



How to Change Your Mind

What the New Science of
Psychedelics Teaches Us
About Consciousness,
Dying, Addiction, Depression,
and Transcendence

Michael Pollan

Author of The Omnivore's Dilemma

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A Place of My Own

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NOTE: This book relates the author’s investigative reporting on, and related self-experimentation with, psilocybin mushrooms, the drug lysergic acid diethylamide (or, as it is more commonly known, LSD), and the drug 5-methoxy-N,N-dimethyltryptamine (more commonly known as 5-MeO-DMT or The Toad). It is a criminal offense in the United States and in many other countries, punishable by imprisonment and/or fines, to manufacture, possess, or supply LSD, psilocybin

mushrooms, and/or the drug 5-MeO-DMT, except in connection with government-sanctioned research. You should therefore understand that this book is intended to convey the author's experiences and to provide an understanding of the background and current state of research into these substances. It is not intended to encourage you to break the law and no attempt should be made to use these substances for any purpose except in a legally sanctioned clinical trial. The author and the publisher expressly disclaim any liability, loss, or risk, personal or otherwise, that is incurred as a consequence, directly or indirectly, of the contents of this book.

Certain names and locations have been changed in order to protect the author and others.

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For my father

The soul should always stand ajar.

—EMILY DICKINSON

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PROLOGUE

A New Door

MIDWAY THROUGH the twentieth century, two unusual new molecules, organic compounds with a striking family resemblance, exploded upon the West. In time, they would change the course of social, political, and cultural history, as well as the personal histories of the millions of people who would eventually introduce them to their brains. As it happened, the arrival of these disruptive chemistries coincided with another world historical explosion—that of the atomic bomb. There were people who compared the two events and made much of the cosmic synchronicity. Extraordinary new energies had been loosed upon the world; things would never be quite the same.

The first of these molecules was an accidental invention of science. Lysergic acid diethylamide, commonly known as LSD, was first synthesized by Albert Hofmann in 1938, shortly before physicists split an atom of uranium for the first time. Hofmann, who worked for the Swiss pharmaceutical firm Sandoz, had been looking for a drug to stimulate circulation, not a psychoactive compound. It wasn't until five years later when he accidentally ingested a minuscule quantity of the new chemical that he realized he had created something powerful, at once terrifying and wondrous.

The second molecule had been around for thousands of years, though no one in the developed world was aware of it. Produced not by a chemist but by an inconspicuous little brown mushroom, this molecule, which would come to be known as psilocybin, had been used by the indigenous peoples of

Mexico and Central America for hundreds of years as a sacrament. Called *teonanácatl* by the Aztecs, or “flesh of the gods,” the mushroom was brutally suppressed by the Roman Catholic Church after the Spanish conquest and driven underground. In 1955, twelve years after Albert Hofmann’s discovery of LSD, a Manhattan banker and amateur mycologist named R. Gordon Wasson sampled the magic mushroom in the town of Huautla de Jiménez in the southern Mexican state of Oaxaca. Two years later, he published a fifteen-page account of the “mushrooms that cause strange visions” in *Life* magazine, marking the moment when news of a new form of consciousness first reached the general public. (In 1957, knowledge of LSD was mostly confined to the community of researchers and mental health professionals.) People would not realize the magnitude of what had happened for several more years, but history in the West had shifted.

The impact of these two molecules is hard to overestimate. The advent of LSD can be linked to the revolution in brain science that begins in the 1950s, when scientists discovered the role of neurotransmitters in the brain. That quantities of LSD measured in micrograms could produce symptoms resembling psychosis inspired brain scientists to search for the neurochemical basis of mental disorders previously believed to be psychological in origin. At the same time, psychedelics found their way into psychotherapy, where they were used to treat a variety of disorders, including alcoholism, anxiety, and depression. For most of the 1950s and early 1960s, many in the psychiatric establishment regarded LSD and psilocybin as miracle drugs.

The arrival of these two compounds is also linked to the rise of the counterculture during the 1960s and, perhaps especially, to its particular tone and style. For the first time in history, the young had a rite of passage all their own: the “acid trip.” Instead of folding the young into the adult world, as rites of passage have always done, this one landed them in a country of the mind few adults had any idea even existed. The effect on society was, to put it mildly, disruptive.

