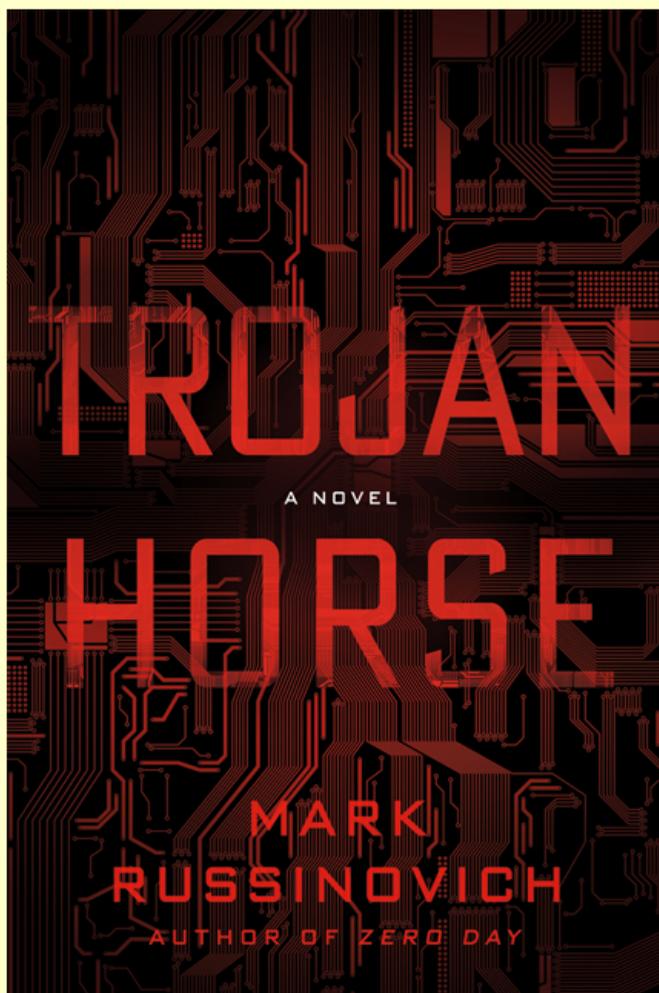


READ IT FIRST



This is a work of fiction. All of the characters, organizations, and events portrayed in this novel are either products of the author's imagination or are used fictitiously.

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10 9 8 7 6 5 4 3 2 1

YAKIMA, WASHINGTON
EASTERN WASHINGTON ELECTRICAL GRID
WAYK5-7863
12:47 A.M. PST

Scalpel.”

The nurse placed it in the surgeon’s palm firmly, without the slap portrayed in movies. The young patient had been brought in more dead than alive following a highway accident. She could not have been more than fifteen years old. Somehow, in the violence and extremity of the collision a knifelike blade of hard polymer had pierced her skull and embedded itself in her brain.

Her vital signs, however, were strong and given its position, if properly removed, the surgeon was optimistic for a satisfactory recovery. She was young, resilient, and the brain had an amazing capacity to restore itself at this age.

The surgery had already lasted for more than three hours. He’d removed a portion of her skull to give him access. He’d picked out bits and pieces of bone until she was clean. But this was the worst of it. Remove this bit of plastic from the young woman’s brain and there was a very good chance she’d live. Leave it in place and she’d die. Make a mistake and she would be left functionally impaired or dead.

Dr. Elias Holt lifted his hand and prepared to make the delicate incision. Just at that moment the lights blinked, then a moment later came back to life. Holt waited in case it happened again. Nothing.

“We’re on emergency power,” Paul Sanders, the tech with the ACPM, or acute care physiologic monitoring system, said. “My data scrambled, Doc. I need a minute to reacquire.”

Holt lowered his hand. There was no need to say anything. The technology this delicate surgery relied upon would soon be back up.

"All right . . ." the tech began, but just at that moment the lights went out and did not come back on.

Everyone on Holt's experienced team knew to freeze in place, to do nothing. In a moment, the power would be restored from the outside grid or the hospital's auxiliary system. A power outage was rare and Holt could not recall a time when he'd been left in darkness during surgery.

The Mount Rainier Regional Medical Center was a small hospital with just eighty-five beds. In recent years, it had added emergency care to its profile as part of a significant expansion. The patient had been brought here because the accident had taken place nearby and her condition was so desperate.

After twenty seconds of darkness the lights sprang on. "Paul?"

"Sorry, Doc, but I need to reacquire my data. It will take a minute or more."

"How's the patient, Allison?"

The anesthetist answered, "Stable. No change."

Holt waited, then asked, "Paul?"

"I'm resetting now."

Just then the lights went out again.

