

# IN A PERPETUAL

THE STRANGE CASE OF THE WOMAN WHO COULDN'T REMEMBER HER PAST—AND CAN'T IMAGINE HER FUTURE.

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LIKE MANY AMERICAN couples of modest but comfortable means, Susie McKinnon and her husband, Eric Green, discovered the joys of cruise vacations in middle age. Their home in a quiet suburb of Olympia, Washington, is filled with souvenirs and trinkets from their travels. There's a plastic lizard in the master bathroom with the words "Cayman Islands" painted on it. From Curaçao there's a framed patchwork collage made of oilcloth hanging in the entrance hall. On the gray summer day when I visit them, we all sit comfortably in their living room, Green decked out in a bright shirt with "Bermuda Islands" emblazoned on it, from a cruise in 2013. As they regale me with talk of their younger selves and their trips to Jamaica, Aruba, Cozumel, and Mazatlán, they present the very picture of well-adjusted adulthood on the verge of retirement.

Except for one fairly major thing.

As we chat, McKinnon makes clear that she has no memories of all those cruises. No memories of buying the lizard or finding that oilcloth collage. She doesn't remember any vacation she's ever taken. In fact, she cannot recall a single moment in her marriage to Green or before it.

Before you start to brace yourself for one of *those* stories—about the onset of dementia, the slow dissolve of a marriage into a relationship of unrequited love, the loss of self—let me reassure you: McKinnon hasn't lost anything. She's *never* been able to remember those experiences.

For decades, scientists suspected that someone like Susie McKinnon might exist. They figured she was probably out there, living an ordinary life—hard to tell apart from the next person in line at the grocery store, yet fundamentally different from the rest of us. And sure enough, they found her (or rather, she found them) in 2006.

McKinnon is the first person ever identified with a condition called severely deficient autobiographical memory. She knows plenty of facts about her life, but she lacks the ability to mentally relive any

of it, the way you or I might meander back in our minds and evoke a particular afternoon. She has no episodic memories—none of those impressionistic recollections that feel a bit like scenes from a movie, always filmed from your perspective. To switch metaphors: Think of memory as a favorite book with pages that you return to again and again. Now imagine having access only to the index. Or the Wikipedia entry.

“I know bits and pieces of stuff that happened,” McKinnon says of her own childhood. But none of it bears a vivid, first-person stamp. “I don’t remember being shorter or smaller or having to reach up for things. I have no images or impressions of myself as a kid.” She finds herself guessing a lot at what her experiences must have been like: She assumes the Cayman Islands were hot. Perhaps she and Green walked around a lot there. “It was probably sometime between 2000 and 2010,” she ventures.

The way McKinnon experiences life scrambles much of what we presume is essential to being human. No less a figure than the philosopher John Locke argued that memory, the kind McKinnon lacks, is the very thing that constitutes personal identity. It’s hard to even imagine what it would feel like to be without these kinds of memories; when we do, we picture disaster. Last year’s blockbuster Pixar film, *Inside Out*, hinged on the idea that if the

main character loses her core memories, then her “islands of personality” collapse into nothingness.

McKinnon has no core memories that she is aware of. But there can be no doubt of her personality. She is a liberal white woman who married a black man despite her conservative father's disapproval. A Catholic who decided somewhere along the way that religion wasn't for her. She's bashful and sensitive. Intuitive, curious, and funny. She has a job—she's a retirement specialist for the state of Washington—and she has hobbies, values, beliefs, opinions, a nucleus of friends. Though she doesn't remember being a part of the anecdotes that shaped her into this person, she knows very well who she is. Which raises the question: Just how expendable is this supposedly essential part of being human after all?

**MUSIC HAS A** powerful way of evoking memories. For McKinnon's husband, this is especially true of songs by Motown acts like the Temptations and the Miracles. They take him back to weekend

nights in Chicago when he was young, when he paid a quarter to go into someone's basement and make out with a girl as music played in the dark. People called them quarter parties. Listening to Motown also reminds him of Saturdays with his cousins at the Regal, where for three bucks he watched performers like Marvin Gaye. It was always crowded and hot and smelled of stale popcorn. The guys wore \$10 Ban-Lon shirts. The women wore ankle-length dresses. Most had processed hair, but Green was just starting to grow out an afro.

