

There were no other survivors.

Family members arriving at the scene of the fifth-century-B.C. banquet hall catastrophe pawed at the debris for signs of their loved ones—rings, sandals, anything that would allow them to identify their kin for proper burial.

Minutes earlier, the Greek poet Simonides of Ceos had stood to deliver an ode in celebration of Scopas, a Thessalian nobleman. As Simonides sat down, a messenger tapped him on the shoulder. Two young men on horseback were waiting outside, anxious to tell him something. He stood up again and walked out the door. At the very moment he crossed the threshold, the roof of the banquet hall collapsed in a thundering plume of marble shards and dust.

He stood now before a landscape of rubble and entombed bodies. The air, which had been filled with boisterous laughter moments before, was

smoky and silent. Teams of rescuers set to work frantically digging through the collapsed building. The corpses they pulled out of the wreckage were mangled beyond recognition. No one could even say for sure who had been inside. One tragedy compounded another.

Then something remarkable happened that would change forever how people thought about their memories. Simonides sealed his senses to the chaos around him and reversed time in his mind. The piles of marble returned to pillars and the scattered frieze fragments reassembled in the air above. The stoneware scattered in the debris re-formed into bowls. The splinters of wood poking above the ruins once again became a table. Simonides caught a glimpse of each of the banquet guests at his seat, carrying on oblivious to the impending catastrophe. He saw Scopas laughing at the head of the table, a fellow poet sitting across from him sponging up the remnants of his meal with a piece of bread, a nobleman smirking. He turned to the window and saw the messengers approaching, as if with some important news.

Simonides opened his eyes. He took each of the hysterical relatives by the hand and, carefully stepping over the debris, guided them, one by one, to the spots in the rubble where their loved ones had been sitting.

At that moment, according to legend, the art of memory was born.

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THE SMARTEST MAN IS HARD TO FIND

Dom DeLuise, celebrity fat man (and five of clubs), has been implicated in the following unseemly acts in my mind's eye: He has hocked a fat globule of spittle (nine of clubs) on Albert Einstein's thick white mane (three of diamonds) and delivered a devastating karate kick (five of spades) to the groin of Pope Benedict XVI (six of diamonds). Michael Jackson (king of hearts) has engaged in behavior bizarre even for him. He has defecated (two of clubs) on a salmon burger (king of clubs) and captured his flatulence (queen of clubs) in a balloon (six of spades). Rhea Perlman, diminutive *Cheers* bartendress (and queen of spades), has been caught cavorting with the seven-foot-seven Sudanese basketball star Manute Bol (seven of clubs) in a highly explicit (and in this case, anatomically improbable) two-digit act of congress (three of clubs).

This tawdry tableau, which I'm not proud to commit to the page,

goes a long way toward explaining the unlikely spot I find myself in at the moment. Sitting to my left is Ram Kolli, an unshaven twenty-five-year-old business consultant from Richmond, Virginia, who is also the defending United States memory champion. To my right is the muzzle of a television camera from a national cable network. Spread out behind me, where I can't see them and they can't disturb me, are about a hundred spectators and a pair of TV commentators offering play-by-play analysis. One is a blow-dried veteran boxing announcer named Kenny Rice, whose gravelly, bedtime voice can't conceal the fact that he seems bewildered by this jamboree of nerds. The other is the Pelé of U.S. memory sport, a bearded forty-three-year-old chemical engineer and four-time national champion from Fayetteville, North Carolina, named Scott Hagwood. In the corner of the room sits the object of my affection: a kitschy two-tiered trophy consisting of a silver hand with gold nail polish brandishing a royal flush, and, in a patriotic flourish, three bald eagles perched just below. It's nearly as tall as my two-year-old niece (and lighter than most of her stuffed animals).