Yet by the end of the 1960s, the social and political shock waves unleashed by these molecules seemed to dissipate. The dark side of psychedelics began to receive tremendous amounts of publicity—bad trips, psychotic breaks, flashbacks, suicides—and beginning in 1965 the exuberance surrounding these new drugs gave way to moral panic. As quickly as the culture and the scientific establishment had embraced psychedelics, they now turned sharply against them. By the end of the decade, psychedelic drugs—which had been legal in most places—were outlawed and forced underground. At least one of the twentieth century’s two bombs appeared to have been defused.

Then something unexpected and telling happened. Beginning in the 1990s, well out of view of most of us, a small group of scientists, psychotherapists, and so-called psychonauts, believing that something precious had been lost from both science and culture, resolved to recover it.

Today, after several decades of suppression and neglect, psychedelics are having a renaissance. A new generation of scientists, many of them inspired by their own personal experience of the compounds, are testing their potential to heal mental illnesses such as depression, anxiety, trauma, and addiction. Other scientists are using psychedelics in conjunction with new brain-imaging tools to explore the links between brain and mind, hoping to unravel some of the mysteries of consciousness.

One good way to understand a complex system is to disturb it and then see what happens. By smashing atoms, a particle accelerator forces them to yield their secrets. By administering psychedelics in carefully calibrated doses, neuroscientists can profoundly disturb the normal waking consciousness of volunteers, dissolving the structures of the self and occasioning what can be described as a mystical experience. While this is happening, imaging tools can observe the changes in the brain’s activity and patterns of connection. Already this work is yielding surprising insights into the “neural correlates” of the sense of self and spiritual experience. The hoary 1960s platitude that psychedelics offered a key to understanding—and “expanding”—consciousness no longer looks quite so preposterous.

How to Change Your Mind is the story of this renaissance. Although it didn't start out that way, it is a very personal as well as public history. Perhaps this was inevitable. Everything I was learning about the third-person history of psychedelic research made me want to explore this novel landscape of the mind in the first person too—to see how the changes in consciousness these molecules wrought actually feel and what, if anything, they had to teach me about *my* mind and might contribute to my life.

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THIS WAS, FOR ME, a completely unexpected turn of events. The history of psychedelics I've summarized here is not a history I lived. I was born in 1955, halfway through the decade that psychedelics first burst onto the American scene, but it wasn't until the prospect of turning sixty had drifted into view that I seriously considered trying LSD for the first time. Coming from a baby boomer, that might sound improbable, a dereliction of generational duty. But I was only twelve years old in 1967, too young to have been more than dimly aware of the Summer of Love or the San Francisco Acid Tests. At fourteen, the only way I was going to get to Woodstock was if my parents drove me. Much of the 1960s I experienced through the pages of *Time* magazine. By the time the idea of trying or not trying LSD swam into my conscious awareness, it had already completed its speedy media arc from psychiatric wonder drug to counterculture sacrament to destroyer of young minds.

I must have been in junior high school when a scientist reported (mistakenly, as it turned out) that LSD scrambled your chromosomes; the entire media, as well as my health-ed teacher, made sure we heard all about it. A couple of years later, the television personality Art Linkletter began campaigning against LSD, which he blamed for the fact his daughter had jumped out of an apartment window, killing herself. LSD supposedly had something to do with the Manson murders too. By the early 1970s, when I

went to college, everything you heard about LSD seemed calculated to terrify. It worked on me: I'm less a child of the psychedelic 1960s than of the moral panic that psychedelics provoked.

I also had my own personal reason for steering clear of psychedelics: a painfully anxious adolescence that left me (and at least one psychiatrist) doubting my grip on sanity. By the time I got to college, I was feeling sturdier, but the idea of rolling the mental dice with a psychedelic drug still seemed like a bad idea.

Years later, in my late twenties and feeling more settled, I did try magic mushrooms two or three times. A friend had given me a Mason jar full of dried, gnarly *Psilocybes*, and on a couple of memorable occasions my partner (now wife), Judith, and I choked down two or three of them, endured a brief wave of nausea, and then sailed off on four or five interesting hours in the company of each other and what felt like a wonderfully italicized version of the familiar reality.

Psychedelic aficionados would probably categorize what we had as a low-dose "aesthetic experience," rather than a full-blown ego-disintegrating trip. We certainly didn't take leave of the known universe or have what anyone would call a mystical experience. But it was *really* interesting. What I particularly remember was the preternatural vividness of the greens in the woods, and in particular the velvety chartreuse softness of the ferns. I was gripped by a powerful compulsion to be outdoors, undressed, and as far from anything made of metal or plastic as it was possible to get. Because we were alone in the country, this was all doable. I don't recall much about a follow-up trip on a Saturday in Riverside Park in Manhattan except that it was considerably less enjoyable and unselfconscious, with too much time spent wondering if other people could tell that we were high.