He grins as he describes the scene, peering through the eyes of a version of himself from decades ago. This was before he and McKinnon met as coworkers at a hospital in Illinois; long before they moved west and started going on cruises. "She was friendly—well, she was sexy," Green says of when they first met. To McKinnon, all this mental time traveling seems magical. "It's hard for me to believe," she says.

Our ability to do this—to be the first-person protagonist of our own memories—is part of what psychologists call auto-noetic consciousness. It's the faculty that allows us to mentally reenact past experiences.

Memory researchers used to believe there was just one kind of

long-term memory. But in 1972, Endel Tulving, a Canadian psychologist and cognitive neuroscientist, introduced the idea that long-term memory comes in multiple forms. One is semantic memory, which allows us to remember how to spell a word like, say, *autonoetic*. Years from now, you might recall how to spell it, but maybe not when and where you were when you first came across the word and its definition, perhaps in WIRED.

Tulving argued that autonoetic consciousness is crucial for the formation of another kind of long-term memory—episodic memory—which integrates time and sensory details in a cinematic, visceral way. Remembering where and when you learned how to spell

*autonoetic*: That's an episodic memory.

As it happens, McKinnon shares Green's love of music. She even performs with a choral ensemble. Lyrics, melodies, and harmonies stick with her, thanks to her intact semantic memory. Similarly, she can tell you for a fact that three months ago, she sang a rendition of an old English folk song onstage—a solo. But only Green can supply the scene: how she strolled onto the stage alone and took her place in front of a piano. Green says her performance

brought him close to tears. McKinnon thinks she must have felt a mixture of confidence and fear, but really she hasn't the faintest idea.

She does, however, have a recording, and we decide to give it a listen. She walks over to the living room CD player, pops in a disc, and presses Play. "Are you ready?" she asks nervously. McKinnon retreats into herself, pacing self-consciously between the sofa, dining room chairs, and kitchen counter.

An alto fills the living room, a voice from another time. "*The water is wide,*" the voice sings. "*I cannot cross o'er.*" McKinnon notices a tremble in the voice and giggles with surprise. It's as if she's experiencing the performance for the first time.





**MCKINNON FIRST BEGAN** to realize that her memory was not the same as everyone else's back in 1977, when a friend from high school, who was studying to be a physician's assistant, asked if she would participate in a memory test as part of a school assignment. When her friend asked basic questions about her childhood as part of the test, McKinnon would reply, "Why are you asking stuff like this? No one remembers that!" She knew that other people claimed to have detailed memories, but she always

thought they embellished and made stuff up—just like she did.

McKinnon's friend was so disturbed by her responses that she suggested McKinnon get her memory checked by a professional. McKinnon put the exchange aside for almost three decades. Then one day in 2004, she came across an article about Endel Tulving, the researcher who had originally characterized the difference between episodic and semantic memory.

McKinnon read about how, at the University of Toronto, Tulving studied an amnesic patient, K. C., who was in a motorcycle accident at 30 that resulted in brain damage affecting his episodic memory. He could not remember anything in his life except experiences from the last minute or two. Yet despite this deficiency, the patient could remember basic knowledge learned before his accident, like math and history, and when taught new information in experiments, he could retain lessons, even though he could not recall visits to the laboratory where he was taught. His case became crucial to Tulving's theories about memory.

Like McKinnon, people with amnesia usually lose their episodic memories and keep their semantic ones. But amnesiacs tend to come by their memory loss

through brain trauma, developmental disorders, or degenerative conditions.

And they are often impaired in their day-to-day functioning; they cannot live normal lives. Reading about Tulving's case studies, McKinnon recognized a resemblance to her own experiences—minus the brain lesions, injuries, or debilitating side effects. Her brain and life, as far as she knew, seemed to be healthy and intact.

One of Tulving's arguments struck a particular chord. A profile of the psychologist reported his belief “that some perfectly intelligent and healthy people also lack the ability to remember personal experiences. These people have no episodic memory; they know but do not remember. Such people have not yet been identified, but Tulving predicts they soon will be.”