The audience has been asked not to take any flash photographs and to maintain total silence. Not that Ram or I could possibly hear them. Both of us are wearing earplugs. I've also got on a pair of industrial-strength earmuffs that look like they belong on an aircraft carrier deckhand (because in the heat of a memory competition, there is no such thing as deaf enough). My eyes are closed. On a table in front of me, lying facedown between my hands, are two shuffled decks of playing cards. In a moment, the chief arbiter will click a stopwatch and I will have five minutes to memorize the order of both decks.

The unlikely story of how I ended up in the finals of the USA Memory Championship, stock-still and sweating profusely, begins a

year earlier on a snowy highway in central Pennsylvania. I had been driving from my home in Washington, D.C., to the Lehigh Valley to do an interview for *Discover* magazine with a theoretical physicist at Kutztown University, who had invented a vacuum chamber device that was supposed to pop the world's largest popcorn. My route took me through York, Pennsylvania, home of the Weightlifting Hall of Fame and Museum. I thought that sounded like something I didn't want to die without having seen. And I had an hour to kill.

As it turned out, the Hall of Fame was little more than a sterile collection of old photographs and memorabilia displayed on the ground floor of the corporate offices of the nation's largest barbell manufacturer. Museologically, it was crap. But it's where I first saw a black-and-white photo of Joe "The Mighty Atom" Greenstein, a hulking five-foot-four Jewish-American strongman who had earned his nickname in the 1920s by performing such inspiring feats as biting quarters in half and lying on a bed of nails while a fourteen-man Dixieland band played on his chest. He once changed all four tires on a car without any tools. A caption next to the photo billed Greenstein as "the strongest man in the world."

Staring at that photo, I thought it would be pretty interesting if the world's strongest person ever got to meet the world's smartest person. The Mighty Atom and Einstein, arms wrapped around each other: an epic juxtaposition of muscle and mind. A neat photo to hang above my desk, at least. I wondered if it had ever been taken. When I got home, I did a little Googling. The world's strongest person was pretty easy to find: His name was Mariusz Pudzianowski. He lived in Biała Rawska, Poland, and could deadlift 924 pounds (about thirty of my nieces).

The world's smartest person, on the other hand, was not so easily identified. I typed in "highest IQ," "intelligence champion," "smartest in the world." I learned that there was someone in New York City with

an IQ of 228, and a chess player in Hungary who once played fifty-two simultaneous blindfolded games. There was an Indian woman who could calculate the twenty-third root of a two-hundred-digit number in her head in fifty seconds, and someone else who could solve a four-dimensional Rubik's cube, whatever that is. And of course there were plenty of more obvious Stephen Hawking types of candidates. Brains are notoriously trickier to quantify than brawn.

In the course of my Googling, though, I did discover one intriguing candidate who was, if not the smartest person in the world, at least some kind of freakish genius. His name was Ben Pridmore, and he could memorize the precise order of 1,528 random digits in an hour and—to impress those of us with a more humanist bent—any poem handed to him. He was the reigning world memory champion.

Over the next few days, my brain kept returning to Ben Pridmore's. My own memory was average at best. Among the things I regularly forgot: where I put my car keys (where I put my car, for that matter); the food in the oven; that it's "its" and not "it's"; my girlfriend's birthday, our anniversary, Valentine's Day; the clearance of the doorway to my parents' cellar (ouch); my friends' phone numbers; why I just opened the fridge; to plug in my cell phone; the name of President Bush's chief of staff; the order of the New Jersey Turnpike rest stops; which year the Redskins last won the Super Bowl; to put the toilet seat down.

Ben Pridmore, on the other hand, could memorize the order of a shuffled deck of playing cards in thirty-two seconds. In five minutes he could permanently commit to memory what happened on ninety-six different historical dates. The man knew fifty thousand digits of pi. What was not to envy? I had once read that the average person squanders about forty days a year compensating for things he or she has forgotten. Putting aside for a moment the fact that he was temporarily unemployed, how much more productive must Ben Pridmore be?

