

HAROLD FROMM

Michael Pollan's Ecology of Food

THE VERY FIRST PLEASURE TO BE OFFERED A READER of Michael Pollan's *The Omnivore's Dilemma: A Natural History of Four Meals*¹ is the physical artifact itself: this notably handsome book. From its elegantly simple title page and its high quality, just-the-right-thickness paper, to its clean legible font surrounded by lots of airspace, the aesthetic experience of simply holding on to this well-designed volume is what first strikes a reader. It's a fitting complement to the clean prose and tactful virtuosity of Pollan himself, one of the unofficial stars of a distinguished clan of earth-oriented public intellectuals, starting with Wendell Berry and taking in John McPhee, Jared Diamond, Peter Singer, Gary Nabhan, Mike Davis and others I have unintentionally neglected.

Pollan's previous book, *The Botany of Desire: A Plant's-Eye View of the World*, has already become a sui-generis classic, a multi-faceted account of apples, tulips, marijuana, and potatoes. Since its appearance in 2001, Pollan has been nurtured by the *New York Times Sunday Magazine*, where his essays have appeared on corn, obesity, beef, agribusiness, hunting, and—most recently—"Mass Natural," an early alarm signal about the potential downside of organic food being co-opted by Wal-Mart. *The Omnivore's Dilemma*, however, has carefully avoided merely collecting these previously published essays, excellent as they are, by artfully incorporating their contents into an ongoing narrative about Homo sapiens' unique capacity to adjust to almost any diet, including some that turn out to be lethal, though lethality can range from the almost instantaneous poisoning by a mushroom to the very slow debilitation from junk-food-induced heart attacks, obesity, and diabetes (and more food is ultimately junk than you can realize). The omnivore's dilemma is that while he is genetically predisposed to the formerly salvific (but scarce) sugar and fat of a hunter-gatherer's roller-coaster diet, he now must exert his will-power to reject the overwhelming quantities of today's manufactured diet of sugars and fats driving him to debility and death. But the *conscientious* omnivore's dilemma—pervading this whole treatise—is *philosophical remorse*, the irresolvable contradictions of mortality that Virgil described two millennia ago as "the tears of things."

In dealing with this subject, Pollan touches many bases: evolution, knowledge and ignorance, industrialization, consumer capitalism,

¹ THE OMNIVORE'S DILEMMA: A Natural History of Four Meals, by Michael Pollan. The Penguin Press. \$26.95.

globalization, social class, poverty and wealth, ecology, energy and fossil fuels, organic foods, family and industrial farms, the power and (ir)responsibilities of government subsidies and regulations, ethics and moral choice. There's little he overlooks as he traces our contemporary food system from earth to dinner plate (or Styrofoam burger box). The cumulative force is so great that *The Omnivore's Dilemma* might serve as a more potent—if inadvertent—diet book than the weirdly trendy recipe collections of high fat, no fat, high carb, no carb meals that sell millions of copies but fail to provide the conviction needed for reform from deep within the psyche. The revelations here about foods' provenance, both practical and philosophical, could turn one against the manufactured (in multiple senses) pig-outs now spreading across the world.

Industrial food (based on corn), organic food (based on grass), and wild food from hunting and gathering (based on the forest) provide the three main divisions of this book, each culminating in a showcase meal (plus an extra meal thrown in for good measure). It's hard to say which of these sections displays the greatest virtuosity, but I am as impressed now by the treatment of corn as I was by its earlier incarnation as "When a Crop Becomes King" in the *Times* of July 19, 2002. Speaking of corn's adaptability to industrial methods of farming, Pollan writes: "It had to adapt itself not just to humans but to their machines, which it did by learning to grow as upright, stiff-stalked, and uniform as soldiers. It had to multiply its yield by an order of magnitude, which it did by learning to grow shoulder to shoulder with other corn plants, as many as thirty thousand to the acre. It had to develop an appetite for fossil fuel (in the form of petrochemical fertilizer) and tolerance for various synthetic chemicals."

