



## INTRODUCTION

Of all the many things humans rely on plants for—sustenance, beauty, medicine, fragrance, flavor, fiber—surely the most curious is our use of them to change consciousness: to stimulate or calm, to fiddle with or completely alter, the qualities of our mental experience. Like most people, I use a couple of plants this way on a daily basis. Every morning without fail I begin my day by preparing a hot-water infusion of one of two plants that I depend on (and dependent I am) to clear the mental fog, sharpen my focus, and prepare myself for the day ahead. We don't usually think of caffeine as a drug, or our daily use of it as an addiction, but that is only because coffee and tea are legal and our dependence on them is socially acceptable. So, then, what exactly is a drug? And why is making tea from the leaves of *Camellia sinensis* uncontroversial, while doing the same thing with the seed heads of *Papaver somniferum* is, as I discovered to my peril, a federal crime?

All who try to construct a sturdy definition of drugs eventually run aground. Is chicken soup a drug? What about sugar? Artificial sweeteners? Chamomile tea? How about a placebo? If we define a

drug simply as a substance we ingest that changes us in some way, whether in body or in mind (or both), then all those substances surely qualify. But shouldn't we be able to distinguish foods from drugs? Faced with that very dilemma, the Food and Drug Administration punted, offering a circular definition of drugs as "articles other than food" that are recognized in the pharmacopoeia—that is, as drugs by the FDA. Not much help there.

Things become only slightly clearer when the modifier "illicit" is added: an illicit drug is whatever a government decides it is. It can be no accident that these are almost exclusively the ones with the power to change consciousness. Or, perhaps I should say, with the power to change consciousness in ways that run counter to the smooth operations of society and the interests of the powers that be. As an example, coffee and tea, which have amply demonstrated their value to capitalism in many ways, not least by making us more efficient workers, are in no danger of prohibition, while psychedelics—which are no more toxic than caffeine and considerably less addictive—have been regarded, at least in the West since the mid-1960s, as a threat to social norms and institutions.

But even these classifications are not as fixed or as sturdy as you may think. At various times both in the Arab world and in Europe, authorities have outlawed coffee, because they regarded the people who gathered to drink it as politically threatening. As I write, psychedelics seem to be undergoing a change of identity. Since researchers have demonstrated that psilocybin can be useful in treating mental health, some psychedelics will probably soon become FDA-approved medicines: that is, recognized as more helpful than threatening to the functioning of society.

This happens to be precisely how Indigenous peoples have always

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regarded these substances. In many Indigenous communities, the ceremonial use of peyote, a psychedelic, *reinforces* social norms by bringing people together to help heal the traumas of colonialism and dispossession. The government recognizes the First Amendment right of Native Americans to ingest peyote as part of the free exercise of their religion, but under no circumstances do the rest of us enjoy that right, even if we use peyote in a similar way. So here is a case where it is the identity of the user rather than the drug that changes its legal status.

Nothing about drugs is straightforward. But it's not quite true that our plant taboos are entirely arbitrary. As these examples suggest, societies condone the mind-changing drugs that help uphold society's rule and ban the ones that are seen to undermine it. That's why in a society's choice of psychoactive substances we can read a great deal about both its fears and its desires.

Ever since I took up gardening as a teenager and attempted to grow cannabis, I have been fascinated by our attraction to these powerful plants as well as by the equally powerful taboos and fraught feelings with which we surround them. I've come to appreciate that when we take these plants into our bodies and let them change our minds, we are engaging with nature in one of the most profound ways possible.

There is scarcely a culture on earth that hasn't discovered in its environment at least one such plant or fungus, and in most cases a whole suite of them, that alters consciousness in one of a variety of ways. Through what was surely a long and perilous trial and error, humans have identified plants that lift the burden of physical pain;

render us more alert or capable of uncommon feats; make us more sociable; elicit feelings of awe or ecstasy; nourish our imagination; transcend space and time; occasion dreams and visions and mystical experiences; and bring us into the presence of our ancestors or gods. Evidently, normal everyday consciousness is not enough for us humans; we seek to vary, intensify, and sometimes transcend it, and we have identified a whole collection of molecules in nature that allow us to do that.