Every day there seems to be more to remember: more names, more passwords, more appointments. With a memory like Ben Pridmore's, I imagined, life would be qualitatively different—and better. Our culture constantly inundates us with new information, and yet our brains capture so little of it. Most just goes in one ear and out the other. If the point of reading were simply to retain knowledge, it would probably be the single least efficient activity I engage in. I can spend a half dozen hours reading a book and then have only a foggy notion of what it was about. All those facts and anecdotes, even the stuff interesting enough to be worth underlining, have a habit of briefly making an impression on me and then disappearing into who knows where. There are books on my shelf that I can't even remember whether I've read or not.

What would it mean to have all that otherwise-lost knowledge at my fingertips? I couldn't help but think that it would make me more persuasive, more confident, and, in some fundamental sense, smarter. Certainly I'd be a better journalist, friend, and boyfriend. But more than that, I imagined that having a memory like Ben Pridmore's would make me an altogether more attentive, perhaps even wiser, person. To the extent that experience is the sum of our memories and wisdom the sum of experience, having a better memory would mean knowing not only more about the world, but also more about myself. Surely some of the forgetting that seems to plague us is healthy and necessary. If I didn't forget so many of the dumb things I've done, I'd probably be unbearably neurotic. But how many worthwhile ideas have gone unthought and connections unmade because of my memory's shortcomings?

I kept returning to something Ben Pridmore said in a newspaper interview, which made me ponder just how different his memory and my own might really be. "It's all about technique and understanding how the memory works," he told the reporter. "Anyone could do it, really."

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A couple weeks after my trip to the Weightlifting Hall of Fame, I stood in the back of an auditorium on the nineteenth floor of the Con Edison headquarters near Union Square in Manhattan, an observer at the 2005 USA Memory Championship. Spurred by my fascination with Ben Pridmore, I was there to write a short piece for *Slate* magazine about what I imagined would be the Super Bowl of savants.

The scene I stumbled on, however, was something less than a clash of titans: a bunch of guys (and a few ladies), widely varying in both age and hygienic upkeep, poring over pages of random numbers and long lists of words. They referred to themselves as “mental athletes,” or just MAs for short.

There were five events. First the contestants had to learn by heart a fifty-line unpublished poem called “The Tapestry of Me.” Then they were provided with ninety-nine photographic head shots accompanied by first and last names and given fifteen minutes to memorize as many of them as possible. Then they had another fifteen minutes to memorize a list of three hundred random words, five minutes to memorize a page of a thousand random digits (twenty-five lines of numbers, forty numbers to a line), and another five minutes to learn the order of a shuffled deck of playing cards. Among the competitors were two of the world’s thirty-six grand masters of memory, a rank attained by memorizing a sequence of a thousand random digits in under an hour, the precise order of ten shuffled decks of playing cards in the same amount of time, and the order of one shuffled deck in less than two minutes.

Though on the face of it these feats might seem like little more than geeky party tricks—essentially useless, and perhaps even vaguely pathetic—what I discovered as I talked to the competitors was something far more serious, a story that made me reconsider the limits of my own mind and the very essence of my education.

I asked Ed Cooke, a young grand master from England who had come to the U.S. event as spring training for that summer's World Championship (since he was a non-American, his scores couldn't be counted in the U.S. contest), when he first realized he was a savant.

"Oh, I'm not a savant," he said, chuckling.

"Photographic memory?" I asked.

He chuckled again. "Photographic memory is a detestable myth," he said. "Doesn't exist. In fact, my memory is quite average. All of us here have average memories."

That seemed hard to square with the fact that I'd just watched him recite back 252 random digits as effortlessly as if they'd been his own telephone number.

"What you have to understand is that even average memories are remarkably powerful if used properly," he said. Ed had a blocky face and a shoulder-length mop of curly brown hair, and could be counted among the competitors who were least concerned with habits of personal grooming. He was wearing a suit with a loosened tie and, incongruously, a pair of flip-flops emblazoned with the Union Jack. He was twenty-four years old but carried his body like someone three times that age. He hobbled about with a cane at his side—"a winning prop," he called it—which was necessitated by a recent painful relapse of chronic juvenile arthritis. He and all the other mental athletes I met kept insisting, as Ben Pridmore had in his interview, that anyone could do what they do. It was simply a matter of learning to "think in more memorable ways" using the "extraordinarily simple" 2,500-year-old mnemonic technique known as the "memory palace" that Simonides of Ceos had supposedly invented in the rubble of the great banquet hall collapse.

