



**COMING OF AGE**  
**Volume 1: Eternal Life**  
  
**by Thomas T. Thomas**

### Who Wants to Live Forever?

“Millions long for immortality who don’t know what to do with themselves on a rainy Sunday afternoon,” wrote British novelist Susan Ertz. So it would seem that humankind was never designed—emotionally or spiritually, let alone biologically—for long, productive lives. But new, life-extending technologies based on advanced genetics and stem-cell reprogramming are coming at us anyway.

Construction magnate John Praxis topples over on the golf course from a massive heart attack. And the attorney who was litigating against him, Antigone Wells, succumbs to a stroke. Both have unfinished business they need to pursue. And they are among the first recipients of the new medical techniques to rebuild failing organs—his heart, her brain—renew deteriorating tissues, and extend their lives almost indefinitely.

*Coming of Age* is a novel of both ideas and action that covers the next century of American history and its probable and improbable impacts on Praxis, Wells, and their extended families through five generations beyond the traditional “three score and ten.” In that time, they will experience love and loss, civil war and geologic upheaval, the rise and fall of both personal and national fortunes, the banishment of old age, the rise of thinking machines, the end of work, and the virtual remaking of the American experience.

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COMING OF AGE  
Volume 1: Eternal Life

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*Have you heard of the wonderful one-hoss shay,  
That was built in such a logical way  
It ran a hundred years to a day ...*

*—Oliver Wendell Holmes*

**Prologue – 2115:  
Orphan on the Wind**

## 1. Traveling Light

Three days after her aunt's death—at the advanced age of 153 years—and with the swift execution of her living testament through the intelligences in the San Francisco Municipal Records Office, Angela Wells was evicted from their five-bedroom luxury condo on the forty-second floor of 333 Market Street. According to terms of the testament, recorded in Antigone Wells's own voice with the dry accents of a Calvinist preacher, Angela was to be allowed one suitcase, to be packed under supervision of a Hall of Records mech, “in order that my niece may learn the virtues of traveling light.”

The mech came programmed with a list of authorized items: three casual tops, three pairs of slacks, two pairs of shorts, one semi-formal dress—“but not the backless burgundy taffeta”—two pairs of ballet pumps, one pair of sandals, four days' supply of fresh underwear, a week's supply of basic toiletries. Specifically proscribed was Angela's collection of tiny crystal animals, bought with her own money—well, money from her allowance, and with her aunt's approval required before buying each piece. Also on the forbidden list was her musicbot with all the songs, scenarios, and player roles she had collected over the years, as well as her old tennis racket, her hockey skates and stick, and her carbon-fiber street luge with vibrafoam impact suit and helmet.

As directed in the testament, her aunt's estate—which included proceeds from the condo's sale and holofax auction of all its furnishings and contents, combined with her liquid assets—had been donated to St. Brigid's Home for Orphaned Girls in the Sunset District. So other, nameless orphans were going to benefit from a long lifetime of professional work, saving, and investment—but not the orphan who bore her aunt's own last name. For some reason, Angela found that typical. Capricious, quixotic, callous, and cruel—but also typical of her aunt's sometimes mysterious reasoning.

When Angela picked up the jewelry box from the dresser in her own room, the mech took it from her with two plastic-and-steel hands and a strength of arm she could not resist. The mech then opened the box and rummaged about in its contents, picking up various brooches and necklaces—clearly in pattern-matching mode—and finally selected one: a heart-shaped silver pendant on a chain, both blackened with a hard glaze of tarnish. It was a piece Angela hadn't worn since she was, oh, seven years old—half a lifetime ago. She remembered her aunt had called it a locket, but it had no catch or hinge. She assumed it was just solid silver without any insides.

“Can't I have the diamond circle?” she asked. “It wasn't expensive.”

“That is not permitted. All you may take is the heart.”

Angela accepted it from the mechanical hand and put it in her pocket—which presumed she would be allowed to leave in the clothes she was wearing.

“You will put the charm around your neck.”

“But it's so dirty. The tarnish will—”

“You must put it on, please.”

Angela knew of ways to override the mechs, even the ones that proctored for the law—her aunt had taught her all about that. But since this one was doing her aunt's final bidding, she guessed those tricks wouldn't work. She put the chain around her neck and tucked the heart inside her blouse.

“Anything else?” she asked.

The mech paused. With these intelligences, a two-second pause was enough time for anything. The house butler, which had been deactivated and wiped by legal order that



morning, could plan a party, order assorted hors d'oeuvres from three different South of Market shops, restock the wine cellar, and send out the invitations in that much time and still have spare capacity to balance the household checkbook and sort the laundry.

"I have ordered your transportation," the city's machine said.

"Thank you. And where do you think I'm going?"

A pause. "I am not permitted to say."

The mech laid the jewelry box on the dresser and picked up her suitcase. It gestured for Angela to go out into the hall. At the side table by the front door, she picked up her purse. The mech took it—not rudely but firmly—extracted her identity card, left the cash cards, and put the purse back on the table. It triggered the front door and waited for her to leave.

Angela walked over to the elevator. Before she could press the down arrow, the other one lit up—the mech taking control again.

"I guess I'm supposed to go to the roof and jump off?" she suggested.

No pause this time. "There is a barrier, and I will stop you."

"That wouldn't be a kindness," Angela replied.

When they arrived at the rooftop pad, the morning fog was just beginning to burn off. An ariflect was already landing. Not one of the low-altitude town cabs, but a model equipped for supersonic, with appropriate pressure-fittings around the door, military-style belts across each seat, and explosive bolts lining the canopy. The mech stowed her suitcase in the luggage bin, turned, and walked away. Unlike the house butler, Angela knew civil-service mechs were not programmed for the courtesies, like saying good-bye.

She belted herself in and waited.

"I'm ready," she told the pilot.

The door latched itself, the cockpit pressurized, and her ears popped. The rim vanes on the wing nacelles engaged and spun up. The 'flect lifted straight into the air, then rose past the city's skyline, through the last wisps of marine layer overcast, into hard sunlight and a view of the Bay that reminded her of a traffic satellite's omnipresent eye. She shifted her attention to the nacelle on her right as the vanes stopped spinning, the wing slats closed and reshaped the machine into a gunmetal-gray dart, and the revs increased by several thousand rippems as the turbine became a jet engine. Where before the seat frame and cushions had been gently pressing against her thighs and bottom, the direction suddenly changed and they pushed against her spine. Pushed hard.

In three seconds San Francisco Bay had disappeared behind her, followed by the East Bay Hills, the Livermore Valley, and Altamont Pass. She was out over the curved plate of the San Joaquin Valley, which held steady in her view for all of half a minute before the eastern edge began wrinkling up with the foothills of the Sierra Nevada.

"Can you tell me where I'm going?" she asked the pilot. Given that the Hall of Records mech had refused to tell her, Angela expected no better from the city's chartered taxi service.

"Tuolumne County, ma'am," the pilot said. "To the Praxis Estate."

