

A\_Project\_Z\_Novel

# THE DRAGON'S C.L.A.W.



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## PROLOGUE

**AS A HINT OF PINK** streaked across the horizon, lighting the indigo sky with the promise of dawn, Alek pulled his dirty white Ford Focus to a stop and sat behind the wheel, the engine still running. From his position on the empty road at the top of a hill, he gazed down at the nondescript stucco house standing alone on the edge of a cul-de-sac in the shallow valley below.

Alek shivered. Why had he driven here in the middle of the night, in the darkness, without telling anyone, without making a plan?

His stomach clenched as he thought about the two men who he believed lived inside the two-story, tan house on the dusty street. *What am I doing here?* Alek thought. *I'm a scientist, not an action hero.* But being a scientist also meant being a problem solver. Alek worked as a physicist at Los Alamos National Laboratory, the United States Department of Energy lab that gave birth to the Manhattan Project and was now one of the largest science and technology institutions in the world. For most of his adult life, scientific research had occupied the majority of his time. Since the accident, however, work had become Alek's obsession, driving him to seek answers in a relentless effort to overcome his guilt and grief. Alek's work had also driven him to this spot on a hill looking down at the house where the stolen components of his research and experiments might be concealed. He had to find the answers. *None of this makes sense.*

Alek knew that the two physicists, his employees, had rented a house on the outskirts of Altavaca, New Mexico

about a year ago. A suburb of Albuquerque, Altavaca consisted largely of abandoned real estate sold to unsuspecting East Coast buyers who came to New Mexico dreaming of the Land of Enchantment, and who left when they couldn't find jobs. The house below looked desolate, half abandoned. Wind-swept tumbleweeds lingered on the street. If this were the land of enchantment, the spell cast was a curse.

Alek reflected on how less than 24 hours ago he had discovered that two of his employees had vanished. The men... their research... their knowledge... all had disappeared. *I must find out why.*

Alek shifted the car into park and flipped on the radio, hoping to distract himself with some meaningless background noise. On the early morning radio newscast on New Mexico's News Leader 77KOB, the anchor rattled off headlines. Alek sat in the car, trying to work up the courage to move forward. Should he knock on the door and risk a confrontation? Should he try to find a way to sneak a look through a window to see if anyone was home?

Alek's mind drifted back to a time when he had lived in a similar stucco house not far from here. Back then, life had made sense. Before the accident, before his marriage ended, he had felt anchored. Now he felt alone and adrift. Alek shook his head, trying to focus on the present. He had to move on.

Something in the distance caught Alek's eye. Leaving the car running, he opened the door and got out, craning his neck in an attempt to identify the flash of red.

That's when it happened.

A blinding sheet of light shattered the darkness. The house below exploded, painting the sky with a blast of intense white light. Slammed back against the car by a wave of pressure, Alek found himself breathless in the brilliance of the blast, baffled by the eerily soundless explosion. He realized that his car had joined in the silence. The engine had stalled, the radio had quit playing,

the car's headlights and dashboard indicator lights had gone out.

Giving himself a shake to clear his head, Alek slowly lowered himself into the driver's seat. He turned the key, trying the ignition, but nothing happened. The dark grey dawn reclaimed the New Mexico desert as the unexpected brightness began to fade.

Alek squinted, trying to see the stucco house, his destination. It was... it was no longer there. Nothing remained but swirling dust. Where the house once stood sat a shiny footprint. It looked as if the desert sand beneath where the house's concrete slab foundation had once been somehow had turned to glass. Overwhelmed and dazed by the implications, Alek wondered if he had just watched years of research vanish in an explosive burst of light.

# Chapter 1

## Death Rays and Delusions

**THE SUN ROSE OVER THE** sprawling complex known as Los Alamos National Laboratory, painting a glow of orange and pink across the undersides of the lacy network of clouds spanning the vast sky. Dr. Alek Spray pulled his car into a parking spot. Exiting the car, he took a deep breath of the crisp mountain air before hustling to his building and swiping his security badge to enter the restricted area. Alek hoped he'd have time to grab a cup of coffee before his first morning meeting. Caffeine was a necessity since he anticipated a fight.

"Nothing good ever comes of violence." Embracing teachable moments, Alek's overprotective Jewish mother would often repeat this quote by Martin Luther King Jr. when he was growing up. She'd say it after Alek had lost yet another fight with a class bully. Scrawny and bookish, Alek wouldn't have won even if he had fought back, and his mother probably knew that. Perhaps that's why she always encouraged peaceful approaches to solving problems. Nothing good ever comes of violence after all.

But violence was exactly what Alek's colleague, Dr. Sunli Hidalgo, supported. In fact, she regularly spoke out in favor of embracing violence as quickly as possible. She was waiting for him in the breakroom.

"I know you don't like the idea of pursuing weapons development," the dark-haired scientist said, leaning forward and commanding Alek's attention with a penetrating stare. "But after all, this is a nuclear weapons lab.

Here's the issue," she continued. "We need the funding, and we know D.C. is far more likely to invest big bucks in weapons technology than in energy research. So why not pursue the defense applications, while exploring ways to use the same technology to create a limitless clean energy source?"

Alek smiled. "Well, I like to think of myself as a pacifist. No pun intended, but the thought of using this research for weapons development kinda makes my head explode."

"No wonder people call you Smart Alek," Sunli said. "Always ready with a corny joke."

Alek bustled about fixing his coffee, keeping his back turned to hide the embarrassment that her comments had caused. *Why does she make me feel so uncomfortable?* he wondered. He was actually her supervisor, but somehow, he always felt as if she were the one in charge.

