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Book Review

Our Agriculture Policy Dilemma:

The Omnivore's Dilemma: A Natural History of Four Meals, by Michael Pollan (2006)

Morgan L. Holcomb*

A. ALL THAT ENERGY

There's a certain absurdity in the way we consume energy to create calories, consume those calories, and then try to burn those very calories all the while consuming even more energy in the process.

Case in point: Membership managers at fitness centers all across the country must live for the weeks following New Years. We pull out our spandex, line up to pay our membership fees, and then line up for the treadmills. I am amazed at the amount of energy people on those treadmills burn. I am more amazed, though, at the phenomenal amount of energy it takes for us to burn all the extra energy (more commonly referred to as calories) we've consumed during holiday parties and dinners.¹

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1. The United States Center for Disease Control has estimated that, on

The energy it takes to run the machines—treadmills, elliptical trainers, stair machines, televisions and iPods is prodigious, and that's not to mention all the energy it took to run the cars in the parking lot that got each exerciser to his or her machine of choice. Fossil fuel has another place in this treadmill, too. That is, an exceptional amount of fossil fuel was consumed by agribusiness as the foods we consumed made their way from farm to our holiday tables.² I often wonder if, or how, we could harness the energy we're burning: Why hasn't some resourceful club manager come up with a way to hook our exercise machines up to generators and cut the club's power bill in half?

This treadmill—holiday indulgence followed by post-holiday exercise—might be the most familiar treadmill in our food supply, but it isn't the only one. Farmers, especially Midwestern corn and soybean farmers, face a treadmill of a different sort.³ As new technology, such as pesticide resistant seed, becomes available, farmers are able to increase their yield. As yield increases, more of a given crop becomes available. Prices fall. In order to maintain their livelihoods, then, farmers

any given day, males consume as many as 2,745 calories. Females, on average, consume 1,833 calories each day. That is, except holidays, when one would expect an average American's calorie intake to swell with the abundance of stuffing, gravy and pumpkin pie found on any Thanksgiving table. CENTER FOR DISEASE CONTROL, NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY: INTAKE OF CALORIES AND SELECTED NUTRIENTS FOR THE UNITED STATES POPULATION, 1999-2000 (2000), available at <http://www.cdc.gov/nchs/nhanes>. The National Institute of Health reports that the average American gains about a pound during the winter holiday season. See NIH News Alert, *Holiday Weight Gain Slight, But May Last a Lifetime*, March 22, 2000, available at <http://www.nichd.nih.gov/news/releases/holidayweightgain.cfm>.

2. "One fifth of America's petroleum consumption goes to producing and transporting our food." MICHAEL POLLAN, *THE OMNIVORE'S DILEMMA: A NATURAL HISTORY OF FOUR MEALS* 83 (2006). See also Steven Shapin, *A Critic at Large: Paradise Sold*, NEW YORKER, May 15, 2006, at 86 (reviewing *The Omnivore's Dilemma*, and citing Pollan's example that "growing, processing, and shipping one calorie's worth of arugula to the East Coast costs fifty-seven calories of fossil fuel"); BRIAN HALWEIL, *EAT HERE: RECLAIMING HOMEGROWN PLEASURES IN A GLOBAL SUPERMARKET* 38 (2004) (noting modern agriculture's heavy dependence on fossil fuels).

3. Jim Chen, *Filburn's Legacy*, 52 EMORY L. J. 1719, 1728 (2003) (describing the treadmill in the context of wheat farmers as "depressed demand and prices for [farmer's] products, coupled with unbearable increases in the cost of living and production."). See also Christopher D. Merrett & Cynthia Struthers, *Globalization & the Future of Rural Communities in the American Midwest*, 12 TRANSNAT'L L. & CONTEMP. PROBS. 33, 58 (2002) (describing the "technological treadmill").

must plant even more corn. Hence, the treadmill.⁴

As Willard W. Cochrane first described:

As [the farmer] rushes to adopt a new and improved technology when it first becomes available, he at first reaps a gain. But, as others after him run to adopt the technology, the treadmill speeds up and grinds out an increased supply of the product. The increased supply of the product drives the price of the product down to where the early adopter and all his fellow adopters are back in a no-profit situation. Farm technological advances in a free market situation forces the participants to run on a treadmill.⁵

These treadmills show that neither the front end (production) nor the back end (consumption) of the food supply is completely logical. In fact, all aspects of the food supply—from beginning to end—are subject to criticism and critique. What causes these absurdities? In the former case, we get to blame individual responsibility; in the latter, however, we get to spread the blame to agriculture policies. No one these days can seriously claim that America's agriculture policies are rational.⁶ Michael Pollan certainly does not. His new book, *The Omnivore's Dilemma: A Natural History of Four Meals*, reveals the bizarre relationship Americans have with food – both in the consumption and in the production.

