PROFILES

DANIEL DENNETT'S *SCIENCE OF THE SOUL*

A philosopher's lifelong quest to understand the making of the mind.

By Joshua Rothman

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Daniel Dennett's naturalistic account of consciousness draws some people in and puts others off. "There ain't no magic here," he says. "Just stage magic." Photograph by Irina Rozovsky for The New Yorker

Four billion years ago, Earth was a lifeless place. Nothing struggled, thought, or wanted. Slowly, that changed. Seawater leached chemicals from rocks; near thermal vents, those chemicals jostled and combined. Some hit upon the trick of making copies of themselves that, in turn, made more copies. The replicating chains were caught in oily bubbles, which protected them and made replication easier; eventually, they began to venture out into the open sea. A new level of order had been achieved on Earth. Life had begun.

The tree of life grew, its branches stretching toward complexity. Organisms developed systems, subsystems, and sub-subsystems, layered in ever-deepening regression. They used these systems to anticipate their future and to change it. When they looked within, some found that they had *selves*—constellations of memories, ideas, and purposes that emerged from the systems inside. They experienced being alive and had thoughts about that experience. They developed language and used it to know themselves; they began to ask how they had been made.

This, to a first approximation, is the secular story of our creation. It has no single author; it's been written collaboratively by scientists over the past few centuries. If, however, it could be said to belong to any single person, that person might be Daniel Dennett, a seventy-four-year-old philosopher who teaches at Tufts. In the course of forty years, and more than a dozen books, Dennett has endeavored to explain how a soulless world could have given rise to a soulful one. His special focus is the creation of the human mind. Into his own he has crammed nearly every related discipline: evolutionary biology, neuroscience, psychology, linguistics, artificial intelligence. His newest book,

"From Bacteria to Bach and Back," tells us, "There is a winding path leading through a jungle of science and philosophy, from the initial bland assumption that we people are physical objects, obeying the laws of physics, to an understanding of our conscious minds."

Dennett has walked that path before. In "Consciousness Explained," a 1991 best-seller, he described consciousness as something like the product of multiple, layered computer programs running on the hardware of the brain. Many readers felt that he had shown how the brain creates the soul. Others thought that he'd missed the point entirely. To them, the book was like a treatise on music that focussed exclusively on the physics of musical instruments. It left untouched the question of how a three-pound lump of neurons could come to possess a point of view, interiority, selfhood, consciousness—qualities that the rest of the material world lacks. These skeptics derided the book as "Consciousness Explained Away." Nowadays, philosophers are divided into two camps. The physicalists believe, with Dennett, that science can explain consciousness in purely material terms. The dualists believe that science can uncover only half of the picture: it can't explain what Nabokov called "the marvel of consciousness—that sudden window swinging open on a sunlit landscape amidst the night of non-being."

Late last year, Dennett found himself among such skeptics at the Edgewater Hotel, in Seattle, where the Canadian Institute for Advanced Research had convened a meeting about animal consciousness. The Edgewater was once a rock-and-roll hangout—in the late sixties and seventies, members of Led Zeppelin were notorious for their escapades there—but it's now plush and sedate, with overstuffed armchairs and roaring fireplaces. In a fourth-floor meeting room with views of Mt. Rainier, dozens of researchers shared speculative work on honeybee brains, mouse minds, octopus intelligence, avian cognition, and the mental faculties of monkeys and human children.

At sunset on the last day of the conference, the experts found themselves circling a familiar puzzle known as the "zombie problem." Suppose that

you're a scientist studying octopuses. How would you know whether an octopus is conscious? It interacts with you, responds to its environment, and evidently pursues goals, but a nonconscious robot could also do those things. The problem is that there's no way to observe consciousness directly. From the outside, it's possible to imagine that the octopus is a "zombie" —physically alive but mentally empty—and, in theory, the same could be true of any apparently conscious being. The zombie problem is a conversational vortex among those who study animal minds: the researchers, anticipating the discussion's inexorable transformation into a meditation on "Westworld," clutched their heads and sighed.