Like Alek, Sunli had relocated to Los Alamos to pursue research at the lab. The highly driven 30-year-old mathematician had only recently become a U.S. citizen. She had been raised in Mexico, her father a Mexican citizen, but her mother was Chinese. Alek's theory was that Sunli's unapproachable demeanor stemmed from growing up as a child of two different backgrounds; perhaps she didn't feel as if she belonged to either the Mexican or the Chinese culture. Surely it must have been difficult if she felt she never quite fit in. At least that's what he told himself as he struggled to get to know his colleague. Some of his other coworkers just described Sunli as aloof and overly ambitious. In other words, they called her "a cold, pushy bitch." Even in 2023, sexist attitudes prevailed in the male-dominated workplace of the national lab. Alek found himself making excuses for Sunli's distant behavior, even as he admitted that her brilliance and beauty were intimidating. It seemed that she would stop at nothing to achieve her goals.

"How can you be against weapons development?" Sunli asked. "Weapons development is why this lab was



founded. This is Los Alamos. The lab is famous for the development and creation of the atomic bomb.”

“Actually, the name ‘Los Alamos’ came from the Spanish word for the cottonwood trees that line the Rio Grande River east of the town,” he mumbled, turning around to discover that Sunli had already left the break-room. Regardless of where the name came from, most people believed that Los Alamos represented secrecy, weapons, and nuclear war.

Despite these public perceptions, the city was a peaceful place to live. Situated on the Pajarito Plateau on the eastern flank of the Jemez Mountains, the area offered spectacular scenery ranging from forested peaks to waterfalls and even a dormant volcano. He enjoyed the small-town feel and the outdoor activities. He loved living on the edge of the national forest and knowing he could immerse himself in nature every day. He felt comfortable with his coworkers at the lab and found his work both intriguing and fulfilling. The only thing that really bothered him about living and working in Los Alamos was... well, it was Los Alamos, the birthplace of the Manhattan Project and a city that nuclear weapons research and development both created and sustained.

Alek was stirring powdered creamer into his coffee when the lab director, Dr. Harold Percy, suddenly swept into the room. “You’re late for the special meeting in my conference room,” he muttered, popping a K-cup into the Keurig machine. Percy, a tall, African American man in his early sixties, always dressed elegantly. Most of the other men who worked at the lab chose worn-out khakis and wrinkled button-down shirts for their work-day uniforms. Percy’s highly polished shoes and ever-present cufflinks distinguished him as the leader of the lab. He had spent his entire life working hard for his achievements. He expected the same level of commitment from his staff.

“We have to prepare for the hearing. Lateness is not tolerated,” added Percy, prompting Alek to wonder why

he was tardy, but the lab director, who was still fixing his coffee, was on time. *Don't question authority*, Alek told himself. He grabbed his notes and his rumpled sport coat and scurried toward the meeting room, running a hand over his head in an attempt to tame his unruly brown hair. Sunli was already waiting in the conference room, well-prepared and completely composed, while Alek scrambled awkwardly to his seat next to her.

Several men and women were seated around the long table, with laptops and file folders close at hand. The group was made up of scientific division directors, associate laboratory directors, and senior lab management. They assembled periodically to examine initiatives and make recommendations. Percy viewed the meeting as a formality. He fully expected the team to follow his lead and rubber stamp his proposals.

The lab director entered the conference room briskly, indicating the time had come to start the meeting. "As you all should know, I've called this proposal review panel together today to go over our progress on the Low Energy Nuclear Reaction project. The congressional appropriations hearing is next week, and we need to fine-tune our approach." The lab director gestured to Alek. "Dr. Spray, is the lead scientist for this project. He's helped the lab win national recognition since coming to Los Alamos, and he's been named as a Fellow of the American Physical Society, recognizing the significance of his contributions to the field. Alek, please introduce your team and provide us with an update on your group's accomplishments."

Percy sat down, kicked back in his chair and began checking his emails on his laptop. Alek was accustomed to the lab director's tendency to pay attention only to matters that related directly to him. Alek rose, cleared his throat awkwardly, and shuffled his notes.

"For those of you who don't know me, I'm Alek Spray. My background is in pulsed power energy and fusion research, and for the past five years, I have headed up our work on Low Energy Nuclear Reaction or LENR. Our team

is small, but we have big goals when it comes to revolutionizing energy production, and we've been making slow but steady progress."

Alek gestured to Sunli, suddenly conscious of the contrast between his disheveled and her professional appearance. He cleared his throat awkwardly and continued his presentation. "Dr. Sunli Hidalgo holds PhDs in mathematics and chemical engineering. She's been developing the theoretical models behind the LENR process and recently has solved several complex equations describing the theory of collective enhancement. Dr. Hidalgo has been my right hand on this project." Alek smiled at Sunli, who looked away, disinterested, picking an invisible bit of lint off her grey skirt.

"About three years ago, we hired Will and Joe Ramos, who both have their PhDs in nuclear engineering from the University of New Mexico. They are working on executing some of these theoretical concepts in the lab." Across the table from Alek, Will and his identical twin brother Joe both looked ill at ease. Since coming to Los Alamos, the two had spent most of their time in their small out-of-the-way lab facility working in relative secrecy because, as Alek described it, some of their research was highly experimental. Percy had told Alek he thought the Ramos brothers' work bordered on outlandish, but the lab director was so excited about any hire that helped him meet the lab's diversity target that he supported the venture and even provided the Ramoses with some discretionary funds.

"Will and Joe are working on developing schematics to build the Low Energy Nuclear Reaction device based on Sunli's theoretical model. Their primary focus has been researching methods to trigger the reaction that will provide the energy source." Will gave the committee a smug grimace, while Joe looked down at the table uncomfortably. Alek wondered if he had made a mistake asking the twin scientists to attend this meeting. They were much

better suited to working alone in their lab.

“So, we have a way to go, but I am confident that we’ll soon find the breakthrough we need to create a transformative new energy source and I’m hopeful that we will be able to secure sufficient funding to continue our research.” Relieved that his presentation was over, Alek resumed his seat, wondering if he had said too much or left out anything important. Regardless of what the committee members thought, Alek knew that Percy would have the final say about their strategy for the congressional funding request.