The techniques of the memory palace—also known as the journey method or the method of loci, and more broadly as the *ars memorativa*, or "art of memory"—were refined and codified in an extensive set of

rules and instruction manuals by Romans like Cicero and Quintilian, and flowered in the Middle Ages as a way for the pious to memorize everything from sermons and prayers to the punishments awaiting the wicked in hell. These were the same tricks that Roman senators had used to memorize their speeches, that the Athenian statesman Themistocles had supposedly used to memorize the names of twenty thousand Athenians, and that medieval scholars had used to memorize entire books.

Ed explained to me that the competitors saw themselves as “participants in an amateur research program” whose aim was to rescue a long-lost tradition of memory training that had disappeared centuries ago. Once upon a time, Ed insisted, remembering was everything. A trained memory was not just a handy tool, but a fundamental facet of any worldly mind. What’s more, memory training was considered a form of character building, a way of developing the cardinal virtue of prudence and, by extension, ethics. Only through memorizing, the thinking went, could ideas truly be incorporated into one’s psyche and their values absorbed. The techniques existed not just to memorize useless information like decks of playing cards, but also to etch into the brain foundational texts and ideas.

But then, in the fifteenth century, Gutenberg came along and turned books into mass-produced commodities, and eventually it was no longer all that important to remember what the printed page could remember for you. Memory techniques that had once been a staple of classical and medieval culture got wrapped up with the occult and esoteric Hermetic traditions of the Renaissance, and by the nineteenth century they had been relegated to carnival sideshows and tacky self-help books—only to be resurrected in the last decades of the twentieth century for this bizarre and singular competition.

The leader of this renaissance in memory training is a slick sixty-seven-year-old British educator and self-styled guru named Tony

Buzan, who claims to have the highest “creativity quotient” in the world. When I met him, in the cafeteria of the Con Edison building, he was wearing a navy suit with five enormous gold-rimmed buttons and a collarless shirt, with another large button at his throat that gave him the air of an Eastern priest. A neuron-shaped pin adorned his lapel. His watch face bore a reproduction of Dali’s *Persistence of Memory* (the one with the dripping watch face). He referred to the competitors as “warriors of the mind.”

Buzan’s grizzled face looked a decade older than his sixty-seven years, but the rest of him was as trim as a thirty-year-old. He rows between six and ten kilometers every morning on the river Thames, he told me, and he makes a point of eating lots of “brain-healthy” vegetables and fish. “Junk food in: junk brain. Healthy food in: healthy brain,” he said.

When he walked, Buzan seemed to glide across the floor like an air hockey puck (the result, he later told me, of forty years’ training in the Alexander Technique). When he spoke, he gesticulated with a polished, staccato precision that could only have been honed in front of a mirror. Often, he punctuated a key point with an explosion of fingers from his closed fist.

Buzan founded the World Memory Championship in 1991 and has since established national championships in more than a dozen countries, from China to South Africa to Mexico. He says he has been working with a missionary’s zeal since the 1970s to get these memory techniques implemented in schools around the world. He calls it a “global education revolution focusing on learning how to learn.” And he’s been minting himself a serious fortune in the process. (According to press reports, Michael Jackson ran up a \$343,000 bill for Buzan’s mind-boosting services shortly before his death.)