Their privatization of the former Stanislaus National Forest.

"Why there, I wonder? I don't know any Praxises."

"That's not in my memory hole, ma'am."

Angela hoped the ariflect was armored and programmed for evasive tactics. From everything she had ever heard about the Praxis family, they were touchy about their privacy—and not shy about defending their airspace.

## 2. Carbon Copy

Callista Praxis watched the dark-gray flyer circle once at high altitude, cued as a bright spark in the second sight of her neural eyepatch. It was shedding speed while it negotiated landing rights with the estate's air defense system. She followed that exchange through her patch, too, and gave the final approval. Then the dart dipped toward the earth and changed shape as its wings unfolded and sprouted daisies. It descended smoothly on vertical thrust.

Last night her mail folder had included a bonded message from the San Francisco Attorney General's intelligence concerning a transfer of wardship. A minor female named Angela Wells—age fifteen, no priors except three traffic citations for recklessness with a “suicide sled,” and no current wants—was being written off the municipal rolls and expelled at the request of her only living relative, an aunt, Antigone Wells, who was deceased as of sixty-seven hours prior to transmission.

Antigone again. Disposing of another “niece.” Well, this one would be her last.

Callie had instructed the family lawbot to accept the transfer of allegiance and assign Angela Wells provisional status as a ward—stipended but without shares—until the girl's situation could be evaluated and her place in the family established.

The ariflect settled with just a whisper from its fans and a tiny bounce as the hydraulic gear took its weight on the estate's landing pad. The door popped out of its seals and swung open. A young girl in a white blouse and corduroy jumper stepped out.

“The air's thinner here,” she said with a little gasp.

“We're at forty-seven hundred feet,” Callie said, then offered her hand. “I'm Callie, by the way.”

The girl took it, holding on for a second longer than customary, perhaps to catch her balance. “I'm Angela.”

“Yes, I know.” Callie busied herself with retrieving a single suitcase from the ariflect's cargo hatch. She turned quickly then, before her own face could give the game away, and led their guest through the radiating pathways of the sunken formal garden and up a flight of granite stairs to the Gate Tower of Resurrection House.

Angela Wells was a slender girl, with as-yet unformed features and a still childish body. She had long, ash-blond hair that was clearly used to regular shampooing and a bedtime routine of one hundred brush strokes. She was an unexceptional girl, except for her eyes, which were a pale, almost iridescent green, the color of old apothecary bottles, and seemed to glow with their own light. They were the same eyes that looked out of Callie's vanity mirror every morning.

\* \* \*

Angela followed the Praxis woman along the gravel path through a low-lying plot that was full of coniferous shrubs in geometric arrangements and long, orderly rows of roses and other flowering perennials in every imaginable color. She wondered how the garden fared when winter came to the mountains and the snow level fell to 4,700 feet of elevation. But then, her internal newsfeeds suggested, the family was rich enough that

they probably could tent over this whole area, heat it all winter long, and provide a couple of mechs to maintain the flowerbeds.

Then the name she had heard almost in passing came into focus, confirmed by her eyepatch: Callie—Callista—Praxis. There had only ever been one. Daughter of John. The most senior woman of this fabled family. And she had come out to the landing pad personally to meet Angela. What was going on?

She couldn't help noticing that Callie was not only beautiful, as reported, but also young looking. She moved with grace, poise, and a perfect centering, the way Angela's yoga instructor had tried to teach her. Callie might have been only thirty or forty years old, judging by her face. Her hair was dark and luxurious, her skin still smooth and lovely, even around her eyes and mouth—the places where women, even those in regeneration, were quickest to age. By contrast, her aunt's face had been a wreck, with wrinkles, indented creases, and the powdery look of old silk left hanging too long at the back of the closet.

The other thing she had noticed was Callie's eyes. They were bright, green eyes like Angela's own. Except that where Angela's eyes were merely strange, like insets of cold green glass stuck in a mask, Callie's were warm and alive, full of expectation and caring and ... well, wisdom. Angela hoped one day she would have eyes like that.

From the rose garden the women climbed a short flight of steps, turned a corner, and came to a round tower. It was four stories tall, made of hard white stone, trimmed in gray granite, with a conical roof of black slate. The tower was remarkably bare of windows. All Angela could see was a single arched casement on the front of the first two upper levels, aligned directly above the door on the ground floor. But at the very top, right under the overhang of the roof, the wall was set with a series of small, black-framed windows, one every thirty degrees, like the numerals on a clock face. Angela thought they might be for lookouts—or for shooting arrows.

Directly in front of the two women, at ground level, was an arched door of ancient-appearing oak, supposedly darkened with age, although Angela knew the whole estate could not have been built much more than thirty years ago.

"That door's big enough to drive a truck through," she said in admiration.

"If we allowed any truck to get that close," Callie said over her shoulder.

They walked into the Gate Tower's central chamber, thirty feet across and empty except for a single reception desk. The receptionist—or rather, a guard with holstered side arm—recognized Callie with a nod and passed her and Angela through into the Gallery.

During the circling descent of her ariflect, Angela had studied the layout of the Praxis Estate and compared it with feeds from her patch. The Gate Tower stood on the northern shore of Cherry Lake, a man-made body of water at the southeastern edge of the former national forest lands. From the lake side of this tower the Gallery crossed the water on five stone piers supporting six high, rounded arches. These in turn supported two tiers of white stone arcades pierced with square windows in granite frames, while the top tier was roofed in steeply-pitched black slate with round windows set in white dormers.

At the far end of the Gallery was the Chateau proper, built right out to the edges of a rocky island that was set deep into the lake. The building rose three stories above its foundation, a wedding cake in white and gray masonry, with rounded towers built into

each corner. The top floor presented more pitched slate and white dormers with tall, peaked windows as well as chimneys topped with granite lintels. On the east side of the Chateau she had noted an anomalous structure, like a hexagonal half-dome clinging to the outer wall, which spanned the first and second floors with tall, gothic-arched windows in stained glass. Her patch had confirmed this extrusion had been designed as a chapel, although the database showed it as having no denomination or actual sanctification.

She and Callie entered the Gallery, which was more than two hundred feet long and thirty feet wide, floored in an alternating pattern of black and white marble and brightly lit by the morning sun coming in through the line of east-facing windows. Angela did a rapid internal scan of available architectural studies. One leapt out at her.

“You modeled this house on the castle at Chenonceau, in the Loire Valley.”

“That’s very perceptive,” Callie said, “since you’ve never been there.”

“But I have seen pictures. My aunt said she adored the place.”

“You should definitely travel one day. France is lovely.”

“But with your choice of almost any architect—”

“Why copy a design over six hundred years old?”

“Well, yes. You studied architecture, didn’t you?”

“It’s a form of homage. Good design is timeless.”

As they made the long walk through the Gallery, Angela looked up, expecting a low ceiling. From outside, the arcades and tiers of windows had suggested three separate levels. But inside it was one massive hall whose wooden hammer beams soared fifty feet overhead between the white-stone dormers.