Dennett sat at the seminar table like a king on his throne. Broad-shouldered and imposing, with a fluffy white beard and a round belly, he resembles a cross between Darwin and Santa Claus. He has meaty hands and a sonorous voice. Many young philosophers of mind look like artists (skinny jeans, T-shirts, asymmetrical hair), but Dennett carries a homemade wooden walking stick and dresses like a Maine fisherman, in beat-up boat shoes and a pocketed vest—a costume that gives him an air of unpretentious competence. He regards the zombie problem as a typically philosophical waste of time. The problem presupposes that consciousness is like a light switch: either an animal has a self or it doesn't. But Dennett thinks these things are like evolution, essentially gradualist, without hard borders. The obvious answer to the question of whether animals have selves is that they sort of have them. He loves the phrase "sort of." Picture the brain, he often says, as a collection of subsystems that "sort of" know, think, decide, and feel. These layers build up, incrementally, to the real thing. Animals have

fewer mental layers than people—in particular, they lack language, which Dennett believes endows human mental life with its complexity and texture—but this doesn't make them zombies. It just means that they "sort of" have consciousness, as measured by human standards.

Dennett waited until the group talked itself into a muddle, then broke in. He speaks slowly, melodiously, in the confident tones of a man with answers. When he uses philosophical lingo, his voice goes deeper, as if he were distancing himself from it. "The big mistake we're making," he said, "is taking our congenial, shared understanding of what it's like to be us, which we learn from novels and plays and talking to each other, and then applying it back down the animal kingdom. *Wittgenstein*"—he deepened his voice—"famously wrote, 'If a lion could talk, we couldn't understand him.' But no! If a lion could talk, we'd understand him just fine. He just wouldn't help us understand anything about lions."

"Because he wouldn't be a lion," another researcher said.

"Right," Dennett replied. "He would be so different from regular lions that he wouldn't tell us what it's like to be a lion. I think we should just get used to the fact that the human concepts we apply so comfortably in our everyday lives apply only sort of to animals." He concluded, "The notorious *zombie problem* is just a philosopher's fantasy. It's not anything that we have to take seriously."

"Dan, I honestly get stuck on this," a primate psychologist said. "If you say, well, rocks don't have consciousness, I want to agree with you"—but he found it difficult to get an imaginative grip on the idea of a monkey with a "sort of" mind.

If philosophy were a sport, its ball would be human intuition. Philosophers compete to shift our intuitions from one end of the field to the other. Some intuitions, however, resist being shifted. Among these is our conviction that there are only two states of being: awake or asleep, conscious or unconscious,

alive or dead, soulful or material. Dennett believes that there is a spectrum, and that we can train ourselves to find the idea of that spectrum intuitive.

"If you think there's a fixed meaning of the word 'consciousness,' and we're searching for that, then you're already making a mistake," Dennett said.

"I hear you as skeptical about whether consciousness is useful as a scientific concept," another researcher ventured.

"Yes, yes," Dennett said.

"That's the ur-question," the researcher replied. "Because, if the answer's no, then we should really go home!"

"No, no!" Dennett exclaimed, as the room erupted into laughter. He'd done it again: in attempting to explain consciousness, he'd explained it away.

In the nineteenth century, scientists and philosophers couldn't figure out how nonliving things became living. They thought that living things possessed a mysterious life force. Only over time did they discover that life was the product of diverse physical systems that, together, created something that appeared magical. Dennett believes that the same story will be told about consciousness. He wants to tell it, but he sometimes wonders if others want to hear it.

"The person who tells people how an effect is achieved is often resented, considered a spoilsport, a party-pooper," he wrote, around a decade ago, in a paper called "Explaining the 'Magic' of Consciousness." "If you actually manage to explain consciousness, they say, you will diminish us all, turn us into mere protein robots, mere things." Dennett does not believe that we are "mere *things*." He thinks that we have souls, but he is certain that those souls can be explained by science. If evolution built them, they can be reverse-engineered. "There ain't no magic there," he told me. "Just stage magic."

It's possible to give an account of Dennett's life in which philosophy hardly figures. He is from an old Maine family. By the turn of the eighteenth century, ancestors of his had settled near the border between Maine and New Hampshire, at a spot now marked by Dennett Road. Dennett and his wife, Susan, live in North Andover, Massachusetts, a few minutes' drive from Tufts, where Dennett co-directs the Center for Cognitive Studies. But, in 1970, they bought a two-hundred-acre farm in Blue Hill, about five hours north of Boston. The Dennetts are unusually easygoing and sociable, and they quickly became friends with the couple next door, Basil and Bertha Turner. From Basil, Dennett learned to frame a house, shingle a roof, glaze a window, build a fence, plow a field, fell a tree, butcher a hen, dig for clams, raise pigs, fish for trout, and call a square dance. "One thing about Dan—you don't have to tell him twice," Turner once remarked to a local mechanic. Dennett still cherishes the compliment.

