Disgust turns out to be another valuable tool for negotiating the omnivore's dilemma. Though the emotion has long since attached itself to a great many objects having nothing to do with food, food is wh and why it began, as the etymology of the word indicates. (It comes from the Middle French verb *desgouster*, to taste.) Rozin, who has written or coauthored several fascinating articles about disgust, defines it as the fear of incorporating offending substances into one's body. Much of what people deem disgusting is culturally determined, but there are certain things that apparently disgust us all, and all these substances, Rozin notes, come from animals: bodily fluids and secretions, corpses, decaying flesh, feces. (Curiously, the one bodily fluid of other people that doesn't disgust us is the one produced by the human alone: tears. Consider the sole type of used tissue you'd be willing to share.) Disgust is an extremely useful adaptation, since it prevents omnivores from ingesting hazardous bits of animal matter: rotten meat that might carry bacterial toxins or infected bodily fluids. In the words of Harvard psychologist Steven Pinker, "Disgust is intuitive microbiology."

Yet helplful as it is, our sense of taste is not a completely adequate guide to what we can and cannot eat. In the case of plants, for instance, it turns out that some of the bitterest ones contain valuable nutrients, even useful medicines. Long before the domestication of plants (a process in which we generally selected for nonbitterness), early mans developed various other tools to unlock the usefulness of these foods, either by overcoming their defenses or overcoming our own aversion to how they taste.

That's precisely what people must have done in the case of the sap in the opium poppy or the bark of the willow, both of which taste extremely bitter—and both of which contain powerful medicines. Once humans discovered the curative properties of salicylic acid in willows (the active ingredient in aspirin) and the relief from pain offered by the poppy's opiates, our instinctive aversion to these plants' bitterness gave way to an even more convincing cultural belief that the plants were worth ingesting even so; basically, our powers of recognition, memory, and communication overcame the plants' defenses.

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Humans also learned to overcome plant defenses by cooking or otherwise processing foods to remove their bitter toxins. Native Americans, for example, figured out that if they ground, soaked, and roasted acorns they could unlock the rich source of nutrients in the bitter nuts. Humans also discovered that the roots of the cassava, which effectively defends itself against most eaters by producing cyanide, could be made edible by cooking. By learning to cook cassava humans unlocked a fabulously rich source of carbohydrate energy, one that, just as important, they had all to themselves, since locusts, pigs, porcupines, and all the other potential cassava eaters haven't yet figured out how to overcome the plant's defense.

Cooking, one of the omnivore's cleverest tools, opened up whole new vistas of edibility. Indeed, in doing so it probably made us who we are. By making these foods more digestible, cooking plants and animal flesh vastly increased the amount of energy available to early humans, and some anthropologists believe this boon accounts for the dramatic increase in the size of the hominid brain about 1.9 million years ago. (Around the same time our ancestors' teeth, jaws, and gut slimmed down to their present proportions, since they were no longer needed to process large quantities of raw food.) By improving digestibility cooking also cut down on the time we had to spend foraging for plants and simply chewing raw meat, freeing that time and energy for other pursuits.

Last but not least, cooking abruptly changed the terms of the evolutionary arms race between omnivores and the species they would eat by allowing us to overcome their defenses. Apart from fruits, which have a declared interest in becoming another species' lunch (this being their strategy for spreading their seeds), and grasses, which welcome grazing as a strategy to keep their habitat free of shady competitors, most wild foods are parts of plants or animals that have no interest in being eaten; they evolved defenses to keep themselves whole. But evolution doesn't stand still, and eaters are constantly evolving counteradaptations to overcome the defenses of nutrient sources: a new digestive enzyme to detoxify a plant or fungal poison, say, or a new perceptual skill

to overcome an edible creature's camouflage. In response, the plants, animals, and fungi evolved new defenses to make themselves either more difficult to catch or to digest. This arms race between the eater and the potentially eaten unfolded at a stately pace until early humans came on the scene. For a countermeasure such as cooking bitter plants completely changed the rules of the game. All at once a species' painstakingly developed defense against being eaten had been breached and, assuming it can erect a new defense, that is going to take time—evolutionary time.