“I would call that a waste of space,” she observed.

Callie Praxis gave her a brief smile. “This might look big and empty to you now. But wait until the whole family gathers here for a wedding—or a proxy fight. Then you’ll see how small it really is. The high ceiling helps with the acoustics, not to mention claustrophobia.”

“Oh!” Angela said. “And how many ...?”

The woman gave another smile. “Why don’t we let John explain these things? He’s expecting you.”

She led Angela through a smaller, arched passage and into a narrow hallway of polished limestone with a vaulted ceiling at the center of the Chateau. It was dark, lit only by a window at the far end, but glowed with the whiteness of the stone. They crossed to a granite stairway, went up two flights, and entered another stone-flagged hallway. At a far door—more antiqued wood—Callie Praxis waved her signet ring, which obviously had an embedded radio-frequency chip. A very modern-sounding *click!* freed the door in its stone frame.

“This is the Residence,” she explained, and Angela could hear the capital “R” in her use of the word. “Very few people come up here, and none without being asked.”

Callie conducted her past what was obviously a lounge area with chairs, a sofa, and ottomans in butterscotch-colored leather, arranged for conversation, as well as a wet bar. The side where they crossed contained what looked like a workout area—half filled with machines for weight and cardio training, half left as open space with mirrors for floor exercise. Hurrying through, Angela caught sight of a piste, laid out on the floor in black stripes, for fencing, with a rack of swords against the paneled wall.

Finally, Callie knocked softly at an interior door and opened it to reveal a man's study with a wide desk and wall cases on three sides for books—not disks or memory blocks but real paper books bound in cloth and leather. Hundreds of them. The room's fourth side was bare stone with one of those granite-cased and mullioned windows that pierced the outer wall of the Chateau.

Standing by the desk was the oldest man, the oldest person, Angela had ever seen. She knew this not by his face or posture, which might have been those of a vigorous man in his early sixties. Instead, she had the authority of the newsfeeds into her patch. This was John Praxis, patriarch of the family, who at the age of 161 was certified to be the world's oldest living human—so far.

He waited for her to approach. His expression was quizzical, not quite smiling. He looked as if he was expecting something strange or wonderful or terrible to come from their meeting.

Callie hung back, allowing her to walk up to the edge of his personal space. Angela didn't know whether to offer her hand, or curtsy, or just stand there. She wanted to drop her eyes under the pressure of his gaze, but something told her that would be a mistake.

Finally he said, simply, "I see."

"The city releases her to us," Callie said. "Antigone is dead."

He glanced across at his daughter. "When?"

"Three days ago. Natural causes."

"I was afraid of that," he said. Then he turned his attention back to Angela. "What do you know about your mother?"

"My mother died, sir," Angela said, expecting such questioning. "Both my parents died when I was a baby, so I never knew them. My aunt took me in and raised me. She was always very good to me—well, until today, when they read to me the terms of her trust document."

John Praxis absorbed this quietly but without showing any sympathy. "And what was your aunt like?" he asked.

"She was—" Angela hesitated. She knew she must not speak ill of the dead.

"—the warmest, most caring, fun-loving, sweetest little old lady you've ever known?" he suggested with a grin. "All lace doilies, gingerbread, and chocolate milk?"

Angela had to smile at that. "Well, no. She liked to have her own way, sir. Have everything just so. She could be pretty strict, too. But she also encouraged me to go out and try new things, learn things. She said she wanted me to grow up strong." Angela paused to reflect, because this man's face and stance demanded a level of personal honesty. "I think, in some ways—some important ways—she was really disappointed with her own life."

"Yes, exactly!" he exclaimed. "That was Antigone to the core."

This made Angela brave. "So why am I here?" she asked.

Rather than answer her question, he asked, "Did your aunt *give* you anything? Oh, isn't that a foolish question! Of course she gave you lots of things. But did she, in particular, give you a token to wear? A locket?"

"You mean this?" She fished the blackened heart out of her blouse.

He stepped closer, reached out his hand, and held the pendant gently, without pulling on the chain. After a moment, he said: "You are here because we need to establish your true identity. The contents of this locket will do that."

"But it doesn't open, sir. So it's not really a locket."

"It opens with the right tools," he said. "And inside is a chip with a message written in the world's oldest code. We'll need to take a sample of your blood to see if it matches."

"But I know who my parents were! My father was Antigone Wells's young nephew. So Miss Wells was my great aunt."

"You look like an intelligent child," the senior Praxis said. "But do you know how to count? Antigone Wells's true age was a matter of public record, as is mine. So how old would her sister have been? How old would any hypothetical son of her sister's be—and still able to father a child your age? That story fails by at least two generations, more likely three."

Now Angela was really confused. She took the locket out of his hand and stepped back. "But then it can't be *my* DNA in there. This heart is an antique. It's more than eighty years old, or so my—aunt—said."

"Of course it's old. You don't you think you're the first girl to wear that heart, do you?"

"What are you telling me, that I'm a *clone*?"

"No, you're real, but a genetic remix."

"How is it that you know all this?"

He smiled. "Because I gave Antigone that locket." He turned to his daughter, who straightened attentively. "Angela is to have provisional acceptance, with the usual benefits. Oh, and you might tell Alexander he has a new baby sister."

Callie Praxis nodded and held out a hand. "This way, my dear."

**Part 1 – 2018:  
First You Die ...**

## 1. Morning in Court

Department 606, Superior Court of California, County of San Francisco, The Honorable Oscar W. Bemis presiding, was a thoroughly, almost reassuringly human place for Antigone Wells.

Morning sunlight coming in through the deep-set casements had, over the years, bleached and cracked the varnish on the lower portions of the room's oak paneling. At the same time, caustic ultraviolet rays from the fluorescent ballasts had darkened that same paneling up near the ceiling until it looked almost like old walnut. Although the janitors waxed the floor's linoleum to a high gloss each month—or, with recent cutbacks, more likely once each quarter—the passage of many feet had scuffed dull pathways through the room's center. Contact with the moist palms, ring binders, and briefcases belonging to generations of attorneys had dulled the polished wooden surfaces of the two tables for opposing counsel. Only the angular dentils in the wooden fretwork across the front of the judge's bench seemed sharply defined and unworn. Only the vivid colors sewn into the flags of both the United States and the State of California hanging behind his high-backed leather chair stood out bright and fresh.

Antigone Wells thought she could smell the age of the room, although that might have been her imagination, based on hundreds of other courts she had appeared in over close to three decades. The lingering ghosts of old sweat and stale perfume would follow those tracks in the linoleum from the endless parade of plaintiffs, defendants, their attorneys, and witnesses. The bindings of the blue-and-beige law books on the shelf behind the clerk's desk would exude odors of fine, acid-free paper and crackling buckram. The very air would hold dust from the mill of the law, which ground slow but exceedingly fine.