In the course of a few summers, he fixed up the Blue Hill farmhouse himself, installing plumbing and electricity. Then, for many years, he suspended his academic work during the summer in order to devote himself to farming. He tended the orchard, made cider, and used a Prohibition-era still to turn the cider into Calvados. He built a blueberry press, made blueberry wine, and turned it into aquavit. "He loves to hand down word-of-mouth knowledge," Steve Barney, a former student who has become one of the Dennetts' many "honorary children," says. "He taught me how to use a chain saw, how to prune an apple tree, how to fish for mackerel, how to operate a tractor, how to whittle a wooden walking stick from a single piece of wood." Dennett is an avid sailor; in 2003, he bought a boat, trained his students to sail, and raced with them in a regatta. Dennett's son, Peter, has worked for a tree surgeon and a fish biologist, and has been a white-water-rafting guide; his daughter, Andrea, runs an industrial-plumbing company with her husband.

A few years ago, the Dennetts sold the farm to buy a nearby waterfront home, on Little Deer Isle. On a sunny morning this past December, fresh

snow surrounded the house; where the lawn met the water, a Hobie sailboat lay awaiting spring. Dennett entered the sunlit kitchen and, using a special, broad-tined fork, carefully split an English muffin. After eating it with jam, he entered his study, a circular room on the ground floor decorated with sailboat keels of different shapes. A close friend and Little Deer Isle visitor, the philosopher and psychologist Nicholas Humphrey, had e-mailed a draft of an article for Dennett to review. The two men are similar—Humphrey helped discover blindsight, studied apes with Dian Fossey, and was, for a year, the editor of *Granta*—but they differ on certain points in the philosophy of consciousness. "Until I met Dan," Humphrey told me, "I never had a philosophical hero. Then I discovered that not only was he a better philosopher than me; he was a better singer, a better dancer, a better tennis player, a better pianist. There is nothing he does not do."

Dennett annotated the paper on his computer, and then called Humphrey on his cell phone to explain that the paper was so useful because it was so *wrong*. "I see how I can write a reaction that is not so much a rebuttal as a rebuilding on your foundations," he said, mischievously. "Your exploration has helped me see some crucial joints in the skeleton. I hope that doesn't upset you!" He laughed, and invited Humphrey and his family to come over later that day.

He then turned to a problem with the house. Something was wrong with the landline; it had no dial tone. The key question was whether the problem lay with the wiring inside the house or with the telephone lines outside. Picking up his walking stick and a small plastic telephone, he went out to explore. Dennett has suffered a heart attack and an aortic dissection; he is robust, but walks slowly and is sometimes short of breath. Carefully, he made his way to a little gray service box, pried it open using a multitool, and plugged in the handset. There was no dial tone; the problem was in the outside phone lines. Harrumphing, he glanced upward to locate them: another new joint in the skeleton.

During the course of his career, Dennett has developed a way of looking at

the process by which raw matter becomes functional. Some objects are mere assemblages of atoms to us, and have only a physical dimension; when we think of them, he says, we adopt a "physicalist stance"—the stance we inhabit when, using equations, we predict the direction of a tropical storm. When it comes to more sophisticated objects, which have purposes and functions, we typically adopt a "design stance." We say that a leaf's "purpose" is to capture energy from sunlight, and that a nut and bolt are designed to fit together. Finally, there are objects that seem to have beliefs and desires, toward which we take the "intentional stance." If you're playing chess with a chess computer, you don't scrutinize the conductive properties of its circuits or contemplate the inner workings of its operating system (the physicalist and design stances, respectively); you ask how the program is thinking, what it's planning, what it "wants" to do. These different stances capture different levels of reality, and our language reveals which one we've adopted. We say that proteins fold (the physicalist stance), but that eyes see (the design stance). We say that the chess computer "anticipated" our move, that the driverless car "decided" to swerve when the deer leaped into the road.