These vast monocultured crops invite fatal insect predation of a sort that organic family farms with a variety of rotatable crops can largely overcome without tons of synthetic pesticides. And organic farms' return of spent plants to the soil, combined with the wastes from farm animals long since banished by agribusiness to meat-raising stockyards and factories, provide an altogether richer soil than the fields increasingly depleted by petrochemical fertilizers. The extraordinary increase of corn output from chemicals (which no soil can sustain indefinitely) ended the practice of farmers bringing sacks of corn to market for local animals and people, replacing that venerable practice with truckloads of "commodity corn" dumped into railroad cars for transport to distant factories. Corn has become so cheap that the U.S. government pays subsidies to farmers who are forced to sell their crops for less than it costs to produce them. As once varied family farms expand into vast monocultures of corn, more and more fossil fuel is needed to make and ship petroleum-derived fertilizer and pesticides to them and to transport the corn from these farms to factories for processing with more petroleum and natural gas as it is transformed into a stunning array of products requiring still more transportation and fossil-fueled packaging.

Pollan visited every type of farm and meat-raising operation he

describes in his book, living with the farmers and cattle growers long enough to get an insider's view of their procedures. He provides a detailed account of how Cargill and Archer Daniels Midland rule the empire of corn at every stage of its growth, transport, and metamorphosis into an astonishing range of products. Since there is vastly more corn than even fat Americans (and now Europeans) can possibly eat (their obesity deriving in large part from a corn-based diet that is not readily visible to the layman), these companies and their buyers have had to invent ways to sell new and highly profitable corn-derived products to people already eating too much, whose essentially hunter-gatherer bodies "are storing reserves of fat against a famine that never comes." Brutally put, "This leaves companies like General Mills and McDonald's with two options if they hope to grow faster than the population: figure out how to get people to spend more money for the same three-quarters of a ton of food [that the average American consumes annually], or entice them to actually eat more than that." These corn products are *refined* foods, that is, they have had the beneficial fiber and phytochemicals removed that would be supplied if the corn were eaten whole. (Later on, discussing the Nitrogen-Phosphorus-Potassium or N-P-K fertilizer that feeds industrialized productivity, Pollan outlines the chemistry of rich organic soil that is missing from this universalized trio: "To reduce such a vast biological complexity to NPK represented the scientific method at its reductionist worst. Complex qualities are reduced to simple quantities; biology gives ways to chemistry.") Without this fiber (whether from corn, wheat, or whatever), these refined foods become the number one contributors toward weight gain. (Today's local newspaper warned against drinking fruit juice whose pulp has been removed: the pulp is the important fiber, without which fruit juices are simply sugary drinks.) Besides corn-derived flours, thickeners, chemicals, ethanol, corn oil and whatnot, there is high fructose corn syrup, a sweetener now present in more foods than most people can possibly have noticed, from vast bottles of soda pop to soups, sauces, baked goods, ice cream, cereals, condiments, candy. All sorts of convenience foods and cereals are invented to sell the cheap corn as value-added processed foods that our evolved craving for sugars and fats has made us suckers for. Hunger is barely involved. ("In many ways, breakfast cereal is the prototypical processed food: four cents worth of corn . . . transformed into four dollars worth of processed food. What an alchemy!") Pollan examines the composition of the highly caloric and fat laden Chicken McNuggets, reporting that of its 38 ingredients he counts thirteen derived from corn, excluding the corn-fed chickens themselves: modified cornstarch, mono-, tri-, and di-glycerides, dextrose, lecithin, chicken broth, yellow corn flour, cornstarch (as opposed to "modified cornstarch"), vegetable shortening, partially hydrogenated corn oil, and citric acid. The chemicals added to preserve and process the nuggets are even more disquieting, some highly toxic sprayed on the nuggets or the inside of the serving box.

