

*“Yet plants have been evolving much, much longer than we have, have been inventing new strategies for survival and perfecting their designs for so long that to say that one of us is the more “advanced” really depends on how you define that term, on what “advances” you value. Naturally we value abilities such as consciousness, toolmaking, and language, if only because these have been the destinations of our own evolutionary journey thus far. Plants have travelled all that distance and then some—they’ve just travelled in a different direction.*

*Plants are nature’s alchemists, expert at transforming water, soil, and sunlight into an array of precious substances, many of them beyond the ability of human beings to conceive, much less manufacture. While we were nailing down consciousness and learning to walk on two feet, they were, by the same process of natural selection, inventing photosynthesis (the astonishing trick of converting sunlight into food) and perfecting organic chemistry. As it turns out, many of the plants’ discoveries in chemistry and physics have served us well. From plants come chemical compounds that nourish and heal and poison and delight the senses, others that rouse and put to sleep and intoxicate, and a few with the astounding power to alter consciousness—even to plant dreams in the brains of awake humans.*

*Why would they go to all this trouble? Why should plants bother to devise the recipes for so many complex molecules and then expend the energy needed to manufacture them? One important reason is defence. A great many of the chemicals plants produce are designed, by natural selection, to compel other creatures to leave them alone: deadly poisons, foul flavors, toxins to confound the minds of predators. But many other of the substances plants make have exactly the opposite effect, drawing other creatures to them by stirring and gratifying their desires.*

*The same great existential fact of plant life explains why plants make chemicals to both repel and attract other species: immobility. The one big thing plants can’t do is move, or, to be more precise, locomote. Plants can’t escape the creatures that prey on them; they also can’t change location or extend their range without help. And so about a hundred million years ago plants stumbled on away—actually a few thousand different ways—of getting animals to carry them, and their genes, here and there. This was the evolutionary watershed associated with the advent of the angiosperms, an extraordinary new class of plants that made showy flowers and formed large seeds that other species were induced to disseminate. Plants began evolving burrs that attach to animal fur like Velcro, flowers that seduce honeybees in order to powder their thighs with pollen, and acorns that squirrels obligingly taxi from one forest to another, bury, and then, just often enough, forget to eat.*

*Even evolution evolves. About ten thousand years ago the world witnessed a second flowering of plant diversity that we would come to call, somewhat self-centeredly, “the invention of agriculture.” A group of angiosperms refined their basic put-the-animals-to-work strategy to take advantage of one particular animal that had*

*evolved not only to move freely around the earth, but to think and trade complicated thoughts. These plants hit on a remarkably clever strategy: getting us to move and think for them. Now came edible grasses (such as wheat and corn) that incited humans to cut down vast forests to make more room for them; flowers whose beauty would transfix whole cultures; plants so compelling and useful and tasty they would inspire human beings to seed, transport, extol, and even write books about them. This is one of those books.*

*So am I suggesting that the plants made me do it? Only in the sense that the flower “makes” the bee pay it a visit. Evolution doesn’t depend on will or intention to work; it is, almost by definition, an unconscious, unwilled process. All it requires are beings compelled, as all plants and animals are, to make more of themselves by what-ever means trial and error present. Sometimes an adaptive trait is so clever it appears purposeful: the ant that “cultivates” its own gardens of edible fungus, for instance, or the pitcher plant that “convinces” a fly it’s a piece of rotting meat. But such traits are clever only in retrospect. Design in nature is but a concatenation of accidents, culled by natural selection until the result is so beautiful or effective as to seem a miracle of purpose.*

*By the same token, we’re prone to overestimate our own agency in nature. Many of the activities humans like to think they under-take for their own good purposes— inventing agriculture, outlawing certain plants, writing books in praise of others—are mere contingencies as far as nature is concerned. Our desires are simply more grist for evolution’s mill, no different from a change in the weather: a peril for some species, an opportunity for others. Our grammar might teach us to divide the world into active subjects and passive objects, but in a coevolutionary relationship every subject is also an object, every object a subject. That’s why it makes just as much sense to think of agriculture as something the grasses did to people as a way to conquer the trees.*