Cooking is often cited (along with tool making and a handful of other protohuman tricks) as evidence that the human omnivore entered a new kind of ecological niche in nature, one that some anthropologists have labeled "the cognitive niche." The term seems calculated to smudge the line between biology and culture, which is precisely the point. To these anthropologists the various tools humans have developed to overcome the defenses of other species—not only food-processing techniques but a whole gamut of hunting and gathering tools and talents—represent biocultural adaptations, so-called because they constitute evolutionary developments rather than cultural inventions that somehow stand apart from natural selection.

In this sense learning to cook cassava roots or disseminate the hard-won knowledge of safe mushrooms is not all that different from recruiting rumenal bacteria to nourish oneself. The cow depends on the ingenious adaptation of the rumen to turn an exclusive diet of grasses into a balanced meal; we depend instead on the prodigious powers of recognition, memory, and communication that allow us to cook cassava or identify an edible mushroom and share that precious information. The same process of natural selection came up with both strategies; one just happens to rely on cognition, the other goes with the gut.

3. THE ANXIETY OF EATING

Being an omnivore occupying a cognitive niche in nature is both a boon and a challenge, a source of tremendous power as well as anxiety. Omnivory is what allowed humans to adapt to a great many environments all over the planet, and to survive in them even after our favored foods were driven to extinction, whether by accident or because of our own too great success in overcoming other species' defenses. After the mastodon there would be the bison and then the cow; after the sturgeon, the salmon, and then, perhaps, some novel mycoprotein like "quorn."

Being a generalist offers us deep satisfactions, too, enjoyments that flow equally from the omnivore's innate neophilia—the pleasure of variety—and neophobia—the comfort of the familiar. What began as a set of simple sensory responses to food (sweet, bitter, disgusting) we've elaborated into more complicated canons of taste that afford us aesthetic pleasures undreamed of by the koala or cow. Since "everything that is edible is at the mercy of his vast appetite," Brillat-Savarin writes, "the machinery of taste attains a rare perfection in man," making "man the only gourmand in the whole of nature." Taste in this more cultivated sense brings people together, not only in small groups at the table but as communities. For a community's food preferences—the strikingly short list of foods and preparations it regards as good to eat and think—represent one of the strongest social glues we have. Historically, national cuisines have been remarkably stable, and resistant to change, which is why the immigrant's refrigerator is the very last place to look for signs of assimilation.

Yet the surfeit of choice that confronts the omnivore brings stresses and anxieties also undreamed of by the cow or the koala, for whom the distinction between The Good Things to Eat and the Bad is second nature. And while our senses can help us draw the first rough distinctions between good and bad foods, we humans have to rely on culture to remember and keep it all straight. So we codify the rules of wise eating

in an elaborate structure of taboos, rituals, manners, and culinary traditions, covering everything from the proper size of portions to the order in which foods should be consumed to the kinds of animals it is and is not okay to eat. Anthropologists argue over whether all these rules make biological sense—some, like the kosher rules, are probably designed more to enforce group identity rather than to protect health. But certainly a great many of our food rules do make biological sense, and they keep each of us from having to confront the omnivore's dilemma every time we visit the supermarket or sit down to eat.

That set of rules for preparing food we call a cuisine, for example, specifies combinations of foods and flavors that on examination do a great deal to mediate the omnivore's dilemma. The dangers of eating raw fish, for example, are minimized by consuming it with wasabi, a potent antimicrobial. Similarly, the strong spices characteristic of many cuisines in the tropics, where food is quick to spoil, have antibacterial properties. The meso-American practice of cooking corn with lime and serving it with beans, like the Asian practice of fermenting soy and serving it with rice, turn out to render these plant species much more nutritious than they otherwise would be. When not fermented, soy contains an antitrypsin factor that blocks the absorption of protein, rendering the bean indigestible; unless corn is cooked with an alkali like lime its niacin is unavailable, leading to the nutritional deficienc called pellagra. Corn and beans each lack an essential amino acid (lysine and methionine, respectively); eat them together and the proper balance is restored. Similarly, a dish that combines fermented soy with rice is nutritionally balanced. As Rozin writes, "[C]uisines embody some of a culture's accumulated wisdom about food." Often when one culture imports another's food species without importing the associated cuisine, and its embodied wisdom, they've made themselves sick.

Rozin suggests that cuisines also help negotiate the tension between the omnivore's neophilia and neophobia. By preparing a novel kind of food using a familiar complex of flavors—by cooking it with traditional spices, say, or sauces—the new is rendered familiar, "reducing the tension of ingestion."