Someone had once told Wells that partners were not supposed to appear in court themselves. Or if they did, they never stood up, addressed a jury, and fired questions at witnesses. Partners were the elder statesmen, the grand strategists, the generals who led from the rear. Instead, the associates, younger attorneys like Carolyn Boggs and Suleiman "Sully" Mkubwa, who were seated at the table next to her, were the ones who stood forth and gave battle. But Antigone Wells loved the law. She loved the battle. The courtroom was her playing field, her boxing ring ... sometimes her bull ring. Bryant Bridger & Wells, LLC had enough other cases in the backlog to keep their associates in good voice.

Wells drew in a little breath, after her precisely timed pause, and began to drive into the heart of her case against Praxis Engineering & Construction Company *et al.* She had already seen her first expert witness sworn in and had worked to establish his professional credentials for the jurors. Ralph M. Townsend had flown out from the American Institute for Structural Analysis, or AISA, in Fair Oaks, Virginia. Now it was time for him to enlighten the jurors on the facts of the case—none of which, as Wells had made clear during her opening statement, were in dispute between the two parties.

"Mr. Townsend," she began, "would you please describe what you discovered when the Board of Directors of St. Brigid's Hospital Foundation retained you to examine specimens of the reinforced concrete from their new medical center at Alemany Boulevard and Ocean Avenue in San Francisco?"

"Yes, of course." The blade-thin man licked his lips—but more from nerves than from hungry anticipation. "We received fifty-four fragments, ranging in size from nine



ounces to more than five pounds, taken from various parts of the complex. Each piece was accompanied by a photograph showing exactly where it had been cut, or in some cases where it had spalled—that is, had already expelled itself from the surrounding material ...”

Praxis Engineering & Construction had contracted to build St. Brigid’s new hospital complex in the Outer Mission District. While the main building and its two conjoined wings, each three and four stories tall, were constructed of steel frame with glass curtain walls, the basements and the floor pads in all three parts of the building, as well as the entire five-story, open-air parking garage, had been poured—supposedly to specification—with reinforced concrete. Even before the structures were completed, they had betrayed evidence of cracks and spalling. The workmen on the site had dutifully patched over these spots and proceeded on schedule.

After the complex was finished and accepted by the hospital foundation, after all of the facility’s expensive, delicate, and complicated equipment had been installed, and after it was opened for business and occupied by staff and patients, only then had divots the size of dinner plates begun dropping out of the floor pads. Two load-bearing walls in the basement—one at the far end of the east wing, the other at the junction of the west wing and main building—had partially collapsed, jeopardizing the entire structure. Concrete chunks the size of a coconuts began raining down in the parking garage. Within a month, the entire hospital had to be shut down and condemned. It was a write-off to the tune—at the time—of \$90 million, plus compensation for injuries to staff and patients, as well as damage to equipment and automobiles. And none of *that* was in dispute in this case, either.

Townsend began to describe the composition of those concrete fragments: various percentages of moisture content; a small but pervasive amount of calcium silicates mixed with clinker or slag containing aluminum and iron oxides, collectively known as “portland cement”; and then a much larger amount of aggregate. And there Wells interrupted him. “Excuse me, sir. ‘Aggregate’? What is that?”

“Oh, that’s a vital component of any concrete mix—in fact, as much as sixty to seventy-five percent, on a volume basis.”

“But what *is* aggregate?”

“It could be many things: graded amounts of sand, gravel, small stones—even bits of used construction materials, like concrete rubble and crushed brick. Aggregate is what gives the concrete its strength. Without those solid bits, the liquid portland cement surrounding them dries to a hard but brittle mass, like porcelain, and is likely to crack under strain. The cement really only serves to bind the sand and stones together.”

“You mentioned ‘crushed brick.’ Do builders use a lot of that?”

“Very sparingly, ma’am. Never more than five percent.”

“What about the kind of brick called ‘refractory’?”

Until this case came to her, Antigone Wells wouldn’t have known a refractory brick from a refried bean. Refractory was made from the kind of clay formulated for high-temperature environments like ovens, kilns, boilers, and open-hearth furnaces. She had been introduced to this special kind of brick when AISA returned their initial report on the concrete fragments. It was one of the chief discoveries of the plaintiff’s case.

“Oh, no, ma’am! Refractory brick is specifically excluded from use as construction aggregate. It contains large amounts of magnesium oxide, also called

‘periclase,’ and so it tends to absorb water. Then it expands. When mixed with wet portland cement, particles of refractory brick gradually become slaked. That is, they kind of explode in slow motion. They crumble, lose their strength, and weaken the concrete.”

All of this—and much else—had been stipulated between the parties before the case even went to trial. But Townsend and his technicians had uncovered a long and winding trail of errors of both omission and oversight. Unknown to anyone at the time of construction—although since confirmed with sample borings throughout the condemned hospital complex by Townsend’s field team—was the fact that the aggregate added to the cement at the batch plant had contained between eight and ten percent of not just crushed red brick but of refractory brick.

What was in dispute between the parties was how to account for its presence. Saint Brigid’s Hospital Foundation sought to recover damages from Praxis Engineering & Construction—which was at once the overall building contractor, construction manager, and deepest pocket—for failure to adequately monitor and test the concrete pours. Praxis blamed the batch company, Chisholm Cement of Stockton, California, for providing bad concrete. Chisholm in turn blamed its aggregate supplier, Yucca Sand & Stone of Indio, Riverside County, for improper fulfillment of their order. Yucca blamed the software integrator, Datamatron of Los Angeles, for faulty material coding when they installed the system that coordinated between its automated order-intake software and the mapping of the stockpile yard and the printing of instructions for the drivers of their front-end loaders that filled the trucks. And Datamatron blamed the original software supplier, Jian Zhu Anye Company of Taiwan, for various untrapped bugs in their underlying code.

Wells had already written out her closing arguments, to be polished and supported by testimony over the coming days. “What we have here, ladies and gentlemen of the jury,” she planned to say, “is a simple matter of human negligence, a failure of human oversight of the machines they use. We all tend to think computer systems are infallible, because they supposedly cannot make mistakes. And in matters like adding two plus two, I suppose this assumption is usually correct. But they are only machines, after all. And we are all aware, too, of the programmer’s watchword: ‘Garbage in, garbage out.’ ” She would pause here for the obligatory chuckle, then again for the jurors to apply the maxim to loading refractory brick on a truck. “It’s only when a person begins to think that computers and their calculations can incorporate any kind of awareness or common sense, well then, you put yourself on greased rails toward the disaster that occurred at Saint Brigid’s Hospital.”

The foundation’s Board of Directors didn’t care who paid, ultimately, so long as someone did. But until the hospital had actually brought suit, no one had bothered to follow the trail backward from the concrete samples and test borings to the batch plant, to the stone yard, to the software assumptions and the faulty system. Antigone Wells and her associates at Bryant Bridger & Wells had brought in Townsend’s analytical firm, and they had traced the whole unlucky chain and proved that the concrete’s failure was not any kind of unforeseeable circumstance or *force majeure*. None of it was hard to unravel—it had just taken persistence and digging.