*This Is Your Mind on Plants* is a personal inquiry into three of those molecules and the remarkable plants that produce them: the morphine in the opium poppy; the caffeine in coffee and tea; and the mescaline produced by the peyote and San Pedro cacti. The second of these molecules is legal everywhere today; the first is illegal in most places (unless it has been refined by a pharmaceutical company and prescribed by a physician); and the third is illegal in the United States unless you are a member of a Native American tribe. Each represents one of the three broad categories of psychoactive compounds: the downer (opium); the upper (caffeine); and what I think of as the outer (mescaline). Or, to put it a bit more scientifically, I profile here a sedative, a stimulant, and a hallucinogen.

Taken together, these three plant drugs cover much of the spectrum of the human experience of psychoactive substances, from the everyday use of caffeine, the most popular psychoactive drug on the planet; to the ceremonial use of mescaline by Indigenous peoples; to the age-old use of opiates to relieve pain. That particular chapter is set during the drug war, at a topsy-turvy moment when the government was paying more attention to a bunch of gardeners growing poppies in order to brew a mild narcotic tea than it was to a pharmaceutical company that was knowingly addicting millions of

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Americans to its FDA-approved opiate, OxyContin. I was one of those gardeners.

I tell each of these stories from multiple perspectives and through a variety of lenses: historical, anthropological, biochemical, botanical, and personal. In each case, I have some skin in the game—or perhaps I should say brain cells, since I don't know how to write about how it feels, and what it means, to change consciousness without conducting some self-experimentation. Though in the case of caffeine, self-experimentation meant abstaining from it rather than partaking, which proved much harder to do.

One of these chapters consists of an essay I wrote twenty-five years ago, when the drug war was raging, and it bears the scars of that period of fear and paranoia. But the other stories have been inflected by the fading of that war, the end of which now appears in sight. In the 2020 election, Oregonians voted to decriminalize the possession of *all* drugs and specifically to legalize therapy using psilocybin. A ballot measure passed in Washington, D.C., calls for the decriminalization<sup>\*</sup> of “entheogenic plants and fungi.” (“Entheogen,” from the Greek for “manifesting the god [divine] within,” is an alternative term for psychedelics, coined in 1979 by a group of religious scholars hoping to remove the counterculture taint from this class of drugs and underscore the spiritual use to which they have been put for thousands of years.) In the same election, New Jersey, along with four traditionally red states—Arizona, Mississippi, Montana, South Dakota—voted to liberalize marijuana laws, bringing

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\*“Decriminalize” is a bit of a misnomer; the ballot measure instructs law enforcement and prosecutors to make the prosecution of crimes involving the growing, possession, or use—but not the sale—of plant medicines their lowest priority. The campaign was organized by a new drug-reform movement called Decriminalize Nature, which I discuss in the chapter on mescaline.

the number of states that have legalized some form of marijuana use to thirty-six.

My wager in writing *This Is Your Mind on Plants* is that the decline of the drug war, with its brutally simplistic narratives about “your brain on drugs,” has opened a space in which we can tell some other, much more interesting stories about our ancient relationship with the mind-altering plants and fungi with which nature has blessed us.

I use the word “blessed” in full awareness of the human tragedies that can accompany the use of drugs. Much better than we do, the Greeks understood the two-faced nature of drugs, an understanding reflected in the ambiguity of their term for them: *pharmakon*. A *pharmakon* can be either a medicine or a poison; it all depends—on use, dose, intention, and set and setting.\* (The word has a third meaning as well, one often relied on during the drug war: a *pharmakon* is also a scapegoat, something for a group to blame its problems on.) Drug abuse is certainly real, but it is less a matter of breaking the law than of falling into an unhealthy relationship with a substance, whether licit or illicit, one in which the ally, or medicine, has become an enemy. The same opiates that killed some fifty thousand Americans by overdose in 2019 also make surgery enduring and ease the passage out of this life. Surely that qualifies as a blessing.

The stories I tell here put this trio of psychoactive plant chemicals into the context of our larger relationship to nature. One of the innumerable threads connecting us to the natural world is the one

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\*“Set and setting” is the term Timothy Leary introduced to underscore the powerful influence of one’s mind-set and physical setting in shaping a psychedelic experience.