Alek trusted Percy. The lab director had good connections, not just with the scientific community, but also within the halls of Congress and the White House. Percy prided himself on being in touch with the endless political manipulations of science investments and having his hands on the congressional purse strings for his lab. At the latest count, there were 42 separate federally-funded research and development centers under his control, and more were added every few years with ever increasing budgets. Convincing Washington to invest in advanced technology required a nuanced approach, and no one understood the politics of scientific research better than Harold Percy did.

Percy closed his laptop, taking back control of the meeting. Several of the attendees perked up at the signal that it was time to pay attention again.

“So, the hearing is next week,” Percy noted. “The President is aware of speculative applications of the LENR technology, not to energy research, but to a beam weapons development concept,” he continued. “As Alek mentioned, this project could lead to the creation of a new form of clean, affordable energy, but key legislators have suggested that their interest lies in the weapons research. The creation of a compact power source using the LENR concept would be an ideal way to drive a directed beam of energy that could be used as a space weapon. In fact, the Defense Intelligence Agency recently uncovered

rumors that the Chinese government is getting close to building a successful collective laser accelerator weapon.”

“That seems unlikely,” Alek interrupted. “Scientists have tried for decades to make the collective laser accelerator concept work.”

“True,” agreed Percy. “But if, or rather when, we master the LENR technology, a small amount of fuel will produce a tremendous amount of energy. All we have to do is figure out how to trigger the reaction. If we can use a high-power laser to modulate the electron beam to trap ions, we’ll able to build and deploy a powerful weapon that could target our adversaries from space.”

Alek opened his mouth in protest, but Percy held up one finger to silence him. “So,” continued the lab director, “the question is whether weapons research is an angle we want to emphasize in our proposal.”

Percy turned to Will and Joe Ramos. “Gentlemen, the outcome of this hearing could provide funds to expand and move your research and experiments to the forefront. What are your thoughts about making a significant departure from energy applications to weapons research?”

The two exchanged panicked looks and Joe muttered something under his breath in Spanish.

“Honestly, we have never intended to explore weapons development,” Will said.

“*Nunca en la vida*. Never,” reiterated Joe emphatically.

“But this concept could be the key to a compact energy source for a space weapon,” Sunli pointed out. “The application would have to be based on entirely new physics, but, with the proper theoretical framework, we could build a directed-energy, speed-of-light weapon unlike anything ever created... an unprecedentedly powerful weapon that could allow the U.S. to dominate space.”

Nervously running his hand through his hair, Alek felt his frustration level building. He couldn’t support Sunli’s advocacy of weapons research. He had to speak up. “Uh, if you don’t mind... I mean, I think I have to say something,” Alek sputtered, his voice rising. “The point of this project

is finding the right reaction trigger to use the emerging theories of LENR to create a clean, inexhaustible energy source. Many of you are well aware of this initiative—the program I call Project Z. How is it that we are talking about weapons?”

Percy raised an eyebrow. “Yes, Alek, we are well aware of your Project Z initiative,” the lab director replied calmly. “But we all know that energy research is just a benefit of the work we are doing to develop weapons technology to ensure national security. You have to remember that technology is just a knife.”

“A knife?” asked Alek. “What do you mean by that?”

“A knife can butter your toast for breakfast, but a knife can also slit someone’s throat. Whether this technology is used for weapons applications or alternative energy sources isn’t the issue. Our job as scientists is to build the knife, not to determine how it’s used.”

Percy stood up, signaling that the issue wasn’t open for further debate.

“Our goal... what I care about... is getting the funding to pay for this research and development,” he said. “Congress will fund weapons technology. Weapons prevent wars. Weapons fund our lab. Weapons pay your salary. The technology we develop is just a knife. How our government decides to use that knife... well, that’s out of our hands.”

The lab director glanced at Alek. His lead scientist looked down at the table, fists clenched, scowling. Percy walked over and placed a hand on Alek’s shoulder. Alek squirmed. He hadn’t meant to disappoint Percy. The younger man looked up to his supervisor who, in many ways, he saw as a father figure, since his own dad had died when he was a toddler.

“Alek, the last thing I want to do is discourage you. You are a gifted researcher and a creative thinker.” *Creative?* Alek wondered. *Is that a euphemism for ‘way off base?’*

The lab director turned to the review committee. “Is anyone opposed to postponing our pursuit of the weapons

angle, at least initially? We can start by asking for funds strictly for energy research. Maybe with the current emphasis on ecological preservation and clean energy sources, we'll have a chance this time. Anyhow, most congressional staffers can be won over with entertaining stories about complex technical issues," Percy added with a wink at Alek who had helped him prepare many government funding requests based on the philosophical approach of baffling with bullshit.

The committee members murmured their approval. All were anxious to get back to work.

"Great," said Percy. "Alek, you, Sunli and I will need to meet to put the finishing touches on our congressional presentation. In the meantime, Joe and Will, please continue your research. Meeting adjourned."

"Congratulations, Smart Alek," said Sunli, not even trying to hide her displeasure. "In any case, the sooner we can get funding, the sooner we can find a way to build the LENR trigger, so let's get back to work."

Will and Joe Ramos exchanged glances and left the room hurriedly. "I can't figure those guys out," Alek said to Percy as he watched the pair exit. "They rent a house in Altavaca, own a condo in Mexico, and share an Italian sports car. They take expensive vacations that seem unusually luxurious on a typical lab employee's budget."

"That is concerning," Percy replied. "Of course, they have passed extensive security screenings and they seem to spend all their time on the LENR project. Maybe, they're just odd."