In the basement, the night supervisor was staring at his computer screen. He could make no sense of what he was seeing. The primary backup generator had started twice, then simply kicked off. There was no power coming into the hospital from the outside power grid. They were on their own and this should not be happening.

He'd been trained on the computer that controlled the power supply but hadn't done anything with the system since then. It was automatic, computerized. It ran itself. Just as he was considering actually doing something, the generator kicked into life a third time. He held his breath, hoping no surgery was underway.

Twenty seconds later the generator died again.

Kathleen Ficke left the Holiday Inn bar and walked to the elevators. The bar was closing and her night was finished. She punched the button and waited for the doors to pop open.

Ficke worked three or four times a month on such assignments for the Smart Agency. When she'd applied for the job, the owner had explained it

to her in simple terms. "When a wife thinks her honey is fooling around, sometimes she wants proof, usually to get a better deal in the divorce. That's when they come to us. I get a good photo and send a woman of the right age into the hotel bar where the target's likely to do his drinking. She can't be too pretty or too plain; she can't be dressed sexy. In fact, I'll take a full body picture of you before you go out. You'll have the guy's photo. All you do is sit alone at the bar and drink a Coke. That's it. Don't talk to anyone, get rid of any man who tries to pick you up, including the target. We just want to know if he's with someone or if he hits on you. That's it. You file a report and I give you two hundred dollars. Want the job?"

The work had proven just as easy as he'd explained and the extra money had come in handy. She was tired and ready to go home. Her cat needed to be fed.

She'd spent two hours in the bar and during that time her target had consumed eight bourbons. He'd been at a small round table talking with two men he'd apparently met in the bar. Each of them had given her the eye but none had approached her, not like others.

The elevator doors opened with a digital chime. Ficke stepped in and a moment later so did her target. He glanced at her, slightly intoxicated, and punched the button for the fourth floor.

"You?" he asked.

"Lobby."

She stared straight ahead as the elevator began to move. He was overweight and she could hear his labored breathing. His face was flush and his eyes watery. Now she could smell the booze.

Without warning the elevator stopped. There was the fading sound of dying machinery in the shaft. "Whoa," her target said. "Who turned out the lights?"

Ficke said nothing but was acutely uncomfortable at being stuck in an elevator with him. They stood silently until the wait extended uncomfortably.

"I saw you at the bar," the target said out of the darkness. "No luck, huh? Maybe he got held up. I've got a bottle in my room. Once this buggy gets going, come on down and we'll talk it over." He moved closer, so close the reek of bourbon flooded across her face. "What do you say?"

Engineer Doug Bradstreet watched the green lights flash past as Trans-American train number 435 plowed through the night at sixty miles an

hour. The run had begun just ten minutes earlier when he'd cleared the switching yard in Yakima and now he was picking up speed before reaching the Pacific Coast mountain range.

He wasn't supposed to do that, of course. He'd been assured he had all the engine power he needed to make the climb, but he liked to build speed and hit the mountains as close to full throttle as reasonably possible. His two linked engines pulled eighty-three cars filled with coal intended for the TransAlta coal-fired power plant near Seattle. Bradstreet enjoyed the motion, the sense of power that came with giving the twin engines their head and letting them run.

The window was open and he leaned out every few seconds, relishing the rush of fresh air across his face. A series of green lights told him all was well ahead. He'd spent long hours this way, the green lights a seemingly endless stream. Just at that moment, the lights suddenly flashed red. Bradstreet eased back on the throttle. Flashing red meant the light system was off the power grid and running from battery power. He slowed, feeling the slight uphill grade suck the power from the train.

Then the flashing lights turned dark. Bradstreet cut the power to nil and the powerful train slowed until it came to rest atop the second of the five bridges the track crossed before reaching the mountains. He removed the microphone, punched the button, and said, "This is 435. I've lost signal lights and am stopped on bridge two. What's the problem? When will I get lights back? Can I proceed?"

"Stand by," came the answer. Bradstreet didn't know if the outage extended to his control, but even if it did the facility had a backup generator.

Bradstreet looked down into the chasm below feeling uneasy. He didn't like heights. He decided to ease the train off the bridge if he didn't get the go-ahead. Just then a frightening thought crossed his mind. He punched the button again. "Hey, Lenny! Is 389 behind me stopped? Lenny! Tell 389 to stop!"

Trans-American number 389 had been in the switching yard behind him. It was scheduled to run thirty minutes back but it had a light load and would have closed fast, depending on the light system to alert it when it approached 435.

"Lenny! Can you hear me? Lenny!"