Normally, Wells hated going after a family-owned business like Praxis. Such companies tended to be small, honest, mom-and-pop affairs. They were usually underfunded in terms of subsidiary functions and supporting staff, and so vulnerable to

predation by the better-funded giants of the corporate world. Family-owned businesses were traditionally the underdogs that juries loved to favor. But in the case of Praxis Engineering & Construction, the better descriptive would be “privately held.”

Praxis was either the third or fourth largest—depending on how you counted certain state-owned Chinese enterprises—of the world’s civil engineering, architectural design, and construction firms. Praxis had grown rich from the building boom in the Middle East during the past forty years. In the previous decade, they had moved strongly into joint ventures in China and Indonesia. The company’s strength was in projects generally known as “infrastructure”—roads, bridges, transit systems, water and sewage projects, power stations, industrial plants, and medical facilities like Saint Brigid’s.

Once Praxis might have been a small family business—way back in the early 1900s. Then Alexander Praxiteles, a Greek immigrant to the United States and sometime fisherman, had started taking on paving jobs in the new beach communities of Pacifica, Montara, Moss Beach, and El Granada that began springing up as the now-defunct Ocean Shore Railroad made its way from San Francisco down the western side of the Peninsula. But now, more than a century later, the eagle-browed, silver-haired man sitting in court behind the defense table was the surviving grandson of Alexander Praxiteles—whose surname had long since been shortened to “Praxis.” The two gray-haired men sitting at his side were the great-grandsons of that earnest entrepreneur. All of them were prosperous and well-fed. None of them had ever lifted a shovelful of dirt in their lives, other than at some formal groundbreaking using brand-new shovels spray-painted in gold. Antigone Wells would have bet money on that.

She finished questioning her expert witness and turned him over to the Praxis Engineering counsel for what was sure to be a perfunctory cross examination. As she did so, the thought again crossed her mind—although she would never mention it to the jury, even obliquely—that the Praxis people should have settled when St. Brigid’s made their offer. After all, the initial claim had only been for \$140 million, and that was chicken feed in the current economic environment. Then Praxis Engineering & Construction could have gone after the subcontractors themselves for recovery. But instead they had held out from the beginning and then propounded that weak-kneed *force majeure* defense. It only made them appear brazen and callous—not to mention just a little bit stupid. ... And juries loved *that*, too.

\* \* \*

The San Francisco courtroom where the civil trial against his company was being argued was not, John Praxis decided, a place that seemed completely comfortable with technology.

The tables where the lawyers sat were festooned with power cords and data cables leading down from their laptop computers to exposed junction boxes on the floor, rather than more modern, molded-in-place connections. The last-generation WIFI repeater with its upright horns sat on a makeshift shelf above the door to the judge’s chambers, with more wires hanging down. A flat-panel television screen—a full five inches thick, so not the latest generation—was bolted under the clock on the wall that faced the jury box and had its own dangling wires. The computer monitors on the desks of the clerk and bailiff were positioned at odd, oblique angles, so that those officials could perform their duties while still facing the court itself. Only the judge, high above the proceedings, operated in a virtual technology-free zone.

Praxis knew his mind was wandering now. He had been sitting for the past two hours in the folding, theater-style seats for spectators behind the courtroom's central railing. They were surprisingly small seats, more like transplants from a junior high school auditorium. They were too narrow for his hips and too close to the row ahead for his knees. With his six-foot-four-inch frame, Praxis could only perch stiffly upright, unable to cross his legs and afraid to move his arms for poking his sons on either side—and, Heaven knew, Leonard and Richard had resented such familiar contact even as boys.

He looked at his watch. If the testimony of the plaintiff's first witness took more than another hour, then the judge would call a noontime recess and send them all off to lunch. Praxis could wait that long. He was only putting in the obligatory, opening-day appearance. Then he and his sons would leave the whole matter with the attorneys they had on retainer and go back to the corporate headquarters on Steuart Street overlooking the Embarcadero.

The woman speaking now, this Antigone Wells, was a pretty sharp lawyer. While she and her witness patiently worked through the massive snafu that had added refractory brick to concrete aggregate, Praxis recalled the color photographs she had sent scrolling across that big-screen television during her opening statement: cratered floors, collapsed bearing walls, and crumbling parking ramps, alternating with shots of damaged and tilting medical equipment, dented car roofs and hoods, entry doors X'ed across with yellow CAUTION tape, and a sign at the gate reading "CONDEMNED" in big, red letters. Even John Praxis, hardened as he was to lawyers' rhetorical tricks, had to admit it was damned effective.

Antigone Wells was a trim woman. She still had her figure at—what? Fifty-something? Late fifties, probably. She wore her ash-blonde hair meticulously combed back in a wave and tied in a bun, like Tippi Hedren in that old San Francisco movie, *The Birds*. She dressed the part, too, in pastel-colored suits that might have come from Chanel. She even had gray eyes—but not smoky and smoldering, like some of the gray-eyed women Praxis had known. These eyes, when you saw them close up—as he had, during their various meetings for depositions, negotiations and, finally, the settlement offer—were sharp and hard, like agates. And that, too, was a bit of the old Tippi.

He looked at the backs of the heads at the defense table. The team of attorneys representing Praxis Engineering & Construction were hunched over, already defeated even before their turn to cross examine. They had stacks of manila folders in front of them, full of construction orders, waybills, and inspection results. They even had rolled printouts of structural drawings on the old E-size vellum—although, of course, nobody drafted with ruler and T-square on paper anymore; all the design work was done in CAD these days. But still, none of that technical documentation could stand up to those pictures on the big television screen.

Praxis looked slowly from side to side at his two sons. Leonard was the firm's president and chief of operations. Richard was chief financial officer. Both of them sat stone-faced and slit-eyed. To the casual observer at a distance—someone in the jury box, say—they might not even seem to be awake. But Praxis could see beads of sweat at Richard's hairline. The boy was terrified. Good!

A hundred and forty million buck-a-ding-dongs was a terrifying number. And the actual cash amount was only going to go up from there. Since the start of the Continuing Currency Crisis—which the news media promptly shortened to "C3"—a couple of years

ago, the value of money had been eroding faster than a sugar cube in hot tea. In previous inflations, that might have been a good thing: take on a big debt today, watch it become pocket change in a decade or so. But these were modern times, and everyone had access to fast computers. All future payments—and that included jury awards, which would not become final until the verdict was in, as well as any scheme for amortization or delayed distribution—were now made in constant dollars, calculated with the “C\$” button on the latest banking apps, and indexed to the value of money at the point of sale or, in this case, the date of actual loss. By the time this lawsuit played out, PE&C might be in the hole for a billion dollars of current value. While that might not be such a horrific number in the sweet by-and-by, the prospect of it bearing down on future balance sheets gave everyone the heebie-jeebies.