Later, at a rickety antique table in the living room, Dennett taught me a word game he'd perfected called Frigatebird. Real frigate birds swoop down to steal fish from other birds; in Frigatebird, you steal words made of Scrabble tiles from your opponents. To do so, you use new letters to transform their stems: you can't steal "march" by making "marched," but you can do it by making "charmed." As we played, I tried to attend to the workings of my own mind. How did I know that I could use the letters "u," "t," and "o" to transform Dennett's "drain" into "duration"? I couldn't quite catch myself in the act of figuring it out. To Dennett, this blindness reflects the fact that we take the intentional stance toward ourselves. We experience ourselves at the level of thoughts, decisions, and intentions; the machinery that generates those higher-order properties is obscured. Consciousness is defined as much by what it hides as by what it reveals. Over two evenings, while drinking gin on the rocks with a twist—a "sort of" cocktail—we played

perhaps a dozen games of Frigatebird, and I lost every time. Dennett was patient and encouraging ("You're getting the hang of it!"), even as he transformed my "quest" into "equations."

A running joke among people who study consciousness is that Dennett himself might be a zombie. ("Only a zombie like Dennett could write a book called 'Consciousness Explained' that doesn't address consciousness at all," the computer scientist Jaron Lanier has written.) The implicit criticism is that Dennett's account of consciousness treats the self like a computer and reflects a disengagement from things like feeling and beauty. Dennett seems wounded by this idea. "There are those wags who insist that I was born with an impoverished mental life," he told me. "That ain't me! I seem to be drinking in life's joys pretty well."

Dennett's full name is Daniel Clement Dennett III. He was born in Boston in 1942. His father, Daniel C. Dennett, Jr., was a professor of Islamic history, who, during the Second World War, was recruited by the Office of Strategic Services and became a secret agent. Dennett spent his early childhood in Beirut, where his father posed as a cultural attaché at the American Embassy. In Beirut, he had a pet gazelle named Babar and learned to speak some Arabic. When he was five, his father was killed in an unexplained plane crash while on a mission in Ethiopia. In Dennett's clearest memory of him, they're driving through the desert in a Jeep, looking for a group of Bedouins; when they find the camp, some Bedouin women take the young Dennett aside and pierce his ears. (The scars are still visible.)

After his father's death, Dennett returned to the Boston suburbs with his mother and his two sisters. His mother became a book editor; with some guidance from his father's friends, Dennett became the man of the house. He had his own workshop and, aged six, used scraps of lumber to build a small table and chair for his Winnie-the-Pooh. As he fell asleep, he would listen to his mother play Rachmaninoff's Piano Prelude No. 6 in E-Flat Major.

Today, the piece moves him to tears—"I've tried to master it," he says, "but I could never play it as well as she could." For a while, Dennett made money playing jazz piano in bars. He also plays the guitar, the acoustic bass, the recorder, and the accordion, and can still sing the a-cappella tunes he learned, in his twenties, as a member of the Boston Saengerfest Men's Chorus.

As a Harvard undergraduate, Dennett wanted to be an artist. He pursued painting, then switched to sculpture; when he met Susan, he told her that she had nice shoulders and asked if she would model for him. (She declined, but they were married two years later.) A photograph taken in 1963, when Dennett was a graduate student, shows him trim and shirtless in a courtyard in Athens, smoking a pipe as he works a block of marble. Although he succeeded in exhibiting some sculptures in galleries, he decided that he wasn't brilliant enough to make a career in art. Still, he continued to sculpt, throw pots, build furniture, and whittle. His whittlings are finely detailed; most are meant to be handled. A life-size wooden apple comes apart, in cross-sections, to reveal a detailed stem and core; a fist-size nut and bolt turn smoothly on minute, perfectly made threads. (Billed as "haptic sculptures," the whittles are currently on display at Underdonk, a gallery in Brooklyn.)

Dennett studied philosophy as an undergraduate with W. V. O. Quine, the Harvard logician. His scientific awakening came later, when he was a graduate student at Oxford. With a few classmates, he found himself debating what happens when your arm falls asleep. The others were discussing the problem in abstract, philosophical terms—"sensation," "perception," and the like—which struck Dennett as odd. Two decades earlier, the philosopher Gilbert Ryle, Dennett's dissertation adviser, had coined the phrase "the ghost in the machine" to mock the theory, associated with René Descartes, that our physical bodies are controlled by immaterial souls. The other students were talking about the ghost; Dennett wanted to study the machine. He began teaching himself neuroscience the next day. Later, with the help of various academic friends and neighbors, Dennett

learned about psychology, computer programming, linguistics, and artificial intelligence—the disciplines that came to form cognitive science.

