had occurred. 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 simply 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 rag-tag band of hackers dropping ransom-ware code onto unsuspecting Internet surfers, encrypting all their hard drive files, and blackmailing them for only 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 still raced 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 and what were their long term goals? For her, this was a blatant seduction that she'd likely accept 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 simply walk away. Success or failure was to be monitored and then conveyed to her by

Mephisto. As the phone rang, she answered in 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 unwaveringly 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 timeframe 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 have to 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 timeframe prescribed."

She nervously laughed and then 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, then she inquired, "I would like to know, how you knew to contact me? I have 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 that I have 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 a single male. 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.

WHICH YIELDS BETTER RESULTS: BRUTE FORCE OR BRUTE THINKING?

Jacob's palms slapped the desktop at the sides of the keyboard as he watched the screen in frustration and then shouted, "Damn it!"

Abruptly standing, sending the wheeled chair back five meters at a high velocity, he started pacing as he watched the idiotic character as it hopped 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 continued gathering 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 small residue 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 female passenger 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 miles 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. In fact, 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 *grope 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 on-board 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 log time date stamps looked odd so Jacob had 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 on-board systems, replaced actual logging files with manufactured ones, and then deleted itself, thus giving the impression that nothing had been done in the on-board computer. However 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 at least 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. However, after studying this series of events he was beginning to lean more towards more traditional 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 on board 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. She was 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 scalp 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 sure am glad we broke these program forms into steps. I can see they are related based on the similar 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, just 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 beasts are introduced, as well as to 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 beast scored a ninety out of one hundred. So not perfect, but at least in the very good range."

Jacob frowned and then asked, "I don't get it. Why does my She-Devil-Layla count points, which, by the way, are Jacob zero and Layla twelve, instead of giving me points for effort? Quip, with his toys and warped sense of humor, is really getting annoying. Argh!"

Petra laughed. "Well, I guess Dad just likes me better than you. But I didn't come in here to gloat or trade point, my darling," she emphasized as she rubbed his shoulders briefly then continued, "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 had 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."

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 people of a group created during World War Two 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 less than a year ago from his grandfather. 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 like this one.

"Sounds good, sweetheart. I've about had it for today. Yep, some progress, but simply 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.