"I guess," said Alek, continuing to wonder about his mysterious employees. The two rarely made casual conversation with their coworkers, and, when they did, they tended to talk about their exercise routines. Alek had always disliked people who bragged about working out, and so he hadn't really tried to get to know them. *Maybe I am just intimidated by their well-defined muscles and classic Latino good looks*, thought Alek, who was thin and wiry, perhaps due to his devotion to jogging daily on the

nearby mountain trails. In any case, while the Ramoses didn't seem particularly friendly, they were committed to the research and Percy was right, that's what mattered the most.

"Let's grab a beer and a burger after work at the Friggin Bar," Percy told Alek. He wasn't using the word 'friggin' as a substitute for swearing—that was actually the name of the nondescript establishment located next to the lab. It was named after the first owner of the dive bar, Joe Friggin, who'd opened it in the 1950s—it had been a Los Alamos icon ever since. The Friggin Bar was a favorite lunch spot for lab employees craving a greasy cheeseburger and a good place to unwind after a long day of research. It was also the place where many of the lab's staff members had some of their best conversations about science and life.

"Uh, we're going to get a drink after work. Would you like to join us?" Alek asked Sunli awkwardly, wiping his sweaty palms on his khakis.

"No, I've got some things I have to finish up here tonight," she said. With an elegant flip of her hair, she left the room.

\* \* \*

The piercing New Mexico sun struggled to penetrate the small, dusty windows on the west side of the lab that Alek had assigned to Will and Joe Ramos for their Low Energy Nuclear Reaction research. Joe studied the narrow beams of sunlight stretching across the dirty floor. The only advantage of their small, rundown lab was its isolation on the edge of the Los Alamos National Lab campus. Although Alek occasionally dropped in to check on them, the number of visitors was few and far between.

Joe walked to the window and scrubbed some dirt off the glass with the heel of his hand so he could see the mountains in the distance. The heavily forested peaks jutted skyward as if reaching to touch the clouds floating above. Joe sighed, wishing he were out hiking among



the ponderosa pine and aspen trees instead of trapped in this lab arguing with his brother about the experiment. Soon the sun would be setting, and they would have spent another entire day indoors. Although Joe had joined Will in graduate school and had completed his doctorate in nuclear engineering, he had never shared his brother's love of science nor his determination to make this project work.

Old equipment littered the corners of the room, discarded bits and pieces of years of failed experiments. This was not a shiny, high-tech laboratory where scientists gathered to make important discoveries. The dimly lit room smelled of sweat and desperation, long hours spent conducting research with nothing to show for all the hard work.

*"Nos estamos acerando... We're getting closer,"* muttered Will as he bent over the contraption he had built on the counter on the far side of the room. The device consisted of a series of high voltage capacitors attached to a vacuum chamber with a target at the top. The machine was designed to focus an electron beam on a target in order to create a low energy nuclear reaction. If they could just find a way to make it work.

"But what are we doing?" Joe asked. "Shooting holes in targets... randomly trying things with no theory and no plan?" Joe had long ago lost interest in his brother's experiments. His only focus was the money. Other than that, he was just along for the ride.

*"Para atrás."* Will gestured to his brother to stand back as he flipped the switch feeding current into his device. The men waited expectantly, watching the device in anticipation.

Nothing happened.

Joe put his hand on his brother's shoulder. "Uh, I think maybe it's time to try something else."

Flicking Joe's hand away, Will bent over the machine he had constructed. "Maybe if I just adjust the current," he mumbled to himself. He flipped the switch again. Still,

there was no result.

Joe picked up the target, a round piece of copper, and began tossing it from hand to hand. "Tell me again. How exactly does this dense plasma focus thing work?" Joe asked.

"Sometimes I think you're dense. We've been working on this project for three years," scoffed Will. "Don't you remember anything from grad school? I never should have agreed to complete your projects and write your dissertation for you."

Joe sighed. "It's not like I had much of a choice about going to school. Once El Verdugo figured out how smart you were, our future was set."

Will shrugged. "Did you want to stay in Mexico, living in a shack and running errands for the cartel? We were lucky that our powerful friends decided to sponsor our education."

"Yeah, I guess," said Joe. "I don't mind the money, but I didn't expect we'd end up here."

Will sat on the end of the counter, facing his younger-by-three-minutes brother. "Look, working here at Los Alamos is just a means to an end. The cartel wants a weapon and by getting hired here, we have access to the technology. Now, pay attention. A dense plasma focus is a remarkable gadget that converts a low voltage slow energy source into a very fast, focused high voltage beam of electrons and ions. It's based on the idea of slowly building up energy in a magnetic field that compresses the superheated ionized gas carrying the current."

"Oh, I remember. An extremely high electric field suddenly extracts ions and electron beams in opposite directions. It's like a whip with the handle moving slowly and the tiny tip moving faster than the speed of sound."

"Yeah, we're trying to crack the whip," Will replied.

Joe looked at the copper target he was holding. "Why do you use copper as a target?"

"Everyone uses copper." Will shook his head in frustration. "Haven't you read any of the literature? The cold

fusion experiments? Anything? We're trying to create electron beam transmutation, so it makes sense that we build on other scientists' experiments. What do you suggest we use?" he sneered.

Joe was accustomed to his brother discrediting his ideas. It didn't bother him. He just wanted to wrap up their work for the day so he could get outside before the sun went down.

"Let's make a bet," Joe said, pulling a handful of change out of his pocket. He laid a nickel on the counter. "Flip this. If it comes up heads, we try a different target. If it comes up tails, you keep on doing what you're doing, and I'll just sit here and watch your experiments fail."

Angrily, Will grabbed the nickel and flipped it. The nickel landed on the ground, spun on its side, and finally came to a rest. Heads.

"Okay *sabelotodo*, what do you suggest we use for a target?" he growled at Joe.

"Don't call me a smart ass," Joe said sulkily. He picked up the nickel from the floor and handed it to Will. "Here, use this."

"Sure, *pendejo*, we'll try this nickel as a target. You know a nickel is partly made of copper. It's a copper/nickel alloy."

"We flipped," replied Joe, crossing his arms.