One of Dennett's early collaborators was Douglas Hofstadter, the polymath genius whose book about the mind, "Gödel, Escher, Bach: An Eternal Golden Braid," became an unlikely best-seller in 1979. "When he was young, he played the philosophy game very strictly," Hofstadter said of Dennett. "He studied the analytic philosophers and the Continental philosophers and wrote pieces that responded to them in the traditional way. But then he started deviating from the standard pathway. He became much more informed by science than many of his colleagues, and he grew very frustrated with the constant, prevalent belief among them in such things as zombies. These things started to annoy him, and he started writing piece after piece to try to destroy the myths that he considered these to be—the religious residues of dualism."

Arguments, Dennett found, rarely shift intuitions; it's through stories that we revise our sense of what's natural. (He calls such stories "intuition pumps.") In 1978, he published a short story called "Where Am I?," in which a philosopher, also named Daniel Dennett, is asked to volunteer for a dangerous mission to disarm an experimental nuclear warhead. The warhead, which is buried beneath Tulsa, Oklahoma, emits a kind of radiation that's safe for the body but lethal to the brain. Government scientists decide on a radical plan: they separate Dennett's brain from his body, using radio transmitters implanted in his skull to allow the brain, which is stored in a vat in Houston, to control the body as it approaches the warhead. "Think of it as a mere stretching of the nerves," the scientists say. "If your brain were just moved over an inch in your skull, that would not alter or impair your mind. We're simply going to make the nerves indefinitely elastic by splicing radio links into them."

After the surgery, Dennett is led into the brain-support lab:

I peered through the glass. There, floating in what looked like ginger ale, was undeniably a human brain, though it was almost covered with printed circuit chips, plastic tubules, electrodes, and other paraphernalia. . . . I thought to myself: "Well, here I am sitting on a folding chair, staring through a piece of plate glass at my own brain. . . . But wait," I said to myself, "shouldn't I have thought, 'Here I am, suspended in a bubbling fluid, being stared at by my own eyes'?" . . . . I tried and tried to think myself into the vat, but to no avail.

Toward the end of the story, the radio equipment malfunctions, and Dennett's point of view is instantly relocated. It is "an impressive demonstration of the immateriality of the soul, based on physicalist principles and premises," he writes, "for as the last radio signal between Tulsa and Houston died away, had I not changed location from Tulsa to Houston at the speed of light?" The story contains only neurons and machines, and is entirely materialist; even so, it shows that you aren't situated "in" your brain the same way you're situated "in" a room. It also suggests that the intuitions upon which philosophers so confidently rely are actually illusions created by an elaborate system of machinery.

Only rarely do cracks in the illusion of consciousness appear through which one might see the machinery at work. Proust inspected the state between sleep and wakefulness. Coleridge experimented with mind-altering drugs. Neuroscientists examine minds compromised by brain injury. Dennett's approach has been to look back into evolutionary history. In the minds of other animals, even insects, Dennett believes, we can see the functional components upon which our selfhood depends. We can also see the qualities we value most in human selfhood in "sort of" form. Even free will, he thinks, evolves over evolutionary time. Your amygdala, the part of the brain that registers fear, may not be free in any meaningful sense—it's effectively a robot—but it endows the mind to which it belongs with the ability to avoid danger. In this way, the winding path leads from determinism to freedom, too: "A whole can be *freer* than its parts."

long with Richard Dawkins, Sam Harris, and the late Christopher Hitchens, I

Yet Dennett is also comfortable with religion—even, in some ways, nostalgic for it. Like his wife, he was brought up as a Congregationalist, and although he never believed in God, he enjoyed going to church. For much of his life, Dennett has sung sacred music in choirs (he gets misty-eyed when he recalls singing Bach's "St. Matthew Passion"). He and Susan tried sending their children to Sunday school, so that they could enjoy the music, sermons, and Bible stories, but it didn't take. Dennett's sister Cynthia is a minister: "A saintly person," Dennett says, admiringly, "who's a little annoyed by her little brother."

The materialist world view is often associated with despair. In "Anna Karenina," Konstantin Levin, the novel's hero, stares into the night sky, reflects upon his brief, bubblelike existence in an infinite and indifferent universe, and contemplates suicide. For Dennett, however, materialism is spiritually satisfying. In a 1995 book called "Darwin's Dangerous Idea," he asks, "How long did it take Johann Sebastian Bach to create the 'St. Matthew Passion'?" Bach, he notes, had to live for forty-two years before he could begin writing it, and he drew on two thousand years of Christianity —indeed, on all of human culture. The subsystems of his mind had been evolving for even longer; creating *Homo sapiens,* Dennett writes, required "billions of years of *irreplaceable* design work"—performed not by God, of course, but by natural selection.