Buzan believes schools go about teaching all wrong. They pour vast amounts of information into students’ heads, but don’t teach them

how to retain it. Memorizing has gotten a bad rap as a mindless way of holding onto facts just long enough to pass the next exam. But it's not memorization that's evil, he says; it's the tradition of boring rote learning that he believes has corrupted Western education. "What we have been doing over the last century is defining memory incorrectly, understanding it incompletely, applying it inappropriately, and condemning it because it doesn't work and isn't enjoyable," Buzan argues. If rote memorization is a way of scratching impressions onto our brains through the brute force of repetition—the old "drill and kill" method—then the art of memory is a more elegant way of remembering through technique. It is faster, less painful, and produces longer-lasting memories, Buzan told me.

"The brain is like a muscle," he said, and memory training is a form of mental workout. Over time, like any form of exercise, it'll make the brain fitter, quicker, and more nimble. It's an idea that dates back to the very origins of memory training. Roman orators argued that the art of memory—the proper retention and ordering of knowledge—was a vital instrument for the invention of new ideas. Today, the "mental workout" has gained great currency in the popular imagination. Brain gyms and memory boot camps are a growing fad, and brain training software was a \$265 million industry in 2008, no doubt in part because of research that shows that older people who keep their minds active with crossword puzzles and chess can stave off Alzheimer's and progressive dementia, but mostly because of the Baby Boomer generation's intense insecurity about losing their marbles. But while there is much solid science to back up the dementia-defying benefits of an active brain, Buzan's most hyperbolic claims about the collateral effects of "brain exercise" should inspire a measured dose (at least) of skepticism. Nevertheless, it was hard to argue with the results. I'd just watched a forty-seven-year-old competitor recite, in order, a list of a hundred random words he'd learned a few minutes earlier.

Buzan was eager to sell me on the idea that his own memory has been improving year after year, even as he ages. “People assume that memory decline is a function of being human, and therefore natural,” he said. “But that is a logical error, because normal is not necessarily natural. The reason for the monitored decline in human memory performance is because we actually do anti-Olympic training. What we do to the brain is the equivalent of sitting someone down to train for the Olympics and making sure he drinks ten cans of beer a day, smokes fifty cigarettes, drives to work, and maybe does some exercise once a month that’s violent and damaging, and spends the rest of the time watching television. And then we wonder why that person doesn’t do well in the Olympics. That’s what we’ve been doing with memory.”

I pestered Buzan about how hard it would be to learn these techniques. How did the competitors train? How quickly did their memories improve? Did they use these techniques in everyday life? If they were really as simple and effective as he was claiming, how come I’d never heard of them before? Why weren’t we all using them?

“You know,” he replied, “instead of asking me all these questions, you should just try it for yourself.”

“What would it take, theoretically, for someone like me to train for the USA Memory Championship?” I asked him.

“If you want to make it into the top three of the U.S. championship, it’d be a good idea to spend an hour a day, six days a week. If you spent that much time, you’d do very well. If you wanted to enter the world championship, you’d need to spend three to four hours a day for the final six months leading up to the championship. It gets heavy.”

Later that morning, while the competitors were trying to memorize “The Tapestry of Me,” Buzan took me aside and put his hand on my shoulder.

“Remember our little talk? Think about it. That could be you up there on the stage, the next USA memory champion.”

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During a break between the poem memorization and the names-and-faces event, I headed for the sidewalk outside the Con Ed building to escape the locker-room humidity. There I ran into the mop-haired, cane-toting English mnemonist Ed Cooke and his lanky sidekick, the Austrian grand master Lukas Amsüss, rolling their own cigarettes.

Ed had graduated from Oxford the previous spring with a first-class degree in psychology and philosophy and told me that he was simultaneously toying with writing a book titled *The Art of Introspection* and pursuing his cognitive science PhD at the University of Paris, where he was doing outré research with the aim of “making people feel like their body has shrunk to a tenth of its normal size.” He was also working on inventing a new color—“not just a new color, but a whole new way of seeing color.”

Lukas, a University of Vienna law student who advertised himself as the author of a short pamphlet titled “How to Be Three Times Cleverer Than Your IQ,” was leaning against the building, trying to justify to Ed his miserable showing in the random words event: “I’ve never heard even of these English words ‘yawn,’ ‘ulcer,’ and ‘aisle’ before,” he insisted in a stiff Austrian accent, “How can I be expected to memorize them?”