"What the hell. It's just five cents." Will placed the nickel in the device and hit the switch. The nickel exploded in a spray of tiny molten particles, as a jagged bolt of lightning exploded from the instantaneous, high-current electron beam. Joe jumped back in shock, a smile splitting his face as he watched the threads of brilliant light flash out from the target in the dusky room. Glimmering trails of electricity flickered, illuminating the lab with a short-lived, eerie glow.

"*Bueno*," Joe exclaimed. "You see! I was right. We just needed a different target. We are so close! We just have to figure out how to control the beam and the energy output. Then we'll have the ultimate weapon in our hands."

Will shook his head. “*Desafortunadamente*, it’s not that easy, *mi hermanito*. We need to figure out how to use the dense plasma focus device as a miniature pulsed power trigger for the LENR weapon.”

Will studied the melted bits of metal left of the nickel. “Do you have another nickel?” Joe sorted through his pocket change and handed his brother a second nickel. “I’m going to increase the current to 50 kiloamperes,” Will said.

Once again, Will flipped the switch feeding the electrical current into the piece of machinery on the lab counter. A flash of light streaked across the room toward the ceiling, punching a large hole in the steel beam running overhead.

The brothers ducked as molten metal rained down on them, their ears ringing from the blast.

“*¡Dios mío!*” Joe exclaimed, using his jacket to extinguish a small fire that the falling metal had sparked in a pile of papers on the desk.

“Now we’re getting closer,” he said gleefully. “We figured it out.”

Will grabbed his laptop. “Maybe. I need to make some calculations. We have to refine the trigger, so we have more control.”

Will tapped on the laptop keys and muttered, “*¡Que mierda!* My computer is dead. It won’t even turn on.”

“Here, use my phone,” Joe said, handing his brother his iPhone.

“You brought a phone in the lab? You know that’s against regulations. Are you trying to get us fired?” Will looked at the iPhone and flung it back at Joe. “Your phone is dead too. That beam must have put off a hell of an electromagnetic pulse that fried our electronics. I’m going to try rebooting the computer. I sure hope the hard drive is alright.”

After a few tense moments, the laptop rebooted. Joe watched his brother type some figures into the computer. Energized by the success, he was no longer consumed

with the desire to end the work day and go hiking. The excitement of scientific discovery gleamed in Joe's eyes. "What if we use 100 percent nickel and turn up the juice? Let's do some more experiments right now."

"I'm not sure that's a good idea," Will replied. "With Percy starting to discuss weapons applications, we need to move this work to our house. Plus, we can't keep blasting holes in the ceiling without someone noticing. What if we had gotten hurt? What if that fire had spread? What if a lab safety inspector had caught us? We'd lose our jobs and our security clearances in an instant. Of course, you could get us in trouble just by bringing your phone in here. How many times do I have to tell you to follow the rules?"

"Come on, Will. *¡No seas gallina!*"

"Look, I'm not being a chicken. This is seriously dangerous. I knew a guy who was experimenting with this kind of stuff in his garage and his whole house blew up. Most importantly, we can't have Alek catching on to what we've really been up to here. My contacts have made it clear that we can't let the Los Alamos scientists find out about our progress. And Alek especially can never know we've been doing weapons research. If the lab discovers what we've been doing, we'll get fired and maybe go to jail. We'll also never get paid by our sponsors, and they might come after us too."

Will turned on the overhead lights and started cleaning up the work area. "Plus, there's that part about going to prison for espionage," he added. "I don't want to become the next Wen Ho Lee."

"Who?" asked Joe.

"That scientist accused of stealing secrets about the U.S. nuclear arsenal for China back in the 90s. He spent nearly a year in prison although in the end, the U.S. government dropped the espionage charges and he was freed. Lab security is always on the lookout for spies. If they find out about our connections, we could face years in federal prison."

"I don't want to go to prison, Will," said Joe. "I just thought we were making some easy money helping our old friends."

"We are... we are. Honestly, I'm more worried about our 'friends' than about lab security. But I'm kinda worried that others are watching us."

"Others?" Joe asked with a laugh.

Will looked around, even though they were alone in the lab. He lowered his voice. "Others. The Russians, or the Chinese. There might be a sleeper cell of Chinese agents and they could be watching us." Will drew a finger across his throat ominously. "Trust me, Joe, if we piss the wrong people off... that's it."

Joe began pacing back and forth across the lab. "Will, you're scaring me. What are we going to do?"

Will placed a hand on his brother's shoulder reassuringly. "We just have to dismantle this device and copy all of our notes and research onto thumb drives. Then we can destroy the computer hard drives so Alek and Sunli won't be able to duplicate our work."

"Ummm, okay," replied Joe. "When are we going to do this?"

"Right now. Tonight," Will said. "Let's get to work."

## Chapter 2

### Just Build the Knife

**DEEP RED LIGHT PAINTED THE** peaks of the Jemez Mountains as shadows crept across the dark green forest below. The work day had ended and the sun sank below the horizon, casting streaks of pink, orange, and purple across the lenticular clouds hanging low in the sky.

Alek Spray and Harold Percy sat across from each other in a red, cracked Naugahyde booth in the Friggin Bar. Alek noticed that the table was slightly sticky, and the waitress was nowhere to be seen.

“The service in this place is awful,” Alek grumbled. “Last time I was here that blonde waitress spilled my Dos Equis and then brought me a Corona Extra to replace it. Who drinks Corona? And how can you get Corona and Dos Equis confused?”

“Well, she’s not just a waitress,” said Percy, defending the woman as he watched her sneaking a French fry off a customer’s plate while she delivered the food. “Plus, she does have great legs,” murmured Percy. “I hear she ran track at Española High School.”