But notwithstanding this wild proliferation of corn derivatives being

forced down consumers' throats via the cozenings and concealments of advertising, three fifths of all corn (of the type once known as field corn or fodder) goes into the feeding of animals. To trace this process, Pollan bought a young steer and tried to watch it go through maturation from feed lot to meat. (He has distilled this chapter, aptly titled "Making Meat," from the slightly more detailed "Power Steer," in the *New York Times Magazine* of March 31, 2002.) Instead of seeing cows grazing on grass, their native food, Pollan found tens of thousands of penned cattle "standing or lying around in a grayish mud that, it eventually dawns on you, isn't mud at all." The stench is overwhelming, and the cattle, raised on a diet of corn that their grass-evolved stomachs (or rumen) can't handle, need large doses of antibiotics and other chemicals to keep them from getting sick (and many die anyhow). But the corn is cheap and enables Pollan's steer to be fed as much as 32 pounds of cornfeed daily to gain four pounds of muscle, fat, and bone, reaching twelve hundred pounds in very short order, far faster than happenstance grazing. The pools of collected manure as well as the manure the cattle are living in result in fecal residues on the animals that the process of slaughter tries, not always successfully, to overcome. On an organic farm like the one Pollan visits later on, the free-roaming cattle are moved from one grazing area to another, while their manure fertilizes the nibbled grass they will eventually return to as well as serving as a food source for insects and microorganisms who help to break it down. But from the massive monoculture of the feed lots the manure's runoff pollutes vast areas of the country, eventually ending up in the Mississippi, poisoning eight thousand square miles of the Gulf of Mexico. The manufactured fertilizer, which is not needed on a recycling organic farm where everything is reused, can be traced back "all the way to the oil fields of the Persian Gulf."

For the consumer, the result is cheap beef of questionable quality, given its chemical residues, large amounts of highly saturated fats—unlike the quantities from grass-fed cows—and reduced amounts of the beneficial omega 3 oil that is more abundant in grazing cattle. "The unnaturally rich diet of corn that undermines a steer's health fattens his flesh in a way that undermines the health of humans who will eat it." When Pollan and his wife and son eat a fast food meal at McDonald's to experience the final products of the corn and beef manufactures, Pollan can't resist noting about his classic cheeseburger and fries, "No, I could not taste the feed corn or the petroleum or the antibiotics or the hormones—or the feedlot manure"! But the caloric content and nutritional deficiencies of the meal are shocking, since almost none of the foods can be found in nature, being composed of ingredients that were artificially produced, refined (that is, to play on words, "made unwholesome") and then reassembled with vitamins added (as well as trans fats), falling far short of anything that could be called fiber-rich whole foods with trace minerals and nutrients. And whereas most of the energy that produces the food in an organic farm is from the sun, our

planet's chief source, most of the energy that produced this meal came from machinery, fertilizer, antibiotics, great quantities of petroleum, and the transportation of raw, processed, packaged, and reshipped finished products. "Behind the 4,510 calories [an enormous amount] the three of us had for lunch stand tens of thousand of corn calories that could have fed a great many hungry people," since 90% of the corn's energy is lost in the process of turning itself into beef or chicken.

Pollan was not allowed into the slaughterhouse to witness the final disposition of his steer, but he was able to collect enough information for a grisly report indeed. But lest anyone think Pollan has exaggerated, while I was reading *The Omnivore's Dilemma*, Bob Herbert reported (in the *New York Times* of June 15, 2006) the sordid conditions at the Smithfield Packing Company in Tar Heel, North Carolina, where the brutalized workers are fighting for benefits in an environment in which 32,000 hogs are killed each day. "'It was depressing inside there,' said Edward Morrison, who spent hour after hour flipping bloody hog carcasses on the kill floor, until he was injured last fall after just a few months on the job. 'You have to work fast because that machine is shooting those hogs out at you constantly. You can end up with all this blood dripping down on you, all these feces and stuff just hanging off of you. It's a terrible environment.'"

If ignorance is bliss, the poet Thomas Gray once told us, 'tis folly to be wise. Only a forgetting can overcome the revulsion—dietary, economic, corporate, political—that is the immediate reaction to an understanding of what we are actually ingesting along with beef, chicken, pork. Indeed, even Pollan overcomes his nausea to live another day to eat some of the products he so meticulously describes with disgust.

