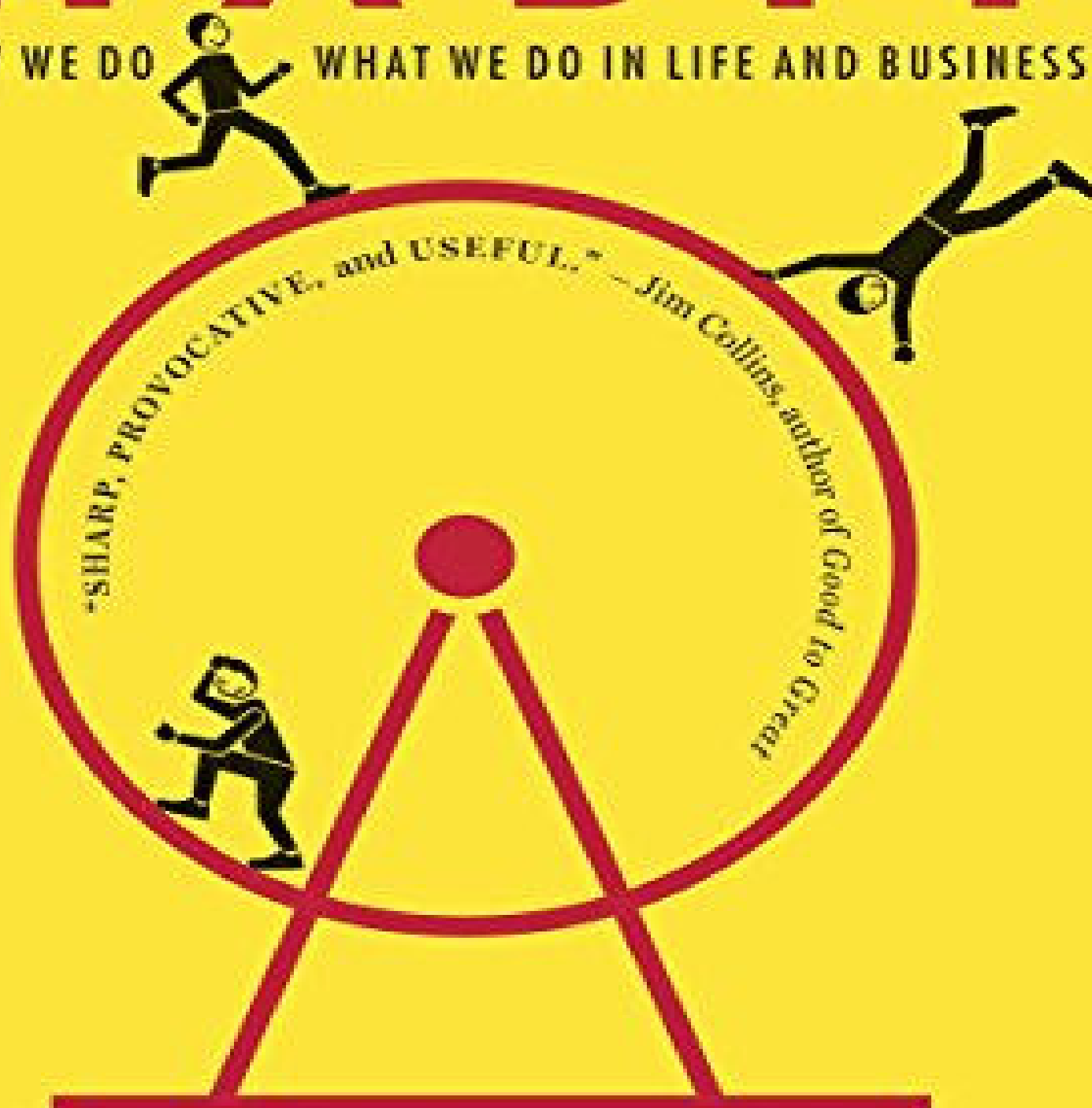


NEW YORK TIMES BESTSELLER

THE POWER OF HABIT

WHY WE DO

WHAT WE DO IN LIFE AND BUSINESS

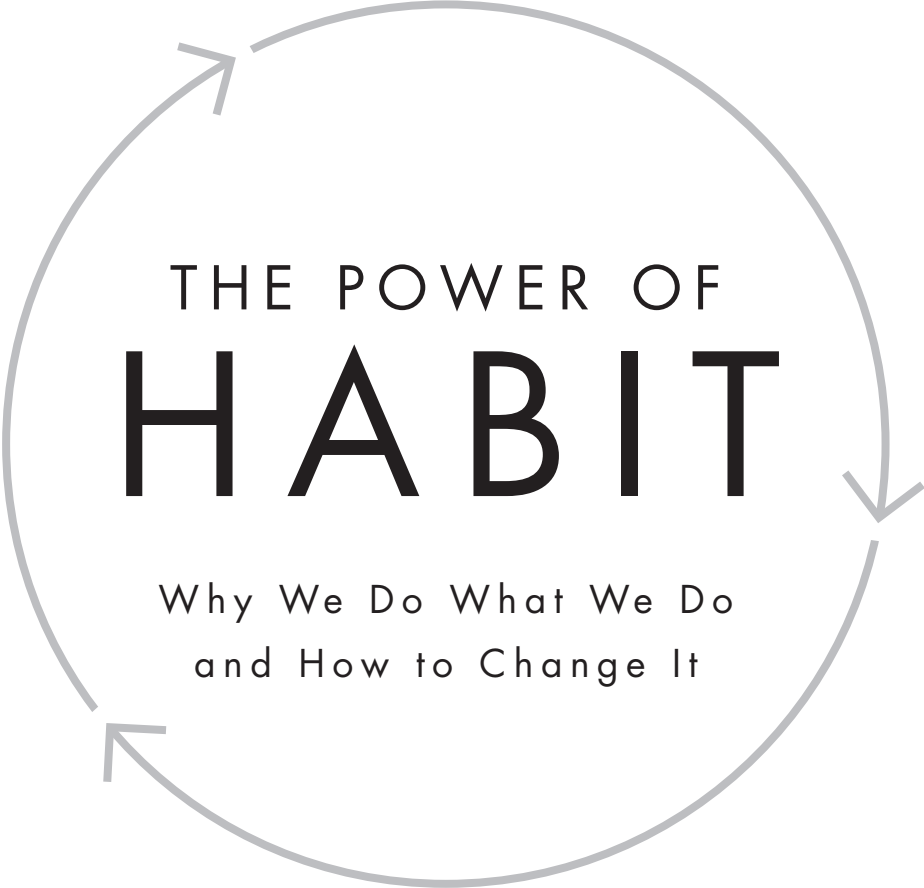


Charles Duhigg

WITH A NEW AFTERWORD BY THE AUTHOR

THE POWER OF HABIT



A large, light gray circular arrow graphic that loops around the title and subtitle, pointing clockwise.

THE POWER OF **HABIT**

Why We Do What We Do
and How to Change It

CHARLES DUHIGG

Random House  New York

This is a work of nonfiction. Nonetheless, some names and personal characteristics of individuals or events have been changed in order to disguise identities. Any resulting resemblance to persons living or dead is entirely coincidental and unintentional.

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*To Oliver, John Harry,
John and Doris,
and, everlastingly, to Liz*



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THE POWER OF HABIT



PROLOGUE

The Habit Cure

She was the scientists' favorite study participant.

Lisa Allen, according to her file, was thirty-four years old, had started smoking and drinking when she was sixteen, and had struggled with obesity for most of her life. At one point, in her mid-twenties, collection agencies were hounding her to recover more than \$10,000 in debts. An old résumé listed her longest job as lasting less than a year.

The woman in front of the researchers today, however, was lean and vibrant, with the toned legs of a runner. She looked a decade younger than the photos in her chart and it seemed likely she could out-exercise anyone in the room. According to the most recent report in her file, Lisa had no outstanding debts, didn't drink, and was in her thirty-ninth month at a graphic design firm.

"How long since your last cigarette?" one of the physicians asked, starting down the list of questions Lisa answered every time she came to this laboratory outside Bethesda, Maryland.