Just then, the object of Percy’s admiration approached the table. “Hi y’all. I’m Gabi. What will it be?” the waitress asked, tucking her long, curly blonde hair behind one ear and gracing the two with a friendly smile. Alek tried not to notice the short skirt or the tight, low-cut sweater. Gabi leaned forward to take their order, making Alek’s struggle that much more difficult. Embarrassed, he took off his glasses and started cleaning them energetically with the

hem of his untucked shirt. *Sometimes it is helpful not to be able to see*, Alek thought.

The men both ordered bottles of Dos Equis and green chile cheeseburgers. Ever since Alek's divorce, he either grabbed something greasy on the way home or skipped dinner. Percy was married, but his wife traveled a lot and she never seemed to care if he made it home for dinner.

After the orders were placed with the kitchen and the beers delivered, Percy got serious. "Look, I know you want us to steer clear of the weapons research, but we can't ignore the rumblings that the Chinese are looking at LENR technology as a component of advanced space weapons. We need to make sure we stay ahead of the enemy," he said.

"Are the Chinese really the enemy?" Alek asked.

"Of course," Percy replied. "The Chinese are the dominant threat to U.S. military performance, and intelligence sources say that they are making progress developing advanced space weapons. If the Chinese develop space attack capabilities, they will gain immense power." Percy took a drink of his beer and settled back in the booth. He was now in his element, pontificating about the intersection between science and politics—his favorite topic.

"China possesses the largest economy, the greatest industrial base, the most powerful military, and the leading centers of technological and scientific innovation," Percy continued. "Just due to its sheer size, China is a geopolitical threat. Plus, the Chinese see our country as ideologically opposed to their way of life. Protecting the Communist regime is paramount to them, and they see America as a hostile force that threatens the stability of the Chinese party state."

Percy paused when Gabi arrived with their food, dropping a few fries and knocking over the ketchup bottle as she set the plates on the table. "Uh, I ordered mine with no onions," Alek said as she leaned over Percy to pick up the bottle of ketchup. Percy, meanwhile, had forgotten about China and was focused on the waitress'



low-cut sweater.

"The, uh, onions." Alek tried again to get the woman's attention. "Never mind. I'll just pick them off."

"Nice girl," Percy said, admiring the view as Gabi headed off to the next table. Alek pushed up his glasses, which had slid down on his nose, and tried not to look.

"Now, as I was saying," Percy continued, "China is America's primary threat. President Thornton has talks scheduled next month in Beijing to try to hammer out a new arms control agreement with a joint space weapons ban, but an agreement doesn't seem likely. There are some rogue military groups in China that are outspoken about their opposition to any kind of arms ban. And we have our fair share of hawks in D.C. too."

"I'm just hoping we can find a way to collaborate with the Chinese on energy research," interjected Alek. "Maybe the scientists can get along even if the politicians can't. Energy research is all I'm interested in." He spit out an onion lurking on his cheeseburger. "Imagine if Project Z succeeded. A limitless supply of clean energy could dramatically transform every aspect of the world."

For the past few years, Alek's work at Los Alamos had focused on Low Energy Nuclear Reactions, which built on his longtime obsession with fusion as an energy source. "Do you remember when I first started at the lab, when we first began discussing the LENR concept?" Alek asked.

"Yeah, I remember how nervous you were," Percy said with a chuckle. "Now that was an ambitious sales pitch."

"Well, I'd spent most of my career chasing after the impossible dream of using hot fusion to provide the ultimate clean, cheap source of energy. I was ready to try a different approach."

Percy snorted. "You actually explained to me the concept of fusion, of bringing together charged particles within ionized plasma gas to combine with each other at the right temperature. By heating the plasma, the particles move rapidly and collide, releasing energy, but only if the plasma can be contained long enough to react."

Percy took a swig of beer and looked Alek in the eye. “Remember what I said then?”

“Of course,” replied Alek. “You said, ‘Fusion doesn’t work.’”

“And what did you say, Smart Alek?” asked Percy, finishing the last of his French fries and reaching for Alek’s.

“Umm, I said, ‘Technically it does. Check out the sun.’”

The two laughed, enjoying yet another discussion of the frustrations of fusion—Alek’s favorite topic. His obsession was evident in every word.

“I remember how I pointed out to you that untold thousands of scientists have sought this goal and many billions of dollars have been invested in major laboratories around the world to deal with the containment problem. But the contained plasma always behaved like a fistful of Jell-O oozing out between someone’s fingers. The search for the fusion power reactor began in the 1940s and many of the most talented technical experts in the world have invested their lives in this research—all in the interest of lighting the ephemeral spark to start and then release the energy from the fusion reaction. The problem is that even if that works, the energy output will destroy nearby materials, and even if the material problems are solved, converting the energy output to a useful form of electric power is problematic.”

Percy sighed. “Every few years, the quest for a fusion power reactor grabs the attention of the press. Remember how I told you I’m not going to let you waste your time and my lab’s money on a wild goose chase.”

Alek chuckled. “And remember how I said, ‘What if we’re chasing the right goose, but just headed in the wrong direction?’”

“Yeah, you started talking about how in graduate school, you did research on cold fusion and were thinking that if the energy output could be contained without material damage, it could be efficiently converted to a useful source of electricity.”

“And then you said cold fusion is just bullshit.”

“Cold fusion is bullshit. Well, it’s kind of bullshit,” said the lab director. “The phenomenon scientists called cold fusion was a nuclear reaction that produced more energy output than input at room temperature. It allegedly was discovered in 1989 by two physicists, which led to an international avalanche of experiments to confirm early claims. The possibility of developing the ultimate source of clean, cheap, unlimited energy attracted world attention and resulted in early excitement, but it was followed by almost immediate frustration when scientists couldn’t duplicate the claims.

“Several experiments created excess heat generation, but the reaction couldn’t be carried out in a predictable manner. There were reports of mysterious explosions that occurred from cold fusion experiments, but nothing was ever confirmed. At best, some small-scale lab experiments generated energy but only in an unpredictable process with no defined trigger. No one really understood what caused this reaction to take place.”