"Darwin's dangerous idea," Dennett writes, is that Bach's music, Christianity, human culture, the human mind, and *Homo sapiens* "all exist as fruits of a single tree, the Tree of Life," which "created itself, not in a miraculous, instantaneous whoosh, but slowly, slowly." He asks, "Is this Tree of Life a God one could worship? Pray to? Fear? Probably not." But, he says, it is "greater than anything any of us will ever conceive of in detail worthy of its detail. . . . I could not pray to it, but I can stand in affirmation of its magnificence. This world is sacred."

Almost every December for the past forty years, the Dennetts have held a black-tie Christmas-carolling party at their home. This year, snow was falling as the guests arrived; the airy modern shingle-style house was decorated like a Yuletide bed-and-breakfast, with toy soldiers on parade. In the kitchen, a small robotic dog-on-wheels named Tati huddled nonfunctionally; the living-room bookshelf displayed a set of Dennett-made Russian dolls—Descartes on the outside, a ghost in the middle, and a robot inside the ghost.

Dennett, dapper in his tuxedo, mingled with the guests. With a bearded, ponytailed postdoc, he considered some mysteries of monkey consciousness; with his silver-haired neighbors, many of whom had attended the party annually since 1976, he discussed the Patriots and the finer points of apple brandy. After a potluck dinner, he called everyone over to the piano, where Mark DeVoto, a retired music professor, was noodling on "O Come, All Ye Faithful." From piles on a Dennett-built coffee table, Dennett and his wife distributed homemade books of Christmas carols.

"Hello!" Dennett said. "Are we ready?" Surrounded by friends, he was grinning from ear to ear. "Let's go. We'll start with 'O Come, All Ye Faithful.' First verse in English, second in Latin!"

Earlier, I'd asked Susan Dennett how their atheism would shape their carol-singing. "When we get to the parts about the Virgin, we sometimes sing with our eyebrows raised," she said. In the event, their performance was unironic. Dennett, a brave soloist, sang beautifully, then apologized for his voice. The most arresting carol was a tune called "O Hearken Ye." Dennett sang the words "*Gloria, gloria / In excelsis Deo*" with great seriousness, his hands at his sides, his eyes faraway. When the carol faded into an appreciative silence, he sighed and said, "Now, that's a beautiful hymn."

Dennett has a philosophical arch-nemesis: an Australian named David Chalmers. Chalmers, who teaches at N.Y.U. and at the Australian

National University, believes that Dennett only "sort of" understands consciousness. In his view, Dennett's theories don't adequately explain subjective experience or why there is an inner life in the first place.

Chalmers and Dennett are as different as two philosophers of mind can be. Chalmers wears a black leather jacket over a black T-shirt. He believes in the zombie problem and is the lead singer of a consciousness-themed rock band that performs a song called "The Zombie Blues." ("I act like you act, I do what you do. . . . / What consciousness is, I ain't got a clue / I got the Zombie Blues.") In his most important book, "The Conscious Mind," published in 1996, Chalmers accused Dennett and the physicalists of focussing on the "easy problems" of consciousness—questions about the workings of neurons or other cognitive systems—while ignoring the "hard problem." In a formulation he likes: "How does the water of the brain turn into the wine of consciousness?" Since then, the "hard problem" has been a rallying cry for those philosophers who think that Dennett's view of the mind is incomplete.

Consider your laptop. It's processing information but isn't having experiences. Now, suppose that every year your laptop gets smarter. A few years from now, it may, like I.B.M.'s Watson, win "Jeopardy!" Soon afterward, it may have meaningful conversations with you, like the smartphone voiced by Scarlett Johansson in "Her." Johansson's character is conscious: you can fall in love with her, and she with you. There's a soul in that phone. But how did it get there? How was the inner space of consciousness opened up within the circuits and code? This is the hard problem. Dennett regards it, too, as a philosopher's fantasy. Chalmers thinks that, at present, it is insurmountable. If it's easy for you to imagine a conscious robot, then you probably side with Dennett. If it's easier to imagine a robot that only *seems* conscious, you're probably with Chalmers.