“Almost four years,” she said, “and I’ve lost sixty pounds and run a marathon since then.” She’d also started a master’s degree program and bought a home. It had been an eventful stretch.

The scientists in the room included neurologists, psychologists, geneticists, and a sociologist. For the past three years, with funding from the National Institutes of Health, they had poked and prodded Lisa and more than two dozen other former smokers, chronic over-eaters, problem drinkers, obsessive shoppers, and people with other destructive habits. All of the participants had one thing in common: They had remade their lives in relatively short periods of time. The researchers wanted to understand how. So they measured subjects’ vital signs, installed video cameras inside their homes to watch their daily routines, sequenced portions of their DNA, and, with technologies that allowed them to peer inside people’s skulls in real time, watched as blood and electrical impulses flowed through their brains while they were exposed to temptations such as cigarette smoke and lavish meals. The researchers’ goal was to figure out how habits work on a neurological level—and what it took to make them change.

“I know you’ve told this story a dozen times,” the doctor said to Lisa, “but some of my colleagues have heard it only secondhand. Would you mind describing again how you gave up cigarettes?”

“Sure,” Lisa said. “It started in Cairo.” The vacation had been something of a rash decision, she explained. A few months earlier, her husband had come home from work and announced that he was leaving her because he was in love with another woman. It took Lisa a while to process the betrayal and absorb the fact that she was actually getting a divorce. There was a period of mourning, then a period of obsessively spying on him, following his new girlfriend around town, and calling her after midnight and hanging up. Then there was the evening Lisa showed up at the girlfriend’s house, drunk, pounding on her door and screaming that she was going to burn the condo down.



“It wasn’t a great time for me,” Lisa said. “I had always wanted to see the pyramids, and my credit cards weren’t maxed out yet, so . . .”

On her first morning in Cairo, Lisa woke at dawn to the sound of the call to prayer from a nearby mosque. It was pitch black inside her hotel room. Half blind and jet-lagged, she reached for a cigarette.

She was so disoriented that she didn’t realize—until she smelled burning plastic—that she was trying to light a pen, not a Marlboro. She had spent the past four months crying, binge eating, unable to sleep, and feeling ashamed, helpless, depressed, and angry, all at once. Lying in bed, she broke down. “It was like this wave of sadness overwhelmed me,” she said. “I felt like everything I had ever wanted had crumbled. I couldn’t even smoke right.

“And then I started thinking about my ex-husband, and how hard it would be to find another job when I got back, and how much I was going to hate it and how unhealthy I felt all the time. I got up and knocked over a water jug that shattered on the floor, and I started crying even harder. I felt this desperation, like I had to change something, I had to find at least one thing I could control.”

She showered and left the hotel. As she rode through Cairo’s rutted streets in a taxi and then onto the dirt roads leading to the Sphinx, the pyramids of Giza, and the vast, endless desert around them, her self-pity, for a brief moment, gave way. She needed a goal in her life, she thought. Something to work toward.

So she decided, sitting in the taxi, that she would come back to Egypt and trek through the desert.

It was a crazy idea, Lisa knew. She was out of shape, overweight, with no money in the bank. She didn’t know the name of the desert she was looking at or if such a trip was possible. None of that mattered, though. She needed something to focus on. Lisa decided that she would give herself one year to prepare. And to survive such an expedition, she was certain she would have to make sacrifices.

In particular, she would need to quit smoking.



When Lisa finally made her way across the desert eleven months later—in an air-conditioned and motorized tour with a half-dozen other people, mind you—the caravan carried so much water, food, tents, maps, global positioning systems, and two-way radios that throwing in a carton of cigarettes wouldn't have made much of a difference.

But in the taxi, Lisa didn't know that. And to the scientists at the laboratory, the details of her trek weren't relevant. Because for reasons they were just beginning to understand, that one small shift in Lisa's perception that day in Cairo—the conviction that she *had* to give up smoking to accomplish her goal—had touched off a series of changes that would ultimately radiate out to every part of her life. Over the next six months, she would replace smoking with jogging, and that, in turn, changed how she ate, worked, slept, saved money, scheduled her workdays, planned for the future, and so on. She would start running half-marathons, and then a marathon, go back to school, buy a house, and get engaged. Eventually she was recruited into the scientists' study, and when researchers began examining images of Lisa's brain, they saw something remarkable: One set of neurological patterns—her old habits—had been overridden by new patterns. They could still see the neural activity of her old behaviors, but those impulses were crowded out by new urges. As Lisa's habits changed, so had her brain.

