ONE FROM FOODS TO NUTRIENTS

If you spent any time at all in a supermarket in the 1980s, you might have noticed something peculiar going on. The food was gradually disappearing from the shelves. Not literally vanishing—I'm not talking about Soviet-style shortages. No, the shelves and refrigerated cases still groaned with packages and boxes and bags of various edibles, more of them landing every year in fact, but a great many of the traditional supermarket foods were steadily being replaced by "nutrients," which are not the same thing. Where once the familiar names of recognizable comestibles—things like eggs or breakfast cereals or snack foods—claimed pride of place on the brightly colored packages crowding the aisles, now new, scientific-sounding terms like "cholesterol" and "fiber" and "saturated fat" began rising to large-type prominence. More important than mere foods, the presence or absence of these invisible substances was now generally believed to confer health benefits on their eaters. The implicit message was that foods, by comparison, were coarse, old-fashioned, and decidedly unscientific things—who
could say what was in them really? But nutrients—those chemical compounds and minerals in foods that scientists have identified as important to our health—gleamed with the promise of scientific certainty. Eat more of the right ones, fewer of the wrong, and you would live longer, avoid chronic diseases, and lose weight.

Nutrients themselves had been around as a concept and a set of words since early in the nineteenth century. That was when William Prout, an English doctor and chemist, identified the three principal constituents of food—protein, fat, and carbohydrates—that would come to be known as macronutrients. Building on Prout’s discovery, Justus von Liebig, the great German scientist credited as one of the founders of organic chemistry, added a couple of minerals to the big three and declared that the mystery of animal nutrition—how food turns into flesh and energy—had been solved. This is the very same Liebig who identified the macronutrients in soil—nitrogen, phosphorus, and potassium (known to farmers and gardeners by their periodic table initials, N, P, and K). Liebig claimed that all that plants need to live and grow are these three chemicals, period. As with the plant, so with the person: In 1842, Liebig proposed a theory of metabolism that explained life strictly in terms of a small handful of chemical nutrients, without recourse to metaphysical forces such as “vitalism.”

Having cracked the mystery of human nutrition, Liebig went on to develop a meat extract—Liebig’s Extractum Carinis—that has come down to us as bouillon and concocted the first baby formula, consisting of cow’s milk, wheat flour, malted flour, and potassium bicarbonate.

Liebig, the father of modern nutritional science, had driven food into a corner and forced it to yield its chemical secrets. But the post-Liebig consensus that science now pretty much knew what was going on in food didn’t last long. Doctors began to notice that many of the babies fed exclusively on Liebig’s formula failed to thrive. (Not surprising, given that his preparation lacked any vitamins or several essential fats and amino acids.) That Liebig might have overlooked a few little things in food also began to occur to doctors who observed that sailors on long ocean voyages often got sick, even when they had adequate supplies of protein, carbohydrates, and fat. Clearly the chemists were missing something—some essential ingredients present in the fresh plant foods (like oranges and potatoes) that miraculously cured the sailors. This observation led to the discovery early in the twentieth century of the first set of micronutrients, which the Polish biochemist Casimir Funk, harking back to older vitalist ideas of food, christened “vitamines” in 1912 (“vita-” for life and “-amines” for organic compounds organized around nitrogen).

Vitamins did a lot for the prestige of nutritional science. These special molecules, which at first were isolated from foods and then later synthesized in a laboratory, could cure people of nutritional deficiencies such as scurvy or beriberi almost overnight in a convincing demonstration of reductive chemistry’s power. Beginning in the 1920s, vitamins enjoyed a vogue among the middle class, a group not notably afflicted by beriberi or scurvy. But the belief took hold that these magic molecules also promoted growth in children, long life in adults, and, in a phrase of the time, “positive health” in every-
one. (And what would "negative health" be exactly?) Vitamins had brought a kind of glamour to the science of nutrition, and though certain elite segments of the population now began to eat by its expert lights, it really wasn't until late in the twentieth century that nutrients began to push food aside in the popular imagination of what it means to eat.

No single event marked the shift from eating food to eating nutrients, although in retrospect a little-noticed political dustup in Washington in 1977 seems to have helped propel American culture down this unfortunate and dimly lighted path. Responding to reports of an alarming increase in chronic diseases linked to diet—including heart disease, cancer, obesity, and diabetes—the Senate Select Committee on Nutrition and Human Needs chaired by South Dakota Senator George McGovern held hearings on the problem. The committee had been formed in 1968 with a mandate to eliminate malnutrition, and its work had led to the establishment of several important food-assistance programs. Endeavoring now to resolve the question of diet and chronic disease in the general population represented a certain amount of mission creep, but all in a good cause to which no one could possibly object.

After taking two days of testimony on diet and killer diseases, the committee's staff—comprised not of scientists or doctors but of lawyers and (ahem) journalists—set to work preparing what it had every reason to assume would be an uncontroversial document called Dietary Goals for the United States. The committee learned that while rates of coronary heart disease had soared in America since World War II, certain other cultures that consumed traditional diets based mostly on plants had strikingly low rates of chronic diseases. Epidemiologists had also observed that in America during the war years, when meat and dairy products were strictly rationed, the rate of heart disease had temporarily plummeted, only to leap upward once the war was over.

Beginning in the 1950s, a growing body of scientific opinion held that the consumption of fat and dietary cholesterol, much of which came from meat and dairy products, was responsible for rising rates of heart disease during the twentieth century. The "lipid hypothesis," as it was called, had already been embraced by the American Heart Association, which in 1961 had begun recommending a "prudent diet" low in saturated fat and cholesterol from animal products. True, actual proof for the lipid hypothesis was remarkably thin in 1977—it was still very much a hypothesis, but one well on its way to general acceptance.