A few years ago, a Russian venture capitalist named Dmitry Volkov organized a showdown between Dennett and Chalmers near Disko Island,

off the west coast of Greenland. Before making a fortune investing in Shazam and in the Russian version of PayPal, Volkov was a graduate student in philosophy at Moscow State University, where he wrote a dissertation on Dennett's work. Now he chartered a hundred-and-sixty-eight-foot schooner, the S/V Rembrandt van Rijn, and invited Dennett, Chalmers, and eighteen other philosophers on a weeklong cruise, along with ten graduate students. Most of the professional philosophers were materialists, like Dennett, but the graduate students were uncommitted. Dennett and Chalmers would compete for their allegiance.

In June, when the Arctic sun never sets, the lowlands of Disko are covered with flowering angelica. The philosophers piled into inflatable boats to explore the fjords and the tundra. The year before, in the *Journal of Consciousness Studies*, Dennett had published a paper called "The Mystery of David Chalmers," in which he proposed seven reasons for Chalmers's resistance to his views, among them a fear of death and a pointless desire to "pursue exhaustively nuanced analyses of our intuitions." This had annoyed Chalmers, but on the cruise the two philosophers were still able to marvel, companionably, at the landscape's alien beauty. Later, everyone gathered in the Rembrandt's spacious galley, where Volkov, a slim, voluble man in sailor's stripes, presided over an intellectual round-robin. Each philosopher gave a talk summarizing another's work; afterward, the philosopher who had been summarized responded and took questions.

Andy Clark, a lean Scottish philosopher with a punk shock of pink hair, summarized Dennett's views. He wore a T-shirt depicting a peacock with a tail made of screwdrivers, wrenches, and other tools. "It obviously looks like something quite colorful and full of complexity and 'peacockness,' " he said. "But, if you look more closely, that complexity is actually built out of a number of little devices."

"A Swiss Army peacock!" Dennett rumbled, approvingly. He was in his element: he loves parties, materialism, and the sea.

After the introduction and summarizing part was over, Chalmers, carrying a can of Palm Belgian ale, walked to the front of the room and began his remarks. Neurobiological explanations of consciousness focus on brain functions, he said. But, "when it comes to explaining consciousness, one needs to explain more than the functions. There are *introspective* data—data about what it's like to be a conscious subject, what it's like experiencing *now* and hearing *now*, what it's like to have an emotion or to hear music." He continued, "There are some people, like Dan Dennett, who think that all we need to explain is the functions. . . . Many people find that this is not taking consciousness seriously." Lately, he said, he had been gravitating toward "pan-proto-psychism"—the idea that consciousness might be "a fundamental property of the universe" upon which the brain somehow draws. It was a strange idea, but, then, consciousness *was* strange.

Andy Clark was the first to respond. "You didn't actually give us any positives for pan-psychism," he said. "It was kind of the counsel of despair."

Jesse Prinz, a blue-haired philosopher from CUNY, seemed almost enraged. "Positing dualism leads to no further insights and discoveries!" he said.

Calmly, nursing his beer, Chalmers responded to his critics. He said that he *could* make a positive case for pan-proto-psychism, pointed out that his position wasn't necessarily antimaterialist (a pan-psychic force could be perfectly material, like electromagnetism), and declared that he was all in favor of more neuroscientific research.

Dennett had lurked off to the side, stolid and silent, but he now launched into an argument about perspective. He told Chalmers that there didn't have to be a hard boundary between third-person explanations and first-person experience—between, as it were, the description of the sugar molecule and the taste of sweetness. Why couldn't one see oneself as taking two different stances toward a single phenomenon? It was possible, he said, to be "neutral about the metaphysical status of the data." From the outside, it looks like

neurons; from the inside, it feels like consciousness. Problem solved.

Chalmers was unconvinced. Pacing up and down the galley, he insisted that "merely cataloguing the third-person data" could not explain the existence of a first-person point of view.

Dennett sighed and, leaning against the wall, weighed his words. "I don't see why it isn't an embarrassment to your view," he said, "that you can't name a kind of experiment that would get at 'first-personal data,' or 'experiences.' That's all I ask—give me a single example of a scientifically respectable experiment!"

"There are any number of experiments!" Chalmers said, heatedly. When the argument devolved into a debate about different kinds of experimental setups, Dennett said, "I think maybe this session is over, don't you? It's time to go to the bar!" He looked to Chalmers, who smiled.