It wasn't the trip to Cairo that had caused the shift, scientists believed, or the divorce or desert trek. It was that Lisa had focused on changing just one habit—smoking—at first. Everyone in the study had gone through a similar process. By focusing on one pattern—what is known as a “keystone habit”—Lisa had taught herself how to reprogram the other automatic routines in her life, as well.

It's not just individuals who are capable of such shifts. When companies focus on changing habits, whole organizations can transform. Firms such as Procter & Gamble, Starbucks, Alcoa, and Target have seized on this insight to influence how work gets done,

how employees communicate, and—without customers realizing it—the way people shop.

“I want to show you one of your most recent scans,” a researcher told Lisa near the end of her exam. He pulled up a picture on a computer screen that showed images from inside her head. “When you see food, these areas”—he pointed to a place near the center of her brain—“which are associated with craving and hunger, are still active. Your brain still produces the urges that made you overeat.

“However, there’s new activity in this area”—he pointed to the region closest to her forehead—“where we believe behavioral inhibition and self-discipline starts. That activity has become more pronounced each time you’ve come in.”

Lisa was the scientists’ favorite participant because her brain scans were so compelling, so useful in creating a map of where behavioral patterns—habits—reside within our minds. “You’re helping us understand how a decision becomes an automatic behavior,” the doctor told her.

Everyone in the room felt like they were on the brink of something important. And they were.



When you woke up this morning, what did you do first? Did you hop in the shower, check your email, or grab a doughnut from the kitchen counter? Did you brush your teeth before or after you tow-eled off? Tie the left or right shoe first? What did you say to your kids on the way out the door? Which route did you drive to work? When you got to your desk, did you deal with email, chat with a colleague, or jump into writing a memo? Salad or hamburger for lunch? When you got home, did you put on your sneakers and go for a run, or pour yourself a drink and eat dinner in front of the TV?

“All our life, so far as it has definite form, is but a mass of habits,” William James wrote in 1892. Most of the choices we make each day

may feel like the products of well-considered decision making, but they're not. They're habits. And though each habit means relatively little on its own, over time, the meals we order, what we say to our kids each night, whether we save or spend, how often we exercise, and the way we organize our thoughts and work routines have enormous impacts on our health, productivity, financial security, and happiness. One paper published by a Duke University researcher in 2006 found that more than 40 percent of the actions people performed each day weren't actual decisions, but habits.

William James—like countless others, from Aristotle to Oprah—spent much of his life trying to understand why habits exist. But only in the past two decades have neurologists, psychologists, sociologists, and marketers really begun understanding how habits *work*—and more important, how they change.

This book is divided into three parts. The first section focuses on how habits emerge within individual lives. It explores the neurology of habit formation, how to build new habits and change old ones, and the methods, for instance, that one ad man used to push toothbrushing from an obscure practice into a national obsession. It shows how Procter & Gamble turned a spray named Febreze into a billion-dollar business by taking advantage of consumers' habitual urges, how Alcoholics Anonymous reforms lives by attacking habits at the core of addiction, and how coach Tony Dungy reversed the fortunes of the worst team in the National Football League by focusing on his players' automatic reactions to subtle on-field cues.

The second part examines the habits of successful companies and organizations. It details how an executive named Paul O'Neill—before he became treasury secretary—remade a struggling aluminum manufacturer into the top performer in the Dow Jones Industrial Average by focusing on one keystone habit, and how Starbucks turned a high school dropout into a top manager by instilling habits designed to strengthen his willpower. It describes why even

the most talented surgeons can make catastrophic mistakes when a hospital's organizational habits go awry.