Technically, ultimately, the buck stopped with John Praxis himself as chief executive officer and chairman of the board—for even a private company had bylaws and needed the appearance of being run by a council of elders. However, for the past two years he had been transitioning into an emeritus position, heading for semi-retirement, and was trotted out mainly for diplomatic functions like ribbon cuttings with governors and heads of state. And for buck-forty-million foul-ups—all right, *fuck*-ups—like the St. Brigid’s contract.

At sixty-four years of age, he was now the firm’s strategic thinker and hadn’t involved himself in its daily operations for six or seven years, and not at the technical level, the ground level, for a dozen years more. That level of involvement was where you walked the site, smelled the dirt, and used your eyes and brain and accumulated knowledge from a hundred other sites to know the land and its geology, know which way the water table flowed, and which part of a hill was likely to collapse in a slide. Where you occasionally put a bare hand into the outflow from the cement mixer and rubbed it between your fingers, to know the consistency and quality of the sand and gravel you were pouring. Where you could just look in the eyes of your subcontractors and tell that a braying jackass like Stephen Macedo, their site superintendent on St. Brigid’s, wouldn’t question when his men started patching over cracks in the foundation. Where you could just shake hands with an operator like Howard Chisholm and tell from his distant, distracted manner that he didn’t know where he was getting his aggregate from and, furthermore, didn’t really care, so long as the price was right.

Once John Praxis had those skills, because he’d worked his way up. Despite his standing as the sole male in the family’s third generation, and his holding an advanced engineering degree from Stanford University, his father Sebastian had still made John walk the ground, know the men, and run the numbers on each of his projects. At first, he was only allowed to assist a more experienced project manager. Only later, with experience of his own, did he get to manage the work himself. It was training he should have demanded of his own sons. But Leonard had never been any good at math, had flunked out of engineering while taking calculus and gone into art history, and finally earned a master’s degree in fine arts. He had come into the company on the administrative side, marketing and sales, and worked his way up from there. Richard, on the other hand, had the math skills but preferred the tidy columns of figures in an accounting ledger to the slippery numbers of strain coefficients and cohesion factors. He was a financial genius, John supposed, but he wouldn’t know anything about refractory brick or why it was so dangerous. Neither would Leonard, for that matter.

At least there was some hope with his third child, Callista. She had started as an architect, doodling pretty houses full of Frank Lloyd Wright angles, had quickly grown bored with that, and transferred into architectural engineering. Callie might have smelled a rat at St. Brigid's, but she happened to be in Dubai at the time.

All of which still didn't explain this hundred-forty-megabuck mistake. When Antigone Wells and her team had uncovered the whole sorry story of the crumbling brick, they had offered Praxis Engineering & Construction a settlement. Leonard had turned it down flat. He'd argued, behind closed doors, among the family, that computer glitches like that were simply acts of God. No one's fault and in no way negligence. Hey, the paperwork had all checked out. The Chisholm order said "clean quartz gravel with 4% recycled construction materials." The Yucca waybills all said "clean quartz gravel with 4% recycled construction materials." The two samples they'd taken at the batch plant—by some law of unholy averages—showed "clean quartz gravel with fractional red brick and crushed concrete." So how was anyone to know there was contaminated firebrick all over the site? Leonard hadn't just argued against settling; he'd made it a test of his leadership, his place in the company. And John Praxis had let his first-born son have his way.

In Leonard's defense, and before twenty-twenty hindsight kicked in, it hadn't been much of a settlement. When you added up all the clauses and stipulations, St. Brigid's was asking for \$1.55 on the dollar—which amounted to excess of damages plus court costs. It was an offer that gloated, that screamed, "We've got you nailed, sucker!" And, as the PE&C attorneys had argued, to pay it would amount to an admission of professional negligence—which might make it harder for them to go after the subcontractors.

Now they were all going take a big dump. Praxis had seen it in the jury's eyes as they looked at those slowly repeating pictures. There was just no acceptable explanation for what had happened. And when this case with St. Brigid's was finished, and PE&C had lost, there would be more trials. The insurance bond wouldn't cover the costs and damages, so PE&C in turn would have to sue the suppliers and their computer contractors. Praxis figured the whole thing would end up costing the company somewhere north of three hundred megabucks—or more like \$3.33 on the dollar. And that was before the inflation clock kicked in.

Oh well, it was only money. ... Richard was going to have to give up buying Ferraris for a while. Leonard would have to sell one of his vacation homes and make do without the pretty, twenty-something, live-in housekeeper who came with it. And John himself? He was going home to his lovely wife and have a good, stiff drink.

## 2. The Heart Stops Beating ...

"The Thunderbolt"—as John Praxis would later describe it—struck on the sixth green of the Cliffs course. It was only nine holes, the shortest of the Olympic Club's three golf courses, but the fairways offered sudden, surprising views of the Pacific Ocean. The selection of the Cliffs that morning was part of a strategy, because it allowed someone to comment that the magnificent view must stretch all the way to China.

Ever since he got out of bed, Praxis had been feeling tired and cranky. If it had been merely his choice, he would have stayed home with Adele and read a book or something. But he and his son Richard were scheduled to entertain the visiting Chinese

Minister of Transportation, whose entourage included the president of Shanghai's second largest bank. China was planning to extend its high-speed rail system westward from Chengdu into the Tibet Autonomous Region and Lhasa. With the Continuing Currency Crisis, American labor—especially of the advanced technical kind—was potentially the cheapest in the world, and Praxis Engineering & Construction needed to exploit every opportunity. Essential to their bid strategy was allowing these high-level functionaries to meet with the nominal head of the firm, practically one of its “ancestors,” in a social setting. An ancestor's work, it seemed, was never done.

And besides, Praxis had wanted the opportunity to take Richard aside and ask how they were going to handle the financial fallout of the St. Brigid's mess. The verdict, and the wallop that would come with it, loomed larger each day as the trial drew to a close. But Richard was avoiding him this morning, wasn't even making eye contact, and Praxis had felt himself getting angrier and angrier.

Then he noticed, as he swung his Two Wood for the last time, that his shoulders were feeling achy. Also, he briefly thought he might have pulled a muscle in his left biceps—but he put that down to being out of practice. In truth, he had not touched a club in two weeks, maybe three. By the time he was on the green, however, he was panting—short, sharp, hard breaths—and the fairway wasn't that steep. He thought the two Chinese officials were giving him anxious looks, but Richard was totally involved in his own golf game. Richard played seriously, to win, and not to make nice.

Praxis was staring at his son, wondering why he couldn't at least flub his putts once in a while, so their guests, who were good but not great players, might feel better about themselves, when someone hit him in the chest with a baseball bat. *Wham!* Pain shot across his whole front, as if his ribs and arms were being broken at the same time.

Without remembering exactly how, Praxis was suddenly lying on his side. His vision was cocked. One eye seemed to stare across acres and acres of brilliant green grass, clipped as smooth as a billiard table, while the flag that was held by his caddy, Sam—whom everyone called “Peaches,” either because he had come from Georgia or because he brought peaches from home for a few favored members—was receding into the distance at a million miles an hour. The other eye was looking up at the edge of the tree line, with the soft, misty blue of a San Francisco morning sky looming beyond it, and a sea gull cartwheeling up there, drawing closer and closer.