I didn't know it at the time, but the difference between these two experiences of the same drug demonstrated something important, and special, about psychedelics: the critical influence of "set" and "setting." Set is the mind-set or expectation one brings to the experience, and setting is the environment in which it takes place. Compared with other drugs,

psychedelics seldom affect people the same way twice, because they tend to magnify whatever's already going on both inside and outside one's head.

After those two brief trips, the mushroom jar lived in the back of our pantry for years, untouched. The thought of giving over a whole day to a psychedelic experience had come to seem inconceivable. We were working long hours at new careers, and those vast swaths of unallocated time that college (or unemployment) affords had become a memory. Now another, very different kind of drug was available, one that was considerably easier to weave into the fabric of a Manhattan career: cocaine. The snowy-white powder made the wrinkled brown mushrooms seem dowdy, unpredictable, and overly demanding. Cleaning out the kitchen cabinets one weekend, we stumbled upon the forgotten jar and tossed it in the trash, along with the exhausted spices and expired packages of food.

Fast-forward three decades, and I really wish I hadn't done that. I'd give a lot to have a whole jar of magic mushrooms now. I've begun to wonder if perhaps these remarkable molecules might be wasted on the young, that they may have more to offer us later in life, after the cement of our mental habits and everyday behaviors has set. Carl Jung once wrote that it is not the young but people in middle age who need to have an "experience of the numinous" to help them negotiate the second half of their lives.

By the time I arrived safely in my fifties, life seemed to be running along a few deep but comfortable grooves: a long and happy marriage alongside an equally long and gratifying career. As we do, I had developed a set of fairly dependable mental algorithms for navigating whatever life threw at me, whether at home or at work. What was missing from my life? Nothing I could think of—until, that is, word of the new research into psychedelics began to find its way to me, making me wonder if perhaps I had failed to recognize the potential of these molecules as a tool for both understanding the mind and, potentially, changing it.

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HERE ARE THE THREE DATA POINTS that persuaded me this was the case.

In the spring of 2010, a front-page story appeared in the *New York Times* headlined “Hallucinogens Have Doctors Tuning In Again.” It reported that researchers had been giving large doses of psilocybin—the active compound in magic mushrooms—to terminal cancer patients as a way to help them deal with their “existential distress” at the approach of death.

These experiments, which were taking place simultaneously at Johns Hopkins, UCLA, and New York University, seemed not just improbable but crazy. Faced with a terminal diagnosis, the very *last* thing I would want to do is take a psychedelic drug—that is, surrender control of my mind and then in that psychologically vulnerable state stare straight into the abyss. But many of the volunteers reported that over the course of a single guided psychedelic “journey” they reconceived how they viewed their cancer and the prospect of dying. Several of them said they had lost their fear of death completely. The reasons offered for this transformation were intriguing but also somewhat elusive. “Individuals transcend their primary identification with their bodies and experience ego-free states,” one of the researchers was quoted as saying. They “return with a new perspective and profound acceptance.”

I filed that story away, until a year or two later, when Judith and I found ourselves at a dinner party at a big house in the Berkeley Hills, seated at a long table with a dozen or so people, when a woman at the far end of the table began talking about her acid trips. She looked to be about my age and, I learned, was a prominent psychologist. I was engrossed in a different conversation at the time, but as soon as the phonemes *L-S-D* drifted down to my end of the table, I couldn’t help but cup my ear (literally) and try to tune in.

At first, I assumed she was dredging up some well-polished anecdote from her college days. Not the case. It soon became clear that the acid trip in question had taken place only days or weeks before, and in fact was one of

her first. The assembled eyebrows rose. She and her husband, a retired software engineer, had found the occasional use of LSD both intellectually stimulating and of value to their work. Specifically, the psychologist felt that LSD gave her insight into how young children perceive the world. Kids' perceptions are not mediated by expectations and conventions in the been-there, done-that way that adult perception is; as adults, she explained, our minds don't simply take in the world as it is so much as they make educated guesses about it. Relying on these guesses, which are based on past experience, saves the mind time and energy, as when, say, it's trying to figure out what that fractal pattern of green dots in its visual field might be. (The leaves on a tree, probably.) LSD appears to disable such conventionalized, shorthand modes of perception and, by doing so, restores a childlike immediacy, and sense of wonder, to our experience of reality, as if we were seeing everything for the first time. (*Leaves!*)