At the time, Ed and Lukas were respectively the eleventh- and ninth-best memorizers in the world, the only grand masters at the event, and the only competitors who had shown up in suit and tie. They were eager to share with me (or anyone) their plan to cash in on their mnemonic fame by building a “memory gymnasium” called the Oxford Mind Academy. Their idea was that subscribers—mostly business executives, they hoped—would pay to have personal mental workout trainers. Once the world learned the benefits of training one’s

memory, they imagined that cash would fall from the sky. “Ultimately,” Ed told me, “we are looking to rehabilitate Western education.”

“Which we consider to be degenerate,” Lukas added.

Ed explained to me that he saw his participation in memory competitions as part of his attempt to unravel the secrets of human memory. “I figure that there are two ways of figuring out how the brain works,” he said. “The first is the way that empirical psychology does it, which is that you look from the outside and take a load of measurements on a load of different people. The other way follows from the logic that a system’s optimal performance can tell you something about its design. Perhaps the best way to understand human memory is to try very hard to optimize it—ideally with a load of bright people in conditions where they get rigorous and objective feedback. That’s what the memory circuit is.”

The contest itself unfolded with all the excitement of, say, the SAT. The contestants sat quietly at tables staring at sheets of paper, then scribbled answers that they handed off to judges. After each event, scores were quickly calculated and displayed on a screen at the front of the room. But much to the dismay of a journalist trying to write about a national memory championship, the “sport” had none of the public agony of a basketball game, or even a spelling bee. Sometimes it was difficult to tell whether competitors were deep in thought or sleep. There may have been a lot of dramatic temple massaging and nervous foot tapping and the occasional empty stare of defeat, but mostly the drama was inside the competitors’ heads, inaccessible to spectators.

A troubling thought percolated to the front of my brain as I stood in the back of the Con Edison auditorium watching these supposedly normal human beings perform their almost unfathomable mental acrobatics: I didn’t have a clue how my own memory worked. Was there even such a place as the front of my brain? A slow wave of questions swept over me—things I’d never bothered to wonder about, but

which all of a sudden seemed profoundly pressing. What exactly *is* a memory? How is one created? And how does it get stored? I'd spent the first two and a half decades of my life with a memory that operated so seamlessly that I'd never had cause to stop and inquire about its mechanics. And yet, now that I was stopping to think about it, I realized that it actually didn't work all that seamlessly. It completely failed in certain areas, and worked far too well in others. And it had so many inexplicable quirks. That very morning my brain had been held hostage by an unbearable Britney Spears song, forcing me to spend the better part of a subway ride humming Hanukkah jingles in an attempt to dislodge it. What was that about? A few days earlier, I had been trying to tell a friend about an author I admired, only to find that I remembered the first letter of his last name, and nothing else. How come that happened? And why didn't I have a single memory before the age of three? For that matter, why couldn't I remember what I had for breakfast just the day before, even though I remembered exactly what I was having for breakfast—Corn Pops, coffee, and a banana—four years earlier when I was told that a plane had just crashed into one of the twin towers? And why am I always forgetting why I opened the refrigerator door?

I came away from the USA Memory Championship eager to find out how Ed and Lukas did it. Were these just extraordinary individuals, prodigies from the long tail of humanity's bell curve, or was there something we could all learn from their talents? I was skeptical about them for the same reason I was skeptical about Tony Buzan. Any self-appointed guru who has earned himself a king's ransom in the modern "self-help" racket is bound to perk up a journalist's bullshit detector, and Buzan had set off every alarm bell I've got. I didn't yet know enough to know whether he was selling hype or science, but his

over-the-top packaging—“a global education revolution”!—certainly smacked of the former.