A face appeared above him, hidden by its own shadow. John Praxis thought he should know that face, but now he just couldn't remember. All he could hear was the screaming of the gull, a single word repeated: “Papa! Papa!” Praxis knew he should be scared, but he was more concerned for that gull and its own sense of panic.

Then somehow he was lying on his back, and a Caterpillar 120 road grader was driving across his chest. The pressure of those massive, cleated tires was making rubble of his bones while the shiny, angled blade cut deeper and deeper.

His vision closed to a tiny white circle, a closeup view of smoothed feathers from the gull's immaculate white breast, which glowed like white neon. And suddenly Johnny Cash was singing, in his ears or in his mind, “Down, down, down ... to a burning ring of fire ...” as the earth sank beneath him and the darkness enfolded him.

\* \* \*

Not until his father fell over on the golf course did Richard Praxis have any idea that something was wrong. The Old Man had always been the strong one, the healthy

specimen, the sturdy oak among the bending, compliant willows and bamboo trees that were other men—including his own children. That morning his father had been playing slowly, sure, but then his golf game was usually careful and methodical, practicing his swings and assessing the ground before each shot. He had been rubbing his left shoulder a bit, but that could just be a touch of neuralgia or bursitis or whatever. There was nothing *wrong* with his father.

When John Praxis toppled sideways, like a statue knocked off its pedestal, Richard suddenly understood the situation was serious. He dropped his putter—barely conscious of how its head nicked his ball and disturbed the lie—and rushed to his father’s side. “Papa!” he called. And again, “Papa!”

His father’s eyes were open, their gaze fixed but at slightly different angles, almost cross-eyed. And he was not breathing—not straining or gasping, just not breathing. Richard realized his father was dying.

“Papa!”

He dug out his cell phone and tossed it to the caddy. “Don’t call nine-one-one,” he instructed. “That just gets you the Highway Patrol and a layer of bureaucracy. Call the clubhouse and tell them to call the nearest hospital with a helipad and arrange a medevac chopper. Get it out here *now*! Put any charges on the Praxis membership.”

Without waiting for the caddy to acknowledge, Richard rolled his father over on his back. It was the first time he had physically touched the Old Man, other than a handshake, in more than twenty years. Richard had taken the company’s mandatory training in office safety and high-rise disaster preparedness, which included basic first aid and cardio-pulmonary resuscitation. He couldn’t remember the rhythm—was it twenty or thirty chest compressions? two or five breath-of-life ventilations?—but he suddenly realized the exact number didn’t matter. He just had to do it.

He crossed his palms over his father’s breastbone and started pumping. He dimly recalled the fire department instructor describing the beat of that old Bee Gee’s song “Stayin’ Alive” as the perfect pace. Push, push, push, push, staying alive! Push, push, push ...

After what he guessed were twenty or so compressions, he pulled open his father’s jaw, used his index finger to probe the airway and depress the tongue—which was rough and dry as sandpaper—took a deep breath, and bent to close his lips around his father’s mouth. He blew as hard as he could, forcing air into his father’s lungs, and out of the corner of his eye saw the chest rise an inch or so. He took another breath and blew. Then he went back to pumping along with the Bee Gees.

As Richard worked, the two Chinese government officials knelt quietly on the grass beside him. When he could spare them a glance, he saw their faces held reverence, even awe. He remembered that Chinese culture valued respect for one’s parents and elders. That was what they were feeling now. Then he put that thought out of his mind and kept on pumping.

A long time later—push, push, push, push, breathe—he could hear the familiar *thwock-thwock-thwock-thwock* and the jingling mechanical whine of a helicopter descending. It took effort not to change his rhythm to match the beat of those blades. A frenzied downwind battered his hair and shirt collar. He glanced over to see skids dig into the perfectly manicured green. After a minute, a pair of hands in purple nitrile gloves at



the end of dark-blue uniform sleeves gripped Richard's arms to stop him and then take over the compressions.

He sat back on his heels. The med tech moved into position above his father while others brought a stretcher from the helicopter.

As they loaded John Praxis through the fuselage doors, Richard confirmed the hospital where he would be taken. He retrieved his cell phone from the caddy and called his office, told his administrative assistant to find his brother Leonard and sister Callie, tell them what had happened, and get them over to the UCSF Medical Center at Mission Bay. Richard himself was allowed to ride in with his father.

Two hours later, with John Praxis still in surgery, the three children sat on the cold, slate-blue vinyl furniture of the waiting area. Callie was next to Richard and held his hand. After he had described giving the Old Man mouth-to-mouth and CPR, she had smiled and murmured, "You saved his life."

Leonard, on the other hand, was unusually quiet. As the time dragged on and still no word came from the doctors, he became restless, crossing and uncrossing his legs, then tapping his fingers. Finally, he signaled to Richard with a toss of his head. He got up, went a short way down a connecting corridor, and paused to let Richard catch up.

"What were you thinking of?" Leonard asked in a fierce whisper.

"What do you mean?" Richard asked, surprised.

"Giving him CPR like that."

"Dad was dying."

"So?"

Richard shook his head, not understanding. What was he supposed to do? They gave everyone the training so that, when the time came, they could all save lives. It was what they expected of you. "I still don't know what you mean," he said.

"People die. It's natural. It was his time."

"You *wanted* him to die?" Richard asked.

"No ... no, of course not. But, after all, he's not that young. How much longer could he expect to live? And it was the perfect opportunity for him—doing something he loved, on a beautiful spring day, no pain, no lingering. He probably didn't even know what hit him."

"But I could save him. The doctors can—"

"Come on! You heard what they said. Massive heart attack. Irreversible tissue damage. Possible *brain* damage. Yes, he could live, but what kind of life? He'll be an invalid, maybe a vegetable, still dying, just more slowly."

"But these days, with transplants—"

"Get real, will you? There are waiting lists, criteria, priorities. Who would assign a fresh, young heart to a man his age?"

"I guess I didn't think about that," Richard said.

"I know, and it's just too bad you didn't."

"Well, would *you* have let him die?"

Leonard's eyes went opaque.

"In hindsight ... yes."

\* \* \*

*Whirrr-Click! ... Whirrr-Click! ... Whirr-Click! ...*

John Praxis came awake slowly to the sound. With each *whirr*, he felt growing pressure in his chest. With each *click*, a little thud and release of the pressure. Over and over again. He still felt pain in there, but it was an ache, a throbbing, like the remembered pain after the dentist had drilled a tooth. Not the deep, cutting pain that went along with the Thunderbolt. This was pain he could handle.

He opened his eyes to the muted wash of fluorescents shielded inside tiny egg crates against blue-white ceiling tiles. He breathed in through his nose and caught the scents of a hospital—fresh vinyl rubbed down with mouthwash. So this wasn't the morgue. So he was awake and not dreaming. Or not *mostly* dreaming.