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that links plant chemistries to human consciousness. And since this *is* a relationship, we need to account for the plants' points of view as well as our own. How amazing is it that so many kinds of plants have hit upon the precise recipes for molecules that fit snugly into receptors in human brains? And that by doing so these molecules can short-circuit our experience of pain, or rouse us, or obliterate the sense of being a separate self? You have to wonder: what's in it for the plants to devise and manufacture molecules that can pass for human neurotransmitters and affect us in such profound ways?

Most of the molecules that plants produce that change animal minds start out as tools for defense: alkaloids like morphine, caffeine, and mescaline are bitter-tasting toxins meant to discourage animals from eating the plants that make them and, should the animals persist, to poison them. But plants are clever, and over the course of evolution they've learned that simply killing a pest outright is not necessarily the smartest strategy. Since a lethal pesticide would quickly select for resistant members of the pest population, rendering it ineffective, plants have evolved subtler and more devious strategies: chemicals that instead mess with the minds of animals, confusing or disorienting them or ruining their appetite—something that caffeine, mescaline, and morphine all reliably do.

But while most of the psychoactive molecules plants have developed started out as poisons, they sometimes evolved into the opposite: attractants. Scientists recently discovered a handful of species that produce caffeine in their nectar, which is the last place you would expect a plant to serve up a poisonous beverage. These plants have discovered that they can attract pollinators by offering them a small shot of caffeine; even better, that caffeine has been shown to sharpen the memories of bees, making them more faithful,



efficient, and hardworking pollinators. Pretty much what caffeine does for us.

Once humans discovered what caffeine and morphine and mescaline could do for them, the plants that produce the greatest amounts of these chemicals were the ones that prospered in the sunshine of our attention; we disseminated their genes around the world, vastly expanding their habitat and providing for their every need. By now our fates and the fates of these plants are complexly intertwined. What began as war has evolved into marriage.

Why do we humans go to such lengths to change our minds, and then why do we fence that universal desire with laws and customs, taboos and anxieties? These questions have occupied me since I began writing about our engagement with the natural world more than thirty years ago. When you compare this desire to the other needs we turn to nature to gratify—for food, clothing, shelter, beauty, and so on—the drive to alter consciousness wouldn't seem to contribute nearly as much, if anything, to our success or survival. In fact, the desire to change consciousness may be seen as maladaptive, since altered states can put us at risk for accidents or make us more vulnerable to attack. Also, many of these plant chemicals are toxic; others, like morphine, are highly addictive.

But if our species' desire to change consciousness is universal, a human given, then doing so should offer benefits to make up for the risks, or natural selection would long ago have weeded out the drug takers. Take, for example, morphine's value as a painkiller, which has made it one of the most important drugs in the pharmacopoeia going back thousands of years.

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Plants that change consciousness answer to other human needs as well. We shouldn't underestimate the value, to people trapped in monotonous lives, of a substance that can relieve boredom and entertain by sponsoring novel sensations and thoughts in the mind. Some drugs can expand the contours of a world constrained by circumstance, as I discovered during the pandemic. Drugs that enhance sociability not only gratify us but presumably result in more offspring. Stimulants like caffeine improve concentration, making us better able to learn and work, and to think in rational, linear ways. Human consciousness is always at risk of getting stuck, sending the mind around and around in loops of rumination; mushroom chemicals like psilocybin can nudge us out of those grooves, loosening stuck brains and making possible fresh patterns of thought.

Psychedelic drugs can also benefit us—and occasionally our culture—by stimulating the imagination and nourishing creativity in the individuals who take them. This is not to suggest that all the ideas that occur to the altered mind are any good; most of them aren't. But every now and then a tripping brain will hit upon a novel idea, a solution to a problem, or a new way of looking at things that will benefit the group and, possibly, change the course of history. The case can be made that the introduction of caffeine to Europe in the seventeenth century fostered a new, more rational (and sober) way of thinking that helped give rise to the age of reason and the Enlightenment.

It's useful to think of these psychoactive molecules as mutagens, but mutagens operating in the realm of human culture rather than in biology. In the same way that exposure to a disruptive force like radiation can mutate genes, introducing variation and throwing off new traits that every so often prove adaptive for the species, psychoactive

drugs, operating on the minds of individuals, occasionally contribute useful new memes to the evolution of culture—conceptual breakthroughs, fresh metaphors, novel theories. Not always, not even often, but every now and then, the encounter of a mind and a plant molecule changes things. If the human imagination has a natural history, as it must, can there be any doubt that plant chemistries have helped to inform it?