“I know,” Alek said. “Cold fusion is like making wet wood burn. It just won’t work; you can’t get it to light. But then it occurred to me, what if you had an intense electron beam that could overcome the dampness and cause the wet wood to ignite? What if a nuclear core of ordinary materials could be made to react energetically at room temperatures?” asked Alek. “What if we could actually make this work?”

Percy swallowed the last bite of his cheeseburger and Alek continued reminiscing, his own food forgotten. “That’s when I realized that what scientists have mistakenly been calling cold fusion is actually a type of Low Energy Nuclear Reaction,” said Alek. “It isn’t really cold fusion. In fact, it’s not fusion at all. It’s actually a catalyzed LENR. Something has to trigger the process for the particles to combine. I really believe that these emerging theories will make sense if the right reaction trigger can be found.”

Percy shook his head. “Alek, you are definitely a

dreamer. I remember when I was more like you—young, driven, idealistic... Of course, that was before all the government red tape wore me down.”

“But you gave me your blessing to do the research,” said Alek. “Even though you told me that you wanted me to know, on the record, that you didn’t think it was going to work.”

“It still hasn’t,” said Percy. “But you have made huge strides in the LENR research, and have worked around the clock to alleviate my doubts.”

Alek nodded, remembering how he had named the initiative Project Z in honor of nuclear weapons research and development history. Project Y had been the code name given to Los Alamos, the primary site of the Manhattan Project, the top-secret laboratory responsible for the building of the first atomic bomb. Project Y had resulted in the threat of mutually assured destruction, but Project Z would usher in peace and prosperity as unlimited clean energy could resolve problems worldwide. Alek also thought the “Z” was fitting since it was the last letter in the alphabet and Project Z would be the last source of energy mankind would ever need. Plus, earlier fusion research had relied on a pulsed power device called the Z machine. The Z machine used high magnetic fields associated with strong electrical currents to produce high temperatures, extreme pressures, and powerful X-rays, but it had not yet achieved the goal of producing commercially available fusion and creating an unlimited energy source. Project Z would be the answer that scientists had sought for decades. Alek was certain. Successfully harnessing the Low Energy Nuclear Reaction could produce an enormous energy output that would solve the world’s need for an unlimited source of clean energy. Someday, Project Z would be a reality. He would keep pushing forward until he met that goal.

Sometimes Alek wondered if he would be this driven, this obsessed, if it weren’t for the accident. Regardless, he knew he had to make this research work. The problem

was that in order to continue Project Z, Alek needed money. But was he ready to compromise his nonviolent principles and embrace weapons research just to get funds? He had put in too much time on this research to give up now. They were so close.

"Maybe you're right," he told Percy. "Maybe technology is just a knife, but I do think as physicists we have an ethical obligation to help people use that knife properly."

"That could be true," Percy replied. "But for now... just build the knife."

Percy's cellphone buzzed. He glanced down at a text. "Shit, the wife's back from her business trip. I'd better get going." He took a final swig of beer as Alek reached for his wallet.

"Go ahead, I'll get this. You get the next one." Percy clapped Alek on the shoulder and headed out the door as Alek opened his wallet. A tattered photograph fell out onto the table with the cash he pulled out. Alek froze, paralyzed, looking at the photo of a younger version of himself standing beside an attractive woman and holding a curly-headed toddler in his arms. The perfect happy family. Alek had deleted all of the photos stored on his iPhone and social media accounts, but he still carried this one dog-eared photo. He grimaced and shoved the photograph back into his wallet. Leaving the money on the table, he muttered to himself, "Just build the knife."

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The sky had taken on a periwinkle hue with twinkling stars already emerging as Alek headed to the place he now called home.

While the city of Los Alamos offered all the charms of Northern New Mexico, from authentic Mexican food, to excellent ski runs, to vast unbroken vistas of the state's legendary turquoise skies, apartments in Los Alamos were far from luxurious. Unlike Santa Fe, only 40 minutes away and home to wealthy art connoisseurs seeking elegance and ambiance, Los Alamos catered to scien-

tists. Alek drove down the winding streets of the small town, past buildings that remained stuck in the past. Los Alamos began as a hastily-built military installation constructed during World War II, and much of town had not been updated since the 50s and 60s.

*It's a wonder some of these places are still even standing,* he thought.

Alek's one bedroom at the Arroyo Vista apartment complex was new—by Los Alamos standards, built in the 70s. It could be described as utilitarian at best. Arroyo Vista translated to “ditch view,” so his expectations weren't very high. From the dingy once-white paint to the shallow, scratched aluminum kitchen sink, to the chipped linoleum and single bulb overhead light... the entire place (all 560 square feet of it) gave off a scent of musty desperation. Alek figured it was what he deserved, after all.

One thing Alek felt certain he didn't deserve was a position running high profile experiments as a senior scientist at one of the nation's three nuclear weapons labs. The job was a gift... a lifeline. Percy had reached out with the job offer when Alek had hit his lowest point.

Alek let himself into the dark apartment and switched on the floor lamp. Moving a pile of laundry from the couch to the coffee table, Alek sat down and reached for the TV remote, but didn't push the button. His thoughts tugged him back into the past.

When Percy had first contacted him, nearly a year had passed since that unspeakable July afternoon when Alek's life had changed. He was still struggling. He had tried counseling, medication, extra leave from work. Then he tried drinking too much, excessive exercise, and even a visit to a Native American sweat lodge. With nothing helping him to heal from the trauma of the accident, that phone call from Percy and the thought of joining Los Alamos National Laboratory captured his interest. His then wife Julie, now his ex-wife, announced he would have to choose between her and the new job.

“I have no intention of moving to that backwater town

in the middle of nowhere New Mexico," Julie had decreed, pointing out that, as an attorney, she could support them with the salary she earned at her law practice. If he wanted to, he could even quit his job at Sandia Laboratories in Albuquerque. "Anyhow, you have a perfectly good job as at Sandia. You can't fix things by running away."