"How are we doing?" asked a female voice from somewhere above his head.

Praxis thought about this for a long time. "Not dead yet, I gather."

"That's the spirit! But you should go back to sleep now."

"What happened to me? Why do I feel this—?"

"Sleep now. You'll get answers later."

The next time he awoke, the ceiling was different and someone had raised the head of his bed slightly, so he could also see a fair amount of the opposite wall, with a television set mounted high in the corner—its screen dark now. The *whirr* and *click* were still taking place inside his chest. He moved his head to one side and saw a familiar face.

"Hello, Dad." Callista Praxis, who was sitting close to the edge of his bed, put down her magazine and reached for his hand.

He tried to reach for hers and felt a restraining cuff. "What the—?"

"It's to keep you from moving around. Please don't struggle."

"What happened ...?"

"You had a heart attack."

"How ...?" Wait, he already knew the answer to that one—walking uphill on the damned golf course. He changed direction to ask, "How bad?"

"Pretty massive." Callie never could tell a lie. "But they say you'll be all right."

"Adele ...?" He turned his head to look around.

"Mom sat here for twenty-three hours straight. She's gone home to rest."

"Tell her ..." He struggled with the thought. What could he say? *I'm sorry? I love you? I didn't mean to almost die on you?*

"You can tell her yourself in a little bit. Why don't you go back to sleep now?"

He decided to go back to sleep. The *whirr* and *click* were becoming just a white noise that no longer meant anything. The pressure buildup and release inside his chest were like the impacts of his feet on a carpeted floor. No longer the focus of his awareness. There wasn't even any pain.

The third time he awoke, it was to a bright light shining into his right eyeball. Flicking to one side. Flicking back. A large pink thumb was holding his eyelid open.

"Don't do that," he muttered. He tried to push the nuisance away but his hands were still cuffed to the bed.

"Pupil response is good," said a voice.

"Are you a doctor?" Praxis asked.

"I'm Doctor Jamison, from your OR team. I'm just checking vital signs."

"That means I'm still alive, does it?"

"Yes, very much so," the man said.

Praxis looked around. The head of the bed was even higher now. On one side was a window, drapes drawn, dark outside. On the other side a wall with a credenza-thing and a couple of straight-back chairs, now empty. No sign of an enclosing curtain, so he was in a private room, not recovery, not intensive care. That would be good news, wouldn't it? No sign of Callie or the boys, either, so there was no death watch—another good sign?

He looked down at his chest to see what all the *whirring* and *clicking* were about—and saw that the thin front of his hospital gown, lower down below his stomach, was pushed out by strange shapes that pulsed in time with the muted sounds and distant thuds. It took him a minute to interpret those shapes as loops of hose that came up over the edge of the bed, went under his gown, and stopped somewhere ... inside his chest.

"What is that?" he asked, nodding at the hoses.

"Ah ... we need to explain that," Jamison said.

"So explain," Praxis said, using his CEO voice.

"You suffered a major infarction with irreversible end-stage biventricular failure."

"In English, that's a heart attack," Praxis said.

"No, in English, your heart had already died."

So that was to be his epitaph: *Your heart had already died*. Well, truth to tell, John Praxis had secretly been expecting it for a long time. Ever since a bout of rheumatic fever as a child, the doctors had been urging him at the annual checkups to take care of his heart. Then he had experienced a couple of "episodes," ten and eight years ago, that seemed to be the consequence of all that concern. But those events had been nothing like the Thunderbolt. He'd felt tired, weak, short of breath—and had some discomfort in his chest, like heartburn or a spell of indigestion. The doctors had called them "silent" heart attacks and said they were a warning. So he quit smoking entirely, cut way back on his drinking, and started taking exercise—ironically, most of it on the golf course. The doctors had prescribed nitroglycerin pills for him, but when Praxis started feeling so much better, he stopped carrying them. Instead, he paced himself, and whenever he felt weak or tired, he just sat down. The "heart condition" just hadn't been that big a deal. It wasn't as if he was going to *die*.

"That explains my falling over at the Olympic Club," Praxis said. "It doesn't explain those tubes and the whirligig going on inside me."

"When we couldn't get your heart back to a stable rhythm through either stimulation or percutaneous intervention," Jamison said, "we had to open your chest. We found multiple and extensive blockages and areas of previous necrosis. In laymen's terms, your heart was beating on will power alone. We had no alternative but to remove most of the ventricular muscle tissue."

Praxis tried to relate what the doctor was saying to what he felt inside his chest now. "Yet I'm still alive. How so?"

"We replaced your heart with a mechanical device. It's air driven and simulates natural systole and diastole. The hoses you can see are powering it. They're linked to a pump under the bed, which is regulated by an automated blood pressure cuff on your left arm and a fingertip oxygen monitor on your left hand."

Praxis digested all of that. He hadn't even noticed the subtle, alternating pressures on his upper arm as the cuff inflated, took its readings, and then deflated. "How long do I have to wear all this?"

“Until we can find you a replacement heart. We’ve already entered you on the UNOS waiting list.”

“Eunos? Who are they?”

“United Network for Organ Sharing.”

“A waiting list. There’s a wait. ... How long?”

“Well, you understand it’s all speculative at this point.”

“How long?” Praxis insisted, using his command voice again.

“Seventy to ninety days. But, given your age group, that’s really—”

“You’re kidding me. I’m tied to this contraption for *three months*?”

“At least you’re alive. And really, your prognosis is excellent—”

“Yah, but only if I don’t go crazy and try to kill myself first.”

“We’ll make you as comfortable as humanly possible.”

“You can start by getting me a glass of scotch.”

Dr. Jamison hesitated. “Was that a joke?”

“Just wait until I ask for a cigar.”

### About the Author

Thomas T. Thomas is a writer with a career spanning forty years in book editing, technical writing, public relations, and popular fiction writing. Among his various careers, he has worked at a university press, a tradebook publisher, an engineering and construction company, a public utility, an oil refinery, a pharmaceutical company, and a supplier of biotechnology instruments and reagents. He published eight novels and collaborations in science fiction with Baen Books and is now working on more general and speculative fiction. When he's not working and writing, he may be out riding his motorcycle, practicing karate, or wargaming with friends. Catch up with him at [www.thomastthomas.com](http://www.thomastthomas.com).



Photo by  
Robert L. Thomas

### Books by Thomas T. Thomas

#### *eBooks:*

The Professor's Mistress  
The Children of Possibility  
The Judge's Daughter  
Sunflowers  
Trojan Horse

#### *Baen Books and eBooks:*

The Doomsday Effect (as by "Thomas Wren")  
First Citizen  
ME: A Novel of Self-Discovery  
Crygender

#### *Baen Books in Collaboration:*

An Honorable Defense (with David Drake)  
The Mask of Loki (with Roger Zelazny)  
Flare (with Roger Zelazny)  
Mars Plus (with Frederik Pohl)