McKinnon felt too intimidated to contact Tulving himself; he seemed too famous. So instead she set her sights on Brian Levine, a senior scientist at the Rotman Research Institute in Toronto who had worked closely with Tulving and whose expertise in episodic and autobiographical memory caught her eye.

On August 25, 2006, McKinnon sent Levine an email that referenced Tulving's prediction about healthy people with no episodic memories: *“I think there's at least a possibility that I*

*might be one of the people he was describing.*

*“I’m 52 y/o, extremely stable, with a very satisfying life & well-developed sense of humor. Contacting you is a big (and, frankly, scary) step for me ... I’ll appreciate any guidance you may be able to give me.”*

“I GET A lot of emails from people with various issues,” Levine says. “With Susie, I felt like this was worth pursuing.” So Levine invited McKinnon to his lab in Toronto. His first move, in collaboration with researcher Daniela Palombo, was to begin looking for some underlying physiological or psychological explanation for McKinnon’s apparent lack of episodic memories: a neurological condition, trauma, or brain damage caused by anoxia at birth. They found no such thing.

Next, Levine ran McKinnon through something called an autobiographical interview, to vet her own report that she lacks episodic memories. Before the interview, his lab team spoke with Green, a close friend of McKinnon’s, and McKinnon’s brother and

mother, asking each for stories about McKinnon that they would try to verify with her.

When Levine and colleagues quizzed McKinnon about events that her friends and relatives described—like the time she was in *The Sound of Music* during high school—she had no such recollections, even when she was probed with follow-up questions like “Do you remember any objects in the environment?” The interview seemed to confirm that, sure enough, McKinnon had no recognizable episodic memories.

Soon, Levine discovered two more healthy individuals who also seemed to lack episodic memories. Both were middle-aged men with successful jobs, one of them a PhD. One was in a long-term relationship. Levine put both men through the same battery of tests in his lab. He also ran all three of his patients through an MRI machine. Each showed reduced activity in regions of the brain crucial to the mind’s understanding of the self, the ability to mentally time travel, and the capacity to form episodic memories.

Levine published a study about McKinnon and his two other

subjects in *Neuropsychologia* in April 2015. Since then, hundreds of people claiming to have severely deficient autobiographical memory have reached out to Levine's team. Each must go through a set of tests as well, he says, and results might lead to only a dozen or so provable cases. But the response suggests that the discovery of McKinnon and the other two subjects wasn't a fluke. "It raises fairly large questions," Levine says. "What exactly does recollection do for us?" If members of our species can get by so well without episodic memories, why did we evolve to have them in the first place? And how long are they liable to stick around?

**SPEND ENOUGH TIME** with McKinnon and it's hard to escape the creeping sense that she's not just different—she's lucky. Memories that would be searing to anyone else leave little impression on her. Like the time in 1986 when the couple was living in Arizona and Green was jumped by a group of white men while out fishing. When he came home, his head was covered with welts. "She went to get ice and she started crying," Green says. He began to cry too. They felt terrorized.

Once again, McKinnon knows the salient facts of the story, but the details and the painful associations all reside with Green. For McKinnon, the memory doesn't trigger the trauma and fear associated with it. "I can imagine being upset and scared, but I don't remember that at all," she says. "I can't put myself back there. I can only imagine what it would have been like."

McKinnon also quickly forgets arguments, which might be the reason she and Green have stayed together so long, she jokes. She cannot hold a grudge. She is unfamiliar with the feeling of regret and oblivious to the diminishment of aging. A 1972 yearbook photo shows that she was once a petite brunette with a delicate face framed by a pixie cut. ("Dorky little innocent thing," she says, looking at the picture.) On an intellectual level, McKinnon knows that this is her; but put the picture away and, in her mind, she has always been the 60-year-old woman she is now, broad-shouldered and fair, her face pinkish and time-lined, her closely cropped hair white and gray. She doesn't know what it's like to linger in a memory, to long for the past, to dwell in it.