Pollan subsequently worked for a week as a farmhand of sorts at a totally organic farm in Virginia run by a family of almost fanatic dedication to sustainability. There were no waste products to dispose of because everything was reused during the growth cycle of the plants and animals that nourished each other, nor were the animals forced to eat grains they had not evolved to digest. The principal food was grass, the use of fossil fuels was minimal, and the farm's produce and meat were sold locally. Looking at the spiraled tails of the pigs sticking up in the air, Pollan could not fail to remember the hogs at the industrial hog pens whose tails were cut off and who were weaned from their mothers ten days after birth instead of the usual thirteen weeks "because they gain weight faster on their drug-fortified feed than on sow's milk. But this premature weaning leaves the pigs with a lifelong craving to suck and chew, a need they gratify in confinement by biting the tail of the animal in front of them [hence their excision]. A normal pig would fight off his molester, but a demoralized pig has stopped caring."

Using Whole Foods market (where he often shops) as representative, Pollan contrasts the genuinely bucolic character of the Virginia farm with what he calls "Big Organic" and "Supermarket Pastoral," the

growing industrialization of organic foods. Most of the produce sold at stores like Whole Foods and Wild Oats comes from two major American companies, Earthbound Farms and Grimmway Farms (though their names are not necessarily on the final product). "As I tossed a plastic box of Earthbound prewashed spring mix salad into my Whole Foods cart, I realized that I was venturing deep into the belly of the industrial beast." His account of the realities behind the bucolic logos of farms and cows on many of the packages would puncture the heart of any food-idealist preening himself on his own benevolence to the creation, though Pollan recognizes the impossibility of conducting massive industrial organic operations as if they were on the same scale as the Virginia family farm. (His description of the stupendous processes used by Earthbound Farms to grow, pick, wash, and bag 2.5 million pounds of lettuce a week is daunting, with the 80 calories of energy in a one-pound box of lettuce requiring more than 4,600 calories of fossil fuel to produce and deliver.) Still, his accounts of what "free range" really means and his visit to the home of "Rosie, the organic chicken," verge on the tragicomical.

The chicken houses don't resemble a farm so much as a military barracks: a dozen long, low-slung sheds with giant fans at each either end. I donned what looked like a hooded white hazmat suit—since the birds receive no antibiotics yet live in close confinement, the company is ever worried about infection, which could doom a whole house overnight—and stepped inside. Twenty thousand birds moved away from me as one, like a ground-hugging white cloud, clucking softly. The air was warm and humid and smelled powerfully of ammonia. . . . After they adjusted to our presence, the birds resumed sipping from waterers suspended from the ceiling, nibbled organic food from elevated trays . . . and did pretty much everything chickens do except step outside the little doors located at either end of the shed.

Outside these doors (which must be provided for the "free range" qualification) were narrow grassy strips that the birds ignored, "an unfamiliar and terrifying world." Stepping outside "is the last thing the farm managers want to see happen, since these defenseless, crowded, genetically identical birds are exquisitely vulnerable to infection." Here as elsewhere in this gripping book, social, agricultural, biological, and corporate histories that lie behind today's affordable products are outlined for the clueless and self-deluded reader.

All of this notwithstanding, the grass-fed meal that culminates the organic foods section of this book provides Pollan with grounds for dietary amelioration: "Grass-fed meat, milk, and eggs, contain less total fat and less saturated fats than the same foods from grain-fed animals. Pastured animals also contain conjugated linoleic acid (CLA), a fatty acid that some recent studies indicate may help reduce weight and

prevent cancer. . . . But perhaps most important, meat, eggs, and milk from pastured animals also contain higher levels of omega-3s . . . that play an indispensable role in human health, and especially in the growth and health of neurons—brain cells.” And as for red meat, the problem “long associated with cardiovascular disease—may owe less to the animal in question than to the animal’s diet.” Today’s remaining hunter-gatherer populations “eat far more red meat than we do without suffering the cardiovascular consequences,” perhaps because of their animals’ diet. “The species of animal you eat may matter less than what the animal you’re eating has itself eaten.”