The third part looks at the habits of societies. It recounts how Martin Luther King, Jr., and the civil rights movement succeeded, in part, by changing the ingrained social habits of Montgomery, Alabama—and why a similar focus helped a young pastor named Rick Warren build the nation's largest church in Saddleback Valley, California. Finally, it explores thorny ethical questions, such as whether a murderer in Britain should go free if he can convincingly argue that his habits led him to kill.

Each chapter revolves around a central argument: Habits can be changed, if we understand how they work.

This book draws on hundreds of academic studies, interviews with more than three hundred scientists and executives, and research conducted at dozens of companies. (For an index of resources, please see the book's notes and <http://www.thepowerofhabit.com>.) It focuses on habits as they are technically defined: the choices that all of us deliberately make at some point, and then stop thinking about but continue doing, often every day. At one point, we all consciously decided how much to eat and what to focus on when we got to the office, how often to have a drink or when to go for a jog. Then we stopped making a choice, and the behavior became automatic. It's a natural consequence of our neurology. And by understanding how it happens, you can rebuild those patterns in whichever way you choose.



I first became interested in the science of habits eight years ago, as a newspaper reporter in Baghdad. The U.S. military, it occurred to me as I watched it in action, is one of the biggest habit-formation experiments in history. Basic training teaches soldiers carefully de-

signed habits for how to shoot, think, and communicate under fire. On the battlefield, every command that's issued draws on behaviors practiced to the point of automation. The entire organization relies on endlessly rehearsed routines for building bases, setting strategic priorities, and deciding how to respond to attacks. In those early days of the war, when the insurgency was spreading and death tolls were mounting, commanders were looking for habits they could instill among soldiers and Iraqis that might create a durable peace.

I had been in Iraq for about two months when I heard about an officer conducting an impromptu habit modification program in Kufa, a small city ninety miles south of the capital. He was an army major who had analyzed videotapes of recent riots and had identified a pattern: Violence was usually preceded by a crowd of Iraqis gathering in a plaza or other open space and, over the course of several hours, growing in size. Food vendors would show up, as well as spectators. Then, someone would throw a rock or a bottle and all hell would break loose.

When the major met with Kufa's mayor, he made an odd request: Could they keep food vendors out of the plazas? Sure, the mayor said. A few weeks later, a small crowd gathered near the Masjid al-Kufa, or Great Mosque of Kufa. Throughout the afternoon, it grew in size. Some people started chanting angry slogans. Iraqi police, sensing trouble, radioed the base and asked U.S. troops to stand by. At dusk, the crowd started getting restless and hungry. People looked for the kebab sellers normally filling the plaza, but there were none to be found. The spectators left. The chanters became dispirited. By 8 P.M., everyone was gone.

When I visited the base near Kufa, I talked to the major. You wouldn't necessarily think about a crowd's dynamics in terms of habits, he told me. But he had spent his entire career getting drilled in the psychology of habit formation.

At boot camp, he had absorbed habits for loading his weapon,

falling asleep in a war zone, maintaining focus amid the chaos of battle, and making decisions while exhausted and overwhelmed. He had attended classes that taught him habits for saving money, exercising each day, and communicating with bunkmates. As he moved up the ranks, he learned the importance of organizational habits in ensuring that subordinates could make decisions without constantly asking permission, and how the right routines made it easier to work alongside people he normally couldn't stand. And now, as an impromptu nation builder, he was seeing how crowds and cultures abided by many of the same rules. In some sense, he said, a community was a giant collection of habits occurring among thousands of people that, depending on how they're influenced, could result in violence or peace. In addition to removing the food vendors, he had launched dozens of different experiments in Kufa to influence residents' habits. There hadn't been a riot since he arrived.

"Understanding habits is the most important thing I've learned in the army," the major told me. "It's changed everything about how I see the world. You want to fall asleep fast and wake up feeling good? Pay attention to your nighttime patterns and what you automatically do when you wake up. You want to make running easy? Create triggers to make it a routine. I drill my kids on this stuff. My wife and I write out habit plans for our marriage. This is all we talk about in command meetings. Not one person in Kufa would have told me that we could influence crowds by taking away the kebab stands, but once you see everything as a bunch of habits, it's like someone gave you a flashlight and a crowbar and you can get to work."