Was it really true that anyone could learn to quickly memorize huge quantities of information? *Anyone?* I was willing to believe Buzan when he said there were techniques that one could learn to marginally improve one’s memory around the edges, but I didn’t fully believe him (or Ed) when he said that any schmo off the street could learn to memorize entire decks of playing cards or thousands of binary digits. The alternate explanation just seemed a whole lot more plausible: that Ed and his colleagues had some freakish innate talent that was the mental equivalent of André the Giant’s height or Usain Bolt’s legs.

Indeed, much of what’s been written about memory improvement by self-help gurus is tainted by hucksterism. When I checked out the self-help aisle at my local Barnes & Noble, I found stacks of books making fevered claims that they could teach me how to “never forget a telephone number or date” or “develop instant recall.” One book even pronounced that it could show me how to use the “other 90 percent” of my brain, which is one of those pseudoscientific clichés that makes about as much sense as saying I could be taught to use the other 90 percent of my hand.

But memory improvement has also long been investigated by people whose relationships to the subject are less obviously profitable and whose claims are inspected by peer review. Academic psychologists have been interested in expanding our native memory capacities ever since Hermann Ebbinghaus first brought the study of memory into the laboratory in the 1870s.

This book is about the year I spent trying to train my memory, and also trying to understand it—its inner workings, its natural deficiencies, its hidden potential. It’s about how I learned firsthand that our memories are indeed improvable, within limits, and that the skills of Ed and Lukas can indeed be tapped by all of us. It’s also about the scientific study of expertise, and how researchers who study memory

champions have discovered general principles of skill acquisition—secrets to improving at just about anything—from how mental athletes train their brains.

Though this is not meant to be a self-help book, I hope you'll come away with a sense of how one goes about training one's memory, and how memory techniques can be used in everyday life.

Those techniques have a surprisingly rich and important legacy. The role that they have played in the development of Western culture is one of the great themes in intellectual history whose story is not widely known outside of the rarefied academic corners in which it is studied. Mnemonic systems like Simonides' memory palace profoundly shaped the way people approached the world from the time of antiquity through the Middle Ages and the Renaissance. And then they all but disappeared.

Physiologically, we are virtually identical to our ancestors who painted images of bison on the walls of the Lascaux cave in France, among the earliest cultural artifacts to have survived to the present day. Our brains are no larger or more sophisticated than theirs. If one of their babies were to be dropped into the arms of an adoptive parent in twenty-first-century New York, the child would likely grow up indistinguishable from his or her peers.

All that differentiates *us* from *them* is our memories. Not the memories that reside in our own brains, for the child born today enters the world just as much a blank slate as the child born thirty thousand years ago, but rather the memories that are stored outside ourselves—in books, photographs, museums, and these days in digital media. Once upon a time, memory was at the root of all culture, but over the last thirty millennia since humans began painting their memories on cave walls, we've gradually supplanted our own natural

memory with a vast superstructure of external memory aids—a process that has sped up exponentially in recent years. Imagine waking up tomorrow and discovering that all the world's ink had become invisible and all our bytes had disappeared. Our world would immediately crumble. Literature, music, law, politics, science, math: Our culture is an edifice built of externalized memories.

If memory is our means of preserving that which we consider most valuable, it is also painfully linked to our own transience. When we die, our memories die with us. In a sense, the elaborate system of externalized memory we've created is a way of fending off mortality. It allows ideas to be efficiently passed across time and space, and for one idea to build on another to a degree not possible when a thought has to be passed from brain to brain in order to be sustained.

The externalization of memory not only changed how people think; it also led to a profound shift in the very notion of what it means to be intelligent. Internal memory became devalued. Erudition evolved from possessing information internally to knowing how and where to find it in the labyrinthine world of external memory. It's a telling statement that pretty much the only place where you'll find people still training their memories is at the World Memory Championship and the dozen national memory contests held around the globe. What was once a cornerstone of Western culture is now at best a curiosity. But as our culture has transformed from one that was fundamentally based on internal memories to one that is fundamentally based on memories stored outside the brain, what are the implications for ourselves and for our society? What we've gained is indisputable. But what have we traded away? What does it mean that we've lost our memory?