FROM THE NON-FICTION BEST SELLER "OMNIVORE'S DILEMMA" BY MICHAEL POLLAN

EATS ALL PLANTS & ANIMALS

SIXTEEN

THE OMNIVORE'S DILEMMA

A DIFFICULT DECISION w/ +/- ON BOTH SIDES.

(1)

1. GOOD TO EAT, GOOD TO THINK

A MUSHROOM — MANY THINK ALL MUSHROOMS ARE POISONOUS.

My encounter with the chanterelle—or was it a false chanterelle?—put me in touch with one of the most elemental facts about human eating: It can be dangerous, and even when it isn't dangerous, it is fraught. The blessing of the omnivore is that he can eat a great many different things in nature. The curse of the omnivore is that when it comes to figuring out which of those things are safe to eat, he's pretty much on his own.

As noted at the beginning of this book, the omnivore's dilemma, or paradox, was first described in the 1976 paper, "The Selection of Foods by Rats, Humans, and Other Animals," by University of Pennsylvania psychologist Paul Rozin. Rozin studied food selection behavior in rats, which are omnivores, in the hopes of understanding something about food selection in people. Like us, rats daily confront the bounty of nature and its manifold perils—perils designed to protect plants, animals, and microbes from being eaten. To defend themselves from predation,

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plants and fungi produce a great many poisons, everything from cyanide and oxalic acid to a wide variety of toxic alkaloids and glucosides; similarly, bacteria colonizing dead plants and animals produce toxins to keep other potential eaters at bay. (Also similarly, we humans manufacture toxins to keep rats from eating our food.)

Among the more specialized eaters, natural selection takes care of the whole problem of food selection, hardwiring the monarch butterfly, say, to regard the milkweed as food and everything else in nature as not food. No thought or emotion need go into deciding whether to eat any given thing. This approach works for the monarch because its digestion can wring everything it needs for its survival from milkweed leaves (including a toxin that makes the butterfly itself unappetizing to birds). But rats and humans require a wider range of nutrients and so must eat a wider range of foods, some of them questionable. Whenever they encounter a potential new food they find themselves torn between two conflicting emotions unknown to the specialist eater, each with its own biological rationale: neophobia, a sensible fear of ingesting anything new, and neophilia, a risky but necessary openness to new tastes.

Rozin found that the rat minimizes the risk of the new by treating its digestive tract as a kind of laboratory. It nibbles a very little bit of the new food (assuming it is food) and then waits to see what happens. The animal evidently has a good enough grasp of causality ("delayed learning," as the social scientists call it) to link a stomach ache in the present to something it ingested a half hour before, and a good enough memory to store that finding as a lifelong aversion to that particular substance. (This is what makes poisoning rats so difficult.) I might have used the same strategy to test my chanterelle, eating a tiny bite of it and waiting to see what happened.

Rozin's early work on food selection behavior postulated that the "omnivoral problem" would explain a great deal, not only about how and what we eat, but who we are as a species, and subsequent research by him and others, in anthropology as well as psychology, has done much to confirm his hunch. The concept of the omnivore's dilemma helps unlock not only simple food-selection behaviors in animals, but

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much more complex "biocultural" adaptations in primates (humans included) as well as a wide range of otherwise baffling cultural practices in humans, the species for whom, as Claude Lévi-Strauss famously said, food must be "not only good to eat, but also good to think."

The omnivore's dilemma is replayed every time we decide whether or not to ingest a wild mushroom, but it also figures in our less primordial encounters with the putatively edible: when we're deliberating the nutritional claims on the boxes in the cereal aisle; when we're settling on a weight-loss regimen (low fat or low carb?); or deciding whether to sample McDonald's' newly reformulated chicken nugget; or weighing the costs and benefits of buying the organic strawberries over the conventional ones; or choosing to observe (or flout) kosher or halal rules; or determining whether or not it is ethically defensible to eat meat—that is, whether meat, or any other of these things, is not only good to eat, but good to think as well.