Pollan, a journalism professor at the University of California-Berkeley, and a frequent contributor to the *New York Times Magazine*, takes us on a journey to discover the origins of four meals: from fast—McDonald's—to really, really slow—a meal he hunts and gathers almost entirely himself. Along the

4. See POLLAN, *supra* note 2, at 39, 101 (describing the treadmill without using the term).

5. WILLARD W. COCHRANE, *THE DEVELOPMENT OF AMERICAN AGRICULTURE: A HISTORICAL ANALYSIS* 429 (2d ed. 1993) (the "aggressive, innovative farmer is on a treadmill with regard to the adoption of new and improved technologies on his farm"). Cochrane was an academic, he held various positions at the University of Minnesota, he served President Lyndon Johnson and he also served in the USDA. Cochrane is credited with designing our modern food stamp system. See University of Minnesota Archives, Willard W. Cochrane Papers, 1960s-1970s, available at <http://special.lib.umn.edu/findaid/xml/uarc00414.xml>.

6. See, e.g., E.C. PASOUR, JR. & RANDAL R. RUCKER, *PLOWSHARES & PORK BARRELS: THE POLITICAL ECONOMY OF AGRICULTURE* 1 (2005) (remarking that "[t]here is growing awareness that protectionist farm programs are expensive and inimical to economic progress, that they have little effect on long-run profitability of production, and that different programs frequently work at cross purposes.").

way, Pollan exposes that what we think we are eating, say a Big Mac, is really just a lot of corn. Corn, that is, and fossil fuel. Luckily, Pollan's often exquisite writing makes this journey worth our while.⁷

Pollan's conceit of following four meals to their origins enables him to explore intricately the three food chains that sustain us: (1) the industrial food supply, exemplified by the McDonald's meal consumed by Pollan and his family as they drive down a California highway in their convertible;⁸ (2) the organic food chain, represented by two meals, a "big organic" Whole Foods meal, and a "small" organic meal;⁹ and, finally, (3) a hunted and gathered meal.¹⁰

This review focuses on the industrial food supply and the "small" organic alternative. Although Pollan's hunter-gatherer section is a good read, it informs agriculture policy to a far lesser extent than the industrial food supply and does not implicate our national obsession with "family farms" in the way the "small organic" does. It is in these two sections, industrial and small organic, that Pollan offers us intimate views of two farms that could not more starkly demonstrate the difference between how most of us are fed (a 160-acre corn farm in Iowa) with how most of us romanticize how we are fed (a poly-culture grass farm in Virginia). Exploration of this disparity between how we eat and how we like to think we eat is one goal of this review. The article seeks also to track and further expose some of the paradoxes, or absurdities, that Pollan identifies in the food supply system as we have evolved from hunters-gatherers to consumers of convenience.

The review begins by recognizing the challenge Pollan faced in his undertaking and articulating where *The Omnivore's Dilemma* clearly succeeds. The review then turns to a brief exploration of our national romanticism of the "family farm," including an explanation of the status of farms today. Pollan's "small organic" section offers a pitch-perfect example of our collective idealized "family farm," and the review proceeds by comparing the "small organic" with the "industrial farm," and in

7. For example, if only I could turn a phrase as beautiful as the last in this sentence: "To go from the chicken (*Gallus gallus*) to the Chicken McNugget is to leave this world in a journey of forgetting that could hardly be more costly." POLLAN, *supra* note 2, at 10 (second emphasis added).

8. *Id.* at 15-122.

9. *Id.* at 123-276.

10. *Id.* at 277-411.

so doing, explores the complexities of our industrial food supply. Following this discussion is an exploration of a paradox of our food supply almost ignored by Pollan: the hunger-obesity paradox. This paradox is almost certainly caused at least in part by the industrialization of agriculture and its obsession with cheap calories. Finally, the review concludes where Pollan begins, by asking, though not attempting to answer, "What's for dinner?"

B. POLLAN'S SUCCESS

Pollan's goal of exploring the way in which we have come to feed ourselves as a nation was a colossal undertaking. Even within any one particular segment of the industry, discussing the complexities of agricultural production and policy in the United States is, for writers and readers, a Sisyphean chore.¹¹ As Pollan would surely agree, the interaction between our daily lives and the national food supply system is inestimable.¹² To speak of a relationship between consumers and what they eat is one thing; to speak of governmental policies, economic market forces, environmental impacts and the myriad issues that influence agricultural production is quite another.