Psychedelic compounds can promote experiences of awe and mystical connection that nurture the spiritual impulse of human beings—indeed, that might have given rise to it in the first place, according to some religious scholars.<sup>5</sup> The notion of a beyond, of a hidden dimension of reality, or of an afterlife—these, too, may be memes introduced to human culture by visions that psychoactive molecules inspired in human minds. Drugs are not the only way to occasion the sort of mystical experience at the core of many religious traditions—meditation, fasting, and solitude can achieve similar results—but they are a proven tool for making it happen. The spiritual or ceremonial use of plant drugs can also help knit people together, fostering a stronger sense of social connection accompanied by a diminished sense of self. We have only just begun to understand how the human involvement with psychoactive plants has shaped our history.

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<sup>5</sup>The idea that psychedelics have played a foundational role in religion has been floating around the fringes of religious studies since at least the 1970s, when R. Gordon Wasson (the man who rediscovered psilocybin) collaborated with Albert Hofmann (the inventor of lysergic acid diethylamide, or LSD) and a young classicist named Carl A. P. Ruck to write *The Road to Eleusis: Unveiling the Secret of the Mysteries* (New York: Harcourt Brace Jovanovich, 1978; reprint, Berkeley: North Atlantic Books, 2008). See also John M. Allegro, *The Sacred Mushroom and the Cross* (London: Hodder and Stoughton; New York: Doubleday, 1970). An excellent recent exploration of the role of psychedelics in early religion is found in Brian C. Muraresku's *The Immortality Key: The Secret History of the Religion with No Name* (New York: St. Martin's Press, 2020).

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It probably shouldn't surprise us that plants of such power and possibility are surrounded by equally powerful emotions, laws, rituals, and taboos. These reflect the understanding that changing minds can be disruptive to both individuals and societies, and that when such powerful tools are placed in the hands of fallible human beings, things can go very wrong. We have much to learn from traditional Indigenous cultures that have made long use of psychedelics like mescaline or ayahuasca: as a rule, the substances are never used casually, but always with intention, surrounded by ritual and under the watchful eye of experienced elders. These people recognize that these plants can unleash Dionysian energies that can get out of control if not managed with care.

But the blunt instrument of a drug war has kept us from reckoning with these ambiguities and the important questions about our nature that they raise. The drug war's simplistic account of what drugs do and are, as well as its insistence on lumping them all together under a single meaningless rubric, has for too long prevented us from thinking clearly about the meaning and potential of these very different substances. The legal status of this or that molecule is one of the least interesting things about it. Much like a food, a psychoactive drug is not a thing—without a human brain, it is inert—so much as it is a relationship; it takes both a molecule and a mind to make anything happen. The premise of this book is that these three relationships hold up mirrors to our deepest human needs and aspirations, the operations of our minds, and our entanglement with the natural world.



# OPIUM





## *Prologue*

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The narrative that follows this prologue is something of a period piece, a dispatch from the war on drugs near its peak, circa 1996–97, that itself became a minor casualty of that war. The piece originally appeared in the April 1997 issue of *Harper's Magazine*, but not in its entirety. After consulting with several lawyers, I concluded there were four or five crucial pages of the narrative that I couldn't publish without risking arrest as well as the forfeiture of our house and garden—the wrecking of our life, basically. Twenty-four years later, those pages—which had gone missing after I hid them away—have been restored and appear here in print for the first time.

The story began as something of a lark and ended in anxiety, paranoia, and self-censorship. At the time, my wife and I and our four-year-old son were living in rural Connecticut, and I was writing personal essays about the goings-on in my garden. As a gardener, I'd become fascinated by the symbiotic relationship our species has struck up with certain plants, using them to gratify our desires for everything from nourishment to beauty to a change of consciousness. Early in 1996, my editor at *Harper's Magazine*, Paul Tough, sent me an underground-press book called *Opium for the Masses*



that had crossed his desk, suggesting there might be a column in it for me. I was immediately intrigued by the idea that I could grow opium and produce this most ancient of psychoactive drugs in my garden from easily obtainable seeds. I decided to give it a try, just to see what would happen. What happened turned out to be a living nightmare, as I found myself ensnared in a quiet but determined federal campaign to stamp out knowledge of an easy-to-produce home-grown narcotic before it became a fad.