2. HOMO OMNIVOROUS

The fact that we humans are indeed omnivorous is deeply inscribed in our bodies, which natural selection has equipped to handle a remarkably wide-ranging diet. Our teeth are omnicompetent—designed for tearing animal flesh as well as grinding plants. So are our jaws, which we can move in the manner of a carnivore, a rodent, or an herbivore, depending on the dish. Our stomachs produce an enzyme specifically designed to break down elastin, a type of protein found in meat and nowhere else. Our metabolisms requires specific chemical compounds that, in nature, can be gotten only from plants (like vitamin C) and others that can be gotten only from animals (like vitamin B-12). More than just the spice of human life, variety for us appears to be a biological necessity.

By comparison, nature's specialists can get everything they need from a small number of foods and, very often, a highly specialized digestive system, freeing them from the need to devote a lot of brain-

power to the challenges of omnivorousness. The ruminant, for example, specializes in eating grass, even though the grasses by themselves don't supply all the nutrients the animal needs. What they do supp' food for the microbes living in the animal's rumen, which in turn supply the other nutrients the animal needs to survive. The ruminant's genius for keeping itself well fed resides in its gut rather than its brain.

There does seem to be an evolutionary trade-off between big brains and big guts—two very different evolutionary strategies for dealing with the question of food selection. The case of the koala bear, one of nature's pickiest eaters, exemplifies the small-brain strategy. You don't need a lot of brain circuitry to figure out what's for dinner when all you ever eat is eucalyptus leaves. As it happens, the koala's brain is so small it doesn't even begin to fill up its skull. Zoologists theorize that the koala bear once ate a more varied and mentally taxing diet than it does now, and that as it evolved toward its present, highly circumscribed concept of lunch, the bear's underemployed brain actually shrank. (Food faddists take note.) More important to the koala than brains is a gut big enough to break down all those fibrous leaves. By the same token, the digestive tract of primates like us has grown progressively shorter as we've evolved to eat a more varied, higher quality diet.

Eating might be simpler as a thimble-brained monophagy, but it's also a lot more precarious, which partly explains why there a' many more rats and humans in the world than koala bears. Should a disease or drought strike the eucalyptus trees in your neck of the woods, that's it for you. But the rat and the human can live just about anywhere on earth, and when their familiar foods are in short supply, there's always another they can try. Indeed, there is probably not a nutrient source on earth that is not eaten by some human somewhere—bugs, worms, dirt, fungi, lichens, seaweed, rotten fish; the roots, shoots, stems, bark, buds, flowers, seeds, and fruits of plants; every imaginable part of every imaginable animal, not to mention haggis, granola, and Chicken McNuggets. (The deeper mystery, only partly explained by neophobia, is why any given human group will eat so few of the numberless nutrients available to it.)

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The price of this dietary flexibility is much more complex and metabolically expensive brain circuitry. For the omnivore a tremendous amount of mental wiring must be devoted to sensory and cognitive tools for figuring out which of all these questionable nutrients it is safe to eat. There's just too much information involved in food selection to encode every potential food and poison in the genes. So instead of genes to write our menus omnivores evolved a complicated set of sensory and mental tools to help us sort everything out. Some of these tools are fairly straightforward and we share them with many other mammals; others represent impressive feats of adaptation by primates; still others straddle the blurry line between natural selection and cultural invention.

The first tool is of course our sense of taste, which performs some of the basic work screening foods for value and safety. Or as Brillat-Savarin put it in *The Physiology of Taste*, taste "helps us to choose, from the various substances offered us by nature, those which are proper to be consumed." Taste in humans gets complicated, but it starts with two powerful instinctual biases, one positive, the other negative. The first bias predisposes us toward sweetness, a taste that signals a particularly rich source of carbohydrate energy in nature. Indeed, even when we're otherwise sated, our appetite for sweet things persists, which is probably why dessert shows up in the meal when it does. A sweet tooth represents an excellent adaptation for an omnivore whose big brain demands a tremendous amount of glucose (the only type of energy the brain can use), or at least it once did, when sources of sugar were few and far between. (The adult human brain accounts for 2 percent of our body weight but consumes 18 percent of our energy, all of which must come from a carbohydrate. Food faddists take note two.)

Our sense of taste's second big bias predisposes us against bitter flavors, which is how many of the defensive toxins produced by plants happen to taste. Pregnant women are particularly sensitive to bitter tastes, probably an adaptation to protect the developing fetus against even the mild plant toxins found in foods like broccoli. A bitter flavor on the tongue is a warning to exercise caution lest a poison pass what Brillat-Savarin called the sense of taste's "faithful sentries."