More than a decade ago a woman named Jill Price came to the attention of scientists at UC Irvine. She exhibited a condition that is pretty much the direct opposite of McKinnon's: the researchers called it hyperthymestic syndrome, or highly

superior autobiographical memory. Price has an extraordinary ability to recall just about any fact that has intersected with her life: July 18, 1984, was a quiet Wednesday, as she writes in her memoir, and Price picked up the book *Helter Skelter* and read it for the second time. Monday, February 28, 1983, the final episode of *M\*A\*S\*H* aired, and it was raining. The next day Price's windshield wipers stopped working as she drove.

In contrast to McKinnon, who has received relatively little press attention, Price became an instant media sensation. Diane Sawyer had her on air twice in one day. Her powers of memory, after all, seemed supremely enviable, superhuman.

But as the UC Irvine researchers—and a story in WIRED—noted, Price's extraordinary feats of recollection were accompanied by a kind of obsessive-compulsive fixation on recording the details of her life, one that appeared to have taken root after a “traumatizing” move to LA when she was a girl. As an adult in her 40s, she still lived with her parents. And she buttressed her memory with cramped pages full of notes on everything that happened to her in any given day.

Which is all just to say: When it comes to people with highly unusual memories, it's not clear that we as a culture are so



good at choosing who to envy.

**YOU MIGHT THINK** that McKinnon would lean on technology to help compensate for her disorder. After all, she lives at a moment when software companies are churning out products that are, essentially, surrogates for the very faculties she lacks. Isn't a Facebook feed a kind of prosthetic autobiographical memory? Google Photos will even form gauzy retrospective mental associations for you: The artificially intelligent software plunges straight into your photo library, plucks out faces and related events, and automatically generates poignant little videos—synthetic episodic memories. Other software tools aim to capture your entire life in documents—emails, calendar reminders, schoolwork, voicemails, texts, snapshots, videos, and other bits of recordable data—to provide a searchable database of your memories.

And yet the life-logging impulse is lost on McKinnon. Once, she decided to keep a journal to see if she could preserve her memories. “I stopped doing that after two or three days,” she says. “If I get so obsessed with capturing every moment because I'm afraid of losing the memory, I'm never going to experience those moments.” And what else, really, does she have?

She does use email, which sometimes serves as a useful reference. But she doesn't make a special effort to log her experiences there. And she doesn't use social media. No Pinterest. No Instagram. She had a Facebook account, but she quit using it. It didn't interest her.

Even if she had a Facebook feed, she would have very little to put there in the way of photos or videos. McKinnon once borrowed a video camera to film one of their departures on a Caribbean cruise, but she didn't enjoy it. She lost the feeling of the moment, she says. She likewise doesn't take photos. She says she doesn't find them that compelling to look at. Sure enough, I notice there are no pictures on the couple's refrigerator, shelves, or walls. No framed wedding portraits. No posed beach shots. There are just a few photo albums in an upstairs office.

McKinnon pulls down the album of her 1981 courthouse wedding to Green in Maywood, Illinois. There's a shot of the friends who surprised the newlyweds on the steps outside. There's one of Green opening a gag gift—a set of four mugs with images of cats having sex. McKinnon is practiced at laughing through all the anecdotes about the day that she has memorized over the years, with help from the album. But looking at the pictures, she says, feels like observing somebody else's wedding.

Today, though, she learns something new about the day she married Green. As we look over the album, Green mentions a close friend who attended the wedding. “I didn’t even know she was there,” McKinnon says. That’s because there are no photos of this friend. Because she was the one behind the camera.

This actually feels like the kind of error anyone could make: Doesn’t the person behind the camera often get edited out of recall? Even when the person behind the camera is you?

While it’s abundantly clear that McKinnon isn’t using technology to become more like us, it’s conceivable that technology could, over the long run, make us all a bit more like McKinnon. My iPhone now holds 1,217 photos and 159 videos just from the past eight months.

By focusing on clicking picture after picture, I may actually be blurring away my memories of these experiences through something researchers call “the photo-taking impairment effect.” And by automatically storing all those photos in the cloud—which relieves my mind of the burden of cataloging a bunch of memories—I may be short-circuiting some part of my own process of episodic memory formation.

“What would humanity lose if they lost some of that ability?” McKinnon asks during one of our conversations, as if wondering aloud for me. “If they had technology to replace it, what would be lost? The human experience would change, but would it be a plus? Or a minus? Or—just a change?”