Among the professional philosophers, Dennett seemed to have won a narrow victory. But a survey conducted at the end of the cruise found that most of the grad students had joined Team Chalmers. Volkov conjectured that for many people, especially those who are new to philosophy, "it's the question of the soul that's driving their opinions. It's the value of human life. It's the question of the special position of humans in the world, in the universe."

Despite his affability, Dennett sometimes expresses a weary frustration with the immovable intuitions of the people he is trying to convince. "You shouldn't trust your intuitions," he told the philosophers on the Rembrandt. "Conceivability or inconceivability is a life's work—it's not something where you just screw up your head for a second!" He feels that Darwin's central lesson—that everything in biology is gradual; that it arrives "not in a miraculous, instantaneous whoosh, but slowly, slowly"—is too easily swept aside by our categorical habits of mind. It could be that he is struggling with the nature of language, which imposes a hierarchical clarity upon the world that's powerful but sometimes false. It could also be that he is wrong. For

him, the struggle—a Darwinian struggle, at the level of ideas—continues. "I have devoted half a century, my entire academic life, to the project, in a dozen books and hundreds of articles tackling various pieces of the puzzle, without managing to move all that many readers from wary agnosticism to calm conviction," he writes, in "From Bacteria to Bach and Back." "Undaunted, I am trying once again."

For many years, I took Chalmers's side in this dispute. I read Dennett's "Consciousness Explained," but I felt that something crucial was missing. I couldn't understand how neurons—even billions of neurons—could generate the experience of being *me*. Terrence Deacon, an anthropologist who writes about consciousness and neuroscience, refers to "the Cartesian wound that separated mind from body at the birth of modern science." For a long time, not even the profoundly informed arguments that Dennett advanced proved capable of healing that wound.

Then, late last year, my mother had a catastrophic stroke. It devastated the left side of her brain, wrecking her parietal and temporal lobes and Broca's area—parts of the brain that are involved in the emotions, the senses, memory, and speech. My mother now appears to be living in an eternal present. She can say only two words, "water" and "time." She is present in the room—she looks me in the eye—but is capable of only fleeting recognition; she knows only that I am someone she should recognize. She grasps the world, but lightly.

As I spent time with my mother, I found that my intuitions were shifting to Dennett's side of the field. It seems natural to say that she "sort of" thinks, knows, cares, remembers, and understands, and that she is "sort of" conscious. It seems obvious that there is no "light switch" for consciousness: she is present and absent in different ways, depending on which of her subsystems are functioning. I still can't quite picture how neurons create consciousness. But, perhaps because I can take a stance toward my mother

that I can't take toward myself, my belief in the "hard problem" has dissolved. On an almost visceral level, I find it easier to accept the reality of the material mind. I have moved from agnosticism to calm conviction.

On a morning this past winter, Dennett sat in an armchair in his Maine living room. The sky and the water were blue and bright. He'd acquired two copies of the Ellsworth *American*, the local newspaper; later, he and Susan would sit by the fireplace and compete to see who could finish the crossword first. In the meantime, he was thinking about the nature of understanding. He recalled a time, many years ago, when he found himself lecturing a group of physicists. He showed them a slide that read "*E=mc*^2^" and asked if anyone in the audience understood it. Almost all of the physicists raised their hands, but one man sitting in the front protested. "Most of the people in this room are experimentalists," he said. "They think they understand this equation, but, really, they don't. The only people who really understand it are the theoreticians."

"Understanding, too, comes in degrees," Dennett concluded, back in his Maine living room. "So how do you take that last step? What if the answer is: 'Well, you can only sort of take it'?" Physics, Dennett said, tells us that there are more than three dimensions, and we can use math to prove they're there; at the same time, we struggle to picture them in our heads. That doesn't mean they're not real. Perhaps, he thought, the wholly material soul is similarly hard to imagine. "I'm not ready to say it's unimaginable, because there are times when I think I can imagine it," he said, "and then it doesn't seem to be such a big leap at all. But—it is."

Before the morning slipped away, Dennett decided to go out for a walk, down to where the lawn ended and a rocky beach began. He'd long delighted in a particular rock formation, where a few stones were piled just so, creating a peephole. He was disappointed to find that the tides had rearranged the stones, and that the hole had disappeared. The dock was pulled ashore for the winter, its parts stacked next to his sailboat. He walked down the steps

anyway, occasionally leaning on his walking stick. For a few minutes, he stood at the bottom, savoring the frigid air, the lapping water, the dazzling sun. ♦

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