In January 1977, the committee issued a fairly straightforward set of dietary guidelines, calling on Americans to cut down on their consumption of red meat and dairy products. Within weeks a firestorm of criticism, emanating chiefly from the red meat and dairy industries, engulfed the committee, and Senator McGovern (who had a great many cattle ranchers among his South Dakota constituents) was forced to beat a retreat. The committee's recommendations were hastily rewritten. Plain talk about actual foodstuffs—the committee had advised Americans to "reduce consumption of meat"—was replaced by artful compromise: "choose meats, poultry, and fish that will reduce saturated fat intake."

Leave aside for now the virtues, if any, of a low-meat and/or
low-fat diet, questions to which I will return, and focus for a moment on language. For with these subtle changes in wording a whole way of thinking about food and health underwent a momentous shift. First, notice that the stark message to “eat less” of a particular food—in this case meat—had been deep-sixed; don’t look for it ever again in any official U.S. government dietary pronouncement. Say what you will about this or that food, you are not allowed officially to tell people to eat less of it or the industry in question will have you for lunch. But there is a path around this immovable obstacle, and it was McGovern’s staffers who blazed it: Speak no more of foods, only nutrients. Notice how in the revised guidelines, distinctions between entities as different as beef and chicken and fish have collapsed. These three venerable foods, each representing not just a different species but an entirely different taxonomic class, are now lumped together as mere delivery systems for a single nutrient. Notice too how the new language exonerates the foods themselves. Now the culprit is an obscure, invisible, tasteless—and politically unconnected—substance that may or may not lurk in them called saturated fat.

The linguistic capitulation did nothing to rescue McGovern from his blunder. In the very next election, in 1980, the beef lobby succeeded in rusticating the three-term senator, sending an unmistakable warning to anyone who would challenge the American diet, and in particular the big chunk of animal protein squatting in the middle of its plate. Henceforth, government dietary guidelines would shun plain talk about whole foods, each of which has its trade association on Capitol Hill, but would instead arrive dressed in scientific euphemism and speaking of nutrients, entities that few Americans (including, as we would find out, American nutrition scientists) really understood but that, with the notable exception of sucrose, lack powerful lobbies in Washington.*

The lesson of the McGovern fiasco was quickly absorbed by all who would pronounce on the American diet. When a few years later the National Academy of Sciences looked into the question of diet and cancer, it was careful to frame its recommendations nutrient by nutrient rather than food by food, to avoid offending any powerful interests. We now know the academy’s panel of thirteen scientists adopted this approach over the objections of at least two of its members who argued that most of the available science pointed toward conclusions about foods, not nutrients. According to T. Colin Campbell, a Cornell nutritional biochemist who served on the panel, all of the human population studies linking dietary fat to cancer actually showed that the groups with higher cancer rates consumed not just more fats, but also more animal foods and fewer plant foods as well. “This meant that these cancers could

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*Sucrose is the exception that proves the rule. Only the power of the sugar lobby in Washington can explain the fact that the official U.S. recommendation for the maximum permissible level of free sugars in the diet is an eye-popping 25 percent of daily calories. To give you some idea just how permissive that is, the World Health Organization recommends that no more than 10 percent of daily calories come from added sugars, a benchmark that the U.S. sugar lobby has worked furiously to dismantle. In 2004 it enlisted the Bush State Department in a campaign to get the recommendation changed and has threatened to lobby Congress to cut WHO funding unless the organization recants. Perhaps we should be grateful that the saturated fat interests have as yet organized no such lobby.
just as easily be caused by animal protein, dietary cholesterol, something else exclusively found in animal-based foods, or a lack of plant-based foods," Campbell wrote years later. The argument fell on deaf ears.

In the case of the "good foods" too, nutrients also carried the day. The language of the final report highlighted the benefits of the antioxidants in vegetables rather than the vegetables themselves. Joan Gussow, a Columbia University nutritionist who served on the panel, argued against the focus on nutrients rather than whole foods. "The really important message in the epidemiology, which is all we had to go on, was that some vegetables and citrus fruits seemed to be protective against cancer. But those sections of the report were written as though it was the vitamin C in the citrus or the beta-carotene in the vegetables that was responsible for the effect. I kept changing the language to talk about 'foods that contain vitamin C' and 'foods that contain carotenoids.' Because how do you know it's not one of the other things in the carrots or the broccoli? There are hundreds of carotenoids. But the biochemists had their answer: 'You can't do a trial on broccoli.'"

So the nutrients won out over the foods. The panel's resort to scientific reductionism had the considerable virtue of being both politically expedient (in the case of meat and dairy) and, to these scientific heirs of Justus von Liebig, intellectually sympathetic. With each of its chapters focused on a single nutrient, the final draft of the National Academy of Sciences report, Diet, Nutrition and Cancer, framed its recommendations in terms of saturated fats and antioxidants rather than beef and broccoli.

In doing so, the 1982 National Academy of Sciences report helped codify the official new dietary language, the one we all still speak. Industry and media soon followed suit, and terms like polyunsaturated, cholesterol, monounsaturated, carbohydrate, fiber, polyphenols, amino acids, flavonoids, carotenoids, antioxidants, probiotics, and phytochemicals soon colonized much of the cultural space previously occupied by the tangible material formerly known as food.

The Age of Nutritionism had arrived.