I piped up to ask if she had any plans to write about these ideas, which riveted everyone at the table. She laughed and gave me a look that I took to say, *How naive can you be?* LSD is a schedule 1 substance, meaning the government regards it as a drug of abuse with no accepted medical use. Surely it would be foolhardy for someone in her position to suggest, in print, that psychedelics might have anything to contribute to philosophy or psychology—that they might actually be a valuable tool for exploring the mysteries of human consciousness. Serious research into psychedelics had been more or less purged from the university fifty years ago, soon after Timothy Leary's Harvard Psilocybin Project crashed and burned in 1963. Not even Berkeley, it seemed, was ready to go there again, at least not yet.

Third data point: The dinner table conversation jogged a vague memory that a few years before somebody had e-mailed me a scientific paper about psilocybin research. Busy with other things at the time, I hadn't even opened it, but a quick search of the term "psilocybin" instantly fished the paper out of the virtual pile of discarded e-mail on my computer. The paper had been sent to me by one of its co-authors, a man I didn't know by the name of Bob Jesse; perhaps he had read something I'd written about psychoactive plants

and thought I might be interested. The article, which was written by the same team at Hopkins that was giving psilocybin to cancer patients, had just been published in the journal *Psychopharmacology*. For a peer-reviewed scientific paper, it had a most unusual title: “Psilocybin Can Occasion Mystical-Type Experiences Having Substantial and Sustained Personal Meaning and Spiritual Significance.”

Never mind the word “psilocybin”; it was the words “mystical” and “spiritual” and “meaning” that leaped out from the pages of a pharmacology journal. The title hinted at an intriguing frontier of research, one that seemed to straddle two worlds we’ve grown accustomed to think are irreconcilable: science and spirituality.

Now I fell on the Hopkins paper, fascinated. Thirty volunteers who had never before used psychedelics had been given a pill containing either a synthetic version of psilocybin or an “active placebo”—methylphenidate, or Ritalin—to fool them into thinking they had received the psychedelic. They then lay down on a couch wearing eyeshades and listening to music through headphones, attended the whole time by two therapists. (The eyeshades and headphones encourage a more inward-focused journey.) After about thirty minutes, extraordinary things began to happen in the minds of the people who had gotten the psilocybin pill.

The study demonstrated that a high dose of psilocybin could be used to safely and reliably “occasion” a mystical experience—typically described as the dissolution of one’s ego followed by a sense of merging with nature or the universe. This might not come as news to people who take psychedelic drugs or to the researchers who first studied them back in the 1950s and 1960s. But it wasn’t at all obvious to modern science, or to me, in 2006, when the paper was published.

What was most remarkable about the results reported in the article is that participants ranked their psilocybin experience as one of the most meaningful in their lives, comparable “to the birth of a first child or death of a parent.” Two-thirds of the participants rated the session among the top five “most spiritually significant experiences” of their lives; one-third ranked it

the most significant such experience in their lives. Fourteen months later, these ratings had slipped only slightly. The volunteers reported significant improvements in their “personal well-being, life satisfaction and positive behavior change,” changes that were confirmed by their family members and friends.

Though no one knew it at the time, the renaissance of psychedelic research now under way began in earnest with the publication of that paper. It led directly to a series of trials—at Hopkins and several other universities—using psilocybin to treat a variety of indications, including anxiety and depression in cancer patients, addiction to nicotine and alcohol, obsessive-compulsive disorder, depression, and eating disorders. What is striking about this whole line of clinical research is the premise that it is not the pharmacological effect of the drug itself but the kind of mental experience it occasions—involving the temporary dissolution of one’s ego—that may be the key to changing one’s mind.

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AS SOMEONE not at all sure he has ever had a single “spiritually significant” experience, much less enough of them to make a ranking, I found that the 2006 paper piqued my curiosity but also my skepticism. Many of the volunteers described being given access to an alternative reality, a “beyond” where the usual physical laws don’t apply and various manifestations of cosmic consciousness or divinity present themselves as unmistakably real.

All this I found both a little hard to take (couldn’t this be just a drug-induced hallucination?) and yet at the same time intriguing; part of me wanted it to be true, whatever exactly “it” was. This surprised me, because I have never thought of myself as a particularly spiritual, much less mystical, person. This is partly a function of worldview, I suppose, and partly of neglect: I’ve never devoted much time to exploring spiritual paths and did not have a religious upbringing. My default perspective is that of the