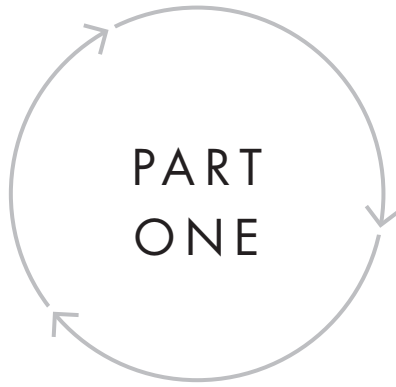
The major was a small man from Georgia. He was perpetually spitting either sunflower seeds or chewing tobacco into a cup. He told me that prior to entering the military, his best career option had been repairing telephone lines, or, possibly, becoming a methamphetamine entrepreneur, a path some of his high school peers had

chosen to less success. Now, he oversaw eight hundred troops in one of the most sophisticated fighting organizations on earth.

“I’m telling you, if a hick like me can learn this stuff, anyone can. I tell my soldiers all the time, there’s nothing you can’t do if you get the habits right.”

In the past decade, what we understand about the neurology of habits and the way patterns work within our lives, societies, and organizations has expanded in ways we couldn’t have imagined fifty years ago. We now know why habits emerge, how they change, and the science behind their mechanics. We know how to break them into parts and rebuild them to our specifications. We understand how to make people eat less, exercise more, work more efficiently, and live healthier lives. Transforming a habit isn’t necessarily easy or quick. It isn’t always simple.

But it is possible. And now we understand how.



The Habits of Individuals





1

THE HABIT LOOP How Habits Work

I.

In the fall of 1993, a man who would upend much of what we know about habits walked into a laboratory in San Diego for a scheduled appointment. He was elderly, a shade over six feet tall, and neatly dressed in a blue button-down shirt. His thick white hair would have inspired envy at any fiftieth high school reunion. Arthritis caused him to limp slightly as he paced the laboratory's hallways, and he held his wife's hand, walking slowly, as if unsure about what each new step would bring.

About a year earlier, Eugene Pauly, or "E.P." as he would come to be known in medical literature, had been at home in Playa del Rey, preparing for dinner, when his wife mentioned that their son, Michael, was coming over.

"Who's Michael?" Eugene asked.

"Your child," said his wife, Beverly. "You know, the one we raised?"

Eugene looked at her blankly. "Who is that?" he asked.



The next day, Eugene started vomiting and writhing with stomach cramps. Within twenty-four hours, his dehydration was so pronounced that a panicked Beverly took him to the emergency room. His temperature started rising, hitting 105 degrees as he sweated a yellow halo of perspiration onto the hospital's sheets. He became delirious, then violent, yelling and pushing when nurses tried to insert an IV into his arm. Only after sedation was a physician able to slide a long needle between two vertebra in the small of his back and extract a few drops of cerebrospinal fluid.

The doctor performing the procedure sensed trouble immediately. The fluid surrounding the brain and spinal nerves is a barrier against infection and injury. In healthy individuals, it is clear and quick flowing, moving with an almost silky rush through a needle. The sample from Eugene's spine was cloudy and dripped out sluggishly, as if filled with microscopic grit. When the results came back from the laboratory, Eugene's physicians learned why he was ill: He was suffering from viral encephalitis, a relatively common disease that produces cold sores, fever blisters, and mild infections on the skin. In rare cases, however, the virus can make its way into the brain, inflicting catastrophic damage as it chews through the delicate folds of tissue where our thoughts, dreams—and according to some, souls—reside.

Eugene's doctors told Beverly there was nothing they could do to counter the damage already done, but a large dose of antiviral drugs might prevent it from spreading. Eugene slipped into a coma and for ten days was close to death. Gradually, as the drugs fought the disease, his fever receded and the virus disappeared. When he finally awoke, he was weak and disoriented and couldn't swallow properly. He couldn't form sentences and would sometimes gasp, as if he had momentarily forgotten how to breathe. But he was alive.

Eventually, Eugene was well enough for a battery of tests. The doctors were amazed to find that his body—including his nervous