Read today, in what we can hope are the waning days of the drug war, the piece feels overwrought in places, but it's important to understand the context in which it was written. Under President Clinton, the government was prosecuting the drug war with a vehemence never before seen in America. The year I planted my poppies, more than a million Americans were arrested for drug crimes. The penalties for many of those crimes had become draconian under Clinton's 1994 crime bill, which introduced new "three-strikes" sentencing provisions and led to mandatory minimum sentences for many non-violent drug offenses. By the mid-1990s, a series of Supreme Court decisions in drug cases had handed the government a raft of new powers that have significantly eroded our civil liberties. The government also won new powers to confiscate property—houses, cars, land—involved in drug crimes, even when no individual has been convicted, or even charged.

Were these erosions of our liberties a casualty of the drug war or its objective? It's a fair question. President Clinton didn't start the drug war—that distinction belongs to Richard Nixon, who we now know viewed drug enforcement not as a matter of public health or safety but as a political tool to wield against his enemies. In an April 2016 article in *Harper's Magazine*, "Legalize It All," Dan Baum

recounted an interview that he conducted with John Ehrlichman in 1994—two years before my misadventures in the garden. Ehrlichman, you will recall, was President Nixon’s domestic policy adviser; he served time in federal prison for his role in Watergate. Baum came to talk to Ehrlichman about the drug war, of which he was a key architect.

“You want to know what this was really all about?” Ehrlichman began, startling the journalist with both his candor and his cynicism. Ehrlichman explained that the Nixon White House “had two enemies: the antiwar left and black people. . . . We knew we couldn’t make it illegal to be either against the war or black, but by getting the public to associate the hippies with marijuana and blacks with heroin, and then criminalizing both heavily, we could disrupt those communities. We could arrest their leaders, raid their homes, break up their meetings, and vilify them night after night on the evening news. Did we know we were lying about the drugs? Of course we did.”\*

Although neither victory nor defeat was ever declared in the war on drugs, you seldom hear the phrase on the lips of government officials and politicians anymore. I suspect there are two reasons for their silence: As a matter of politics, the government has less need of draconian drug laws since declaring a new “war” in 2001. The war on terror has taken over from the war on drugs as a justification for expanding government power and curbing civil liberties. And as a matter of public health, it has become obvious to anyone paying attention that, after a half century of waging war on drugs, it is the drugs

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\*The quote has been disputed by some of Ehrlichman’s colleagues in the administration; Baum died in 2020, so I was not able to ask him for documentation or an explanation of why he waited more than a decade to publish it.

that are winning. Criminalizing drugs has done little to discourage their use or to lower rates of addiction and death from overdose. The drug war's principal legacy has been to fill our prisons with hundreds of thousands of nonviolent criminals—a great many more of them Black people than hippies. This, then, is the first historical context in which my account of growing opium in 1996 should be read, as a window on a dark and fearful time in America, when you didn't have to leave your garden to become a criminal and put yourself in serious legal jeopardy. But there is another historical context in which the piece can be read, and this one nobody was aware of at the time.

The words “opium” and “opiate” carry a very different set of connotations today than they did when I planted my poppies in 1996. Now the words conjure a national public health catastrophe, but in 1996 there was no “opioid crisis” in America. What there was were maybe half a million heroin addicts, and about forty-seven hundred deaths from drug overdoses each year. At the time, these tragedies were often cited to justify the war on drugs, but in a country of 270 million this hardly qualified as a public health crisis. (Which is the reason cannabis had to be added to the war's list of targets.) Today, by comparison, deaths from overdose of opiates, both licit and illicit, approach fifty thousand a year, and an estimated 2 million Americans are addicted to opiates of one kind or another. (Another 10 million abuse opiates, according to the Substance Abuse and Mental Health Services Administration.) After the coronavirus, the opiate epidemic represents the biggest threat to public health since the AIDS/HIV epidemic.

The chief culprit in the opiate epidemic is not a virus, however, or even the illicit drug economy; it's a corporation. What I didn't know when I was conducting my illegal experiments with opium is