At Mount Rainier Regional Medical Center, the generator continued starting then kicking off. The pattern had repeated itself eight times with no

end in sight. The patient's skull was open, the deadly polymer still in place. Three flashlights were now casting the surgery in ghostly shadows. They were inadequate for an operation but alleviated the darkness.

"Doctor," Allison said. "She's starting to fade."

"Paul, do you have status?"

"I can't get power long enough to get a reading."

Dr. Holt positioned his scalpel. "I'm proceeding. I need all the light focused here, please."

What else is there to do? he thought. If he waited she'd die. The lights blinked off and he paused. When they next came on he'd have to work quickly. Do it wrong, he reminded himself, and she'll die anyway.

MENLO PARK, CALIFORNIA
PG TECHNOLOGY APPLICATIONS
9:18 A.M. PST

Guy Fagan finished his coffee as he read the e-mail from a colleague in Washington State concerning the surprise fourteen-minute collapse of the power grid in Yakima earlier that morning. No cause had been found for it.

WAYk5-7863 was considered one of the most stable in the nation. The Inland Empire, as the region was once known, was largely self-contained, walled off from the western portion of the state. Most of its electricity was hydroelectric with a bit of coal and nuclear thrown in, a perfect balance it was thought. The area had a predictable climate that placed no great demand on the grid. Economic growth in the region was anemic and the electrical supply had increased at a modest and easily sustained pace. There had been no similar collapse in years—none, in fact, that Fagan could recall.

It was odd and his colleague was speculating that it might very well have been caused by a computer glitch. That struck Fagan as most likely. Grids were increasingly dependent on computers and specialized software. They were complex structures, far more complicated than the public understood. In the past, during times of great demand, enormous areas had cascaded into darkness, events caused by nothing more than a fallen tree or a collapsed power line. They could take days, even weeks to meticulously rebuild. Electricity, the lifeblood of the twenty-first century, had to be in perfect balance between demand and supply. Computers made that job easier but in providing one more area of control they also made the grids more vulnerable.

Fagan had good reason to know. As a senior software engineer, he was

relatively pleased with his position at PGTA. It was his second job out of college and he'd been steadily promoted over the last decade. Since inception, the company itself had deftly carved out a nice little niche for itself in the software industry. In its early days, it had provided generic software of various applications. Now, it produced a significant portion of the code used throughout the electric grid in the United States under contract with the U.S. Department of Energy. The transition had been complete when the company renamed itself PGTA, short for Power Grid Technology Applications, two years earlier.

Fagan himself was manager for the project, writing the code for any emergency override of the electrical grid in the event of an attack against a regional substation or its operators. His work was interesting and important. He took pride in that.

He had been assigned to this project after six years on the IT team that had maintained the security of PGTA's own systems and database. The company had received a number of awards for the protection it provided its clients. In its years of existence, PGTA had never experienced a serious penetration of its firewall. Not one. And that success was due in no small measure to Fagan himself.

He glanced at the list of unopened e-mails and spotted one he was expecting from DASS, Dallas Applied Software Solutions in Texas. It was a vendor with which he frequently did business, one of his more important sources of industry specific code. He opened the message.

At that moment the Trojan entered his computer, quickly finding its way through an unpatched exploit. It had ridden this message to place itself behind the PGTA firewall. There it unrolled into his computer's operating system, wrapping its tentacles around every function it was targeted to seek and control.

Before Fagan had time to read the message, his screen lit up with a brief flash. This stopped him short. *What was that?* Revisualizing the flash, he realized that he'd seen something like it before and for a moment struggled to recall when. Then he had it. It had been during his latest security training. The flash had resembled the antimalware intrusion detection warning dialog. Or something very like it. Regardless, he'd never before experienced such an event on any computer.

Better to be cautious than sorry, he decided. He opened the security software and was relieved when it reported everything was fine. Nothing to worry about. He paused for a moment, wondering if there was anything

else he should do and decided there was not. He closed the program and returned to his message, not giving the incident another thought.

As he did, the Trojan guardedly acquired the source code to the power grid control software, blending its actions seamlessly into the activity of the computer so as not to attract attention. Before the day was out, the Trojan would also copy Fagan's e-mail list and the data files in his computer related to each e-mail.

Fagan liked to work a bit late, volunteer some time to the company. He believed it was the secret to his success. He'd never been one to watch the clock and bolt right at quitting time. Just after six o'clock he turned off his screen and headed out, his thoughts already directed toward the problems he'd face the next day.

Some hours later, when the PGTA offices were closed, the Trojan in Fagan's computer "called home," inconspicuously transferring the data it had copied. This launched it on a long digital journey from Menlo Park, California, to whoever had written the malware code, the person who was interested in shutting down significant sections of the U.S. electric power grid by remote command.

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