In the last section of the book, Pollan describes a meal comprised almost entirely of foods he himself has grown, gathered, or hunted (a wild pig!) in order to acquaint himself with the whole procedural chain that lies behind our daily meals—or what used to be the daily meals of our species. After so many experiences of disgust—watching beef cattle living in their own manure; learning the sordid details of slaughterhouses; killing chickens while he worked on an organic farm; shooting a wild pig for his “natural” meal—Pollan provides a long reflective chapter on the ethics of eating animals. “The first time I opened Peter Singer’s *Animal Liberation* I was dining alone at the Palm, trying to enjoy a rib-eye steak cooked medium rare.” Singer’s book carried considerable weight because Pollan was already deeply involved in experiencing the horrors of meat production. Recognizing that sentimentality and brutality exist side by side, he notes that “Half the dogs in America will receive Christmas presents this year, yet few of us ever pause to consider the life of the pig—an animal easily as intelligent as a dog—that becomes the Christmas ham.” Animals have mostly disappeared from view except as pets or neat plastic packages at supermarkets. But reading Singer not only resensitized Pollan to the dilemma of vegetarianism vs. animal cruelty, launching him into another experimental trial, this time as a vegetarian, it initiated a review of the major cruxes of philosophy in regard to animals: from Descartes (who regarded animals as insensate machines), through Jeremy Bentham (not “can they reason?” he asked, but “can they suffer?”), to Daniel Dennett, Stephen Budioansky, and the complexities of consciousness studies. Behind his reflections were recollections of the cruelest process of all: the treatment of egg-laying hens, ten percent of which die from the stresses of their wretched lives as egg-producing machines deprived of every natural sustenance entailed by their evolution as a species. And for the survivors, during their last week of life they are “starved of food and water and light for several days in order to stimulate a final bout of egg laying before their life’s work is done.”

Pollan’s warm defense of vegetarianism and his critique of the ruthlessness of industrial capitalism are nevertheless tempered by equally strong defenses of the domestication of animals and their use as food for humans. The arguments are too complex to outline here (this is a book to be read!), but Pollan’s conclusion is “that people who care

about animals should be working to insure that the ones they eat don't suffer, and that their deaths are swift and painless—for animal welfare, in other words, rather than rights." He alludes to the work of Temple Grandin, professor of Animal Sciences at Colorado State University, whose autism has provided her with distinctive psychological tools for initiating reforms at slaughterhouses. What on one level is her impairment, on another is her ability to get closer to animal consciousness in designing humane slaughtering equipment that never gives the animal a chance to be frightened. "I do not use language when I think and solve problems," she writes. "All thoughts are images. When I design livestock equipment, images pop into my imagination and language only serves as a narrative of the images."² But Pollan is convinced that as long as people do not actually view the process of animal slaughter—as he was able to do at the open-air abattoir of the organic farm in Virginia—it will remain an affectless abstraction, outweighed by bloodless, plastic-covered trays at the meat counter and burgers at the drive-in.

As I finished writing this overview of *The Omnivore's Dilemma*, I read in the *New York Times* of June 25, 2006, a feature article by Frank Bruni: "This month Whole Foods announced that it would no longer sell live lobsters, saying that keeping them in crammed tanks for long periods doesn't demonstrate a proper concern for animal welfare. The Chicago City Council recently outlawed the sale of foie gras to protest the force-feeding of the ducks and geese that yield it. California passed a similar law, which doesn't take effect until 2012, and other states and cities are considering such measures." And, of course, Michael Pollan was invited to comment: "Foie gras and lobster are not at the heart of the real tough issues of animal welfare, which are feed lots and pigs and cattle and chickens and how billions of animals are treated," he remarked. "On the other hand, the fact that we're having this conversation at all—that we're talking about ethics in relation to what we're eating every day—strikes me as a very healthy thing."

But Pollan's book is not just a tract for animal welfare. It is a multi-valent, highly introspective examination of the human diet, from capitalism to consumption. Like the poignant ariosos in the cantatas of Bach, declaimed against a ground bass of symbol-laden strumming pizzicatos, Pollan's often elegiac first-person stories are told against a strumming ground of what the philosophers nowadays call "moral considerateness."

²I take this quotation from Grandin's abstract of her talk in the program book for "Toward a Science of Consciousness 2006," a conference given in Tucson by the Center for Consciousness Studies at the University of Arizona in April of 2006.