Ironically, it was Julie who had pushed him to take a job at Albuquerque's Sandia National Laboratories, because the position "paid highly, was well-respected, and made good use of his physics degree." Because Alek balked at the idea of working on weapons research, he had spent much of his time at Sandia trying to find a way to apply his findings to developing new forms of energy rather than nuclear weapons technology. That's why the offer from Los Alamos appealed to him. He would finally be able to pursue the kind of research he had been interested in all along.

"I don't understand why you'd want to take a chance with a speculative subject," snapped Julie. "Sometimes I feel like I don't even understand you anymore."

*Had she ever understood him? Alek wondered. What did they have left in common since... since the accident? Or even before then?* he thought.

"Stop being such a dreamer," Julie had frequently told Alek. Somehow, she couldn't accept that he had spent the year after his college graduation volunteering in Africa, trying to help the people there meet basic human needs. Julie never seemed to understand that ever since then, Alek had been haunted by the desperate poverty that plagued so many. He clung to the hope that science held the answer. He looked to a future when children didn't die of hunger and water flowed, making the desert green.

Rising from the couch, Alek walked to the vertical blinds to close them, lost in memories of his ex-wife. *Had he simply chosen to marry her just to balance out his impractical tendencies?* Julie was organized and extremely disciplined. Her career in tax law suited her personality perfectly, and she didn't tolerate any disruption of her

carefully ordered life. Alek remembered how Julie had mastered the art of compartmentalizing, which served her well in her choice to shut out the past and move forward. “I know how to control my emotions,” she told Alek. “You should learn to do the same.”

If Alek were to be honest with himself, even before the accident he was finding his relationship with Julie to be a lot like his job at Sandia Labs—boring, unsatisfying, and frustrating. During those awful months after the accident, the gap between them had grown—a chasm filled with unspoken words, accusations never uttered but deeply felt.

Instead, they quarreled over inconsequential issues and discovered new ways to get on each other’s nerves. “You take the absent-minded scientist thing too far.” Julie would scold Alek when, on many occasions, she found him staring into space, lost in his thoughts. Julie grew even angrier on the days Alek would become distracted by a new idea or project and would forget to eat or shower. “You have to either get some help or get out,” she admonished. Alek knew she was right.

He did need help, but he didn’t know how to ask for it. The issue ate away at his self-confidence and then turned on his marriage. The unspoken problem was that, no matter how hard either of them tried, they simply could not find a way to move past the accident. Julie blamed Alek. Alek blamed himself. Once they had been a family, but now their life had disintegrated into reminders of their loss played out against a background loop of petty arguments about minor crises that really didn’t matter and would never be resolved.

Alek had tried to throw his energy into his work, but Sandia Labs wasn’t focused on the areas he wanted to investigate. With Percy’s call, he had found the answer, just two hours north—a lead research scientist position at Los Alamos Labs.

So, Alek had packed his belongings and headed to Los Alamos, leaving all the trappings of his former life behind.



He had kept only the one photo, tucked inside his billfold. Sometimes, when he felt frustrated or overwhelmed by his work, or was searching for breakthroughs, he would pull out the photo and remember what happened. He would think about his failures and then he would push even harder on his research. Over time, the snapshot had become weathered and frayed. As the months at Los Alamos became years, Alek looked at the photo less often. He redirected his thoughts toward his research and threw every ounce of his energy into the struggle to make the Low Energy Nuclear Reaction succeed.

All in all, the move to Los Alamos suited Alek. While Julie disliked the small town feel of the city, Alek liked the community and enjoyed living closer to the mountains. He made time to go for a run on the trails of the nearby Pajarito Mountain Ski Area almost every evening after work. The high elevation and clear mountain air helped Alek focus and he felt he did some of his best thinking alone beneath the vast New Mexico sky.

Yes, there were lonely days and even lonelier nights, but the work was all-encompassing and lab management allowed Alek to let his imagination soar. Alek knew he had to create technology that would help people. He owed that to the world. He needed to find a way to atone for his mistakes, even if Julie wouldn't forgive him and even if he couldn't forgive himself.

Over the past few years, Alek had developed a good relationship with Harold Percy, his most senior boss. The lab director encouraged his lead scientist's wandering and curious mind. The two often exchanged new ideas when they traveled to technical conferences or entertained distinguished guests from Washington. Percy had a knack for marketing technology and research. He could always deliver the convincing sales pitch about the potential payoff, and he soon discovered that Alek's passion and limitless imagination provided the ammunition he needed to gain funding and support.

Percy had even found the funding to hire the Ramos

brothers to conduct off-site experiments that could fast track their research on the Low Energy Nuclear Reaction project. Though the two hadn't made much progress, they showed initiative and enthusiasm about the concept. Alek was grateful that Percy had secured the funds to allow them to focus on their research without distractions from the rest of the lab.

Percy's support meant a lot to him. True, the lab director always put funding first, but his willingness to focus on energy applications in the upcoming congressional hearing instead of pushing the weapons angle—that represented a significant sacrifice. *I may not have any real friends or social life at the lab*, mused Alek, *but at least I have a supportive boss.*

*In any case*, he thought, settling in on the lumpy beige couch that came standard with his furnished apartment, *Los Alamos isn't so bad.* Though difficult, the divorce had been the right choice. Julie deserved the chance to be happy. Her life was better off without him. Now he could work on the kind of projects he had only dreamed about when he was completing his PhD in physics and engineering at Princeton.

Despite this, Percy's desire to push the weapons angle disturbed him. Yes, there was plenty of funding for weapons technology, but that didn't make it right. He didn't want to be responsible for giving the world a new weapon. The goal was unlimited, clean energy—an achievement that could truly change lives.

*If we could only find the trigger and get the LENR to work*, thought Alek. Project Z had to become a reality.

He had to build the knife.