The startling success of *The Omnivore's Dilemma* is Pollan's ability to expose even the most complex and pressing agricultural issues in a simple, compelling narrative. Pollan's account is a modern history and critique of what we eat and why. Through an unusual cast of characters and unfamiliar American hamlets, Pollan is able to retell the story of American agriculture and its industrialization, moving even the most uninformed reader to take a greater interest in his or her next meal. More importantly, *The Omnivore's Dilemma* compels the reader to question the perplexities of our modern food supply and its inevitable relationship to our own health and wellbeing.

It is Pollan's journey into industrial and "small organic" sectors that provides the most poignant insight into the food systems we have come to depend upon as a nation. To say

11. "The gods had condemned Sisyphus to ceaselessly rolling a rock to the top of a mountain, whence the stone would fall back of its own weight. They had thought with some reason that there is no more dreadful punishment than futile and hopeless labor." ALBERT CAMUS, *The Myth of Sisyphus*, in *THE MYTH OF SISYPHUS AND OTHER ESSAYS* 119, 119 (1991).

12. See POLLAN, *supra* note 2, at 6-7 (noting that humans, "like every other creature on earth," are part of a complicated food chain).

“depend upon” is an oversimplification that merits some insight itself. As Pollan points out, our dependence is partly of our own making, born of convenience and anxiety.¹³ The return of the omnivore’s dilemma,¹⁴ the decision of what to eat, has been brought about by an industry which stocks the “cornucopia of the American supermarket.”¹⁵ Faced with the abundant supply of food on the shelves of local grocery stores, it is easy to be assuaged by the assurances of the food scientist and the marketer.¹⁶ After all, for most of us, food is food. Right?¹⁷

As it turns out, much of the food we choose to eat —because of convenience and an unwillingness to question the food scientist and the marketer—may not be what we expect. It may be that most food is corn and, as Pollan emphasizes, fossil fuel.¹⁸ As Pollan tells us, by consuming petroleum-based corn in such quantities, we are feeding ourselves in ways much more novel than we realize.¹⁹ In any event, our self-made dependence on our industrial and organic food systems points to central and widely held misconceptions about agriculture that impact our way of thinking about food and farming. Our dependence on existing industrial and even industrial-organic is, for many Americans, really a lack of appreciation for the journey that each meal must embark upon before winding up on our dinner plates. Throughout his narrative, Pollan exposes our naiveté. As he explains: “Our bewilderment in the supermarket is no accident; the return of the omnivore’s dilemma has deep roots in the modern food industry, roots that, I found, reach all the way back to fields of corn growing in places like Iowa.”²⁰

13. *Id.* at 1-11.

14. As Pollan describes, the omnivore’s dilemma is the unique problem faced by omnivores, such as humans and rats, in deciding what to eat. *Id.* at 3-7. Because humans can eat any number of foods, as compared to, for example, the giant panda, which eats only bamboo, each meal can become an exercise in anxiety. The anxiety is the product of the fact that some of the foods that we can eat, and that look and seem remarkably similar to foods we can enjoy, are in fact poisonous. *Id.* at 4.

15. *Id.*

16. Indeed, Steven Shapin, reviewing *The Omnivore’s Dilemma* for *The New Yorker*, expressed this same sentiment as he quoted Gene Kahn, of the “industrial organic” company Cascadian Farms: “This is just lunch for most people. *Just lunch.* We can call it sacred, we can talk about communion, but it’s just lunch.” Shapin, *supra* note 2, at 88.

17. *See supra* note 2 (note re: fossil fuel cost of food).

18. POLLAN, *supra* note 2, at 10.

19. *Id.* at 5-6.

20. *Id.* at 5. This notion of “family farm” has deep roots in our cultural

C. ROMANCE MEETS REALITY ON THE FARM

It is in those fields that Pollan embarks on a journey that takes readers through, first, the industrial food chain and, later, the increasingly-industrial organic food chain. For many Americans, whose only exposure to farm life is in the halogen glow of the supermarket aisle, the corn fields of Iowa where Pollan finds himself will seem entirely foreign. Despite the rhetoric of farming in food advertising, many American farms are far from the picture-perfect "family farm" that exists in the imagination of the typical American. American consumers, at least to the extent that they think about it at all, want to believe that their food comes from the type of "family farm" they believe most farms to be – that is, freehold farms owned and worked in the main by one family, with an occasional hired hand. This idealized "family farm" is a closed system: it allows various types of livestock to graze and produces crops that can both support the livestock and be sold to local markets; waste from the livestock fertilizes the crops.²¹ The "family farm" as it exists in our imagination, is perhaps more easily defined by what it is not—it is not "agribusiness." It is not "factory farms."²²

Unfortunately, the odds that any significant share of our food products actually come fresh from the farm—at least the farm that most Americans are likely to imagine—is a wager at which even the most reckless gambler would balk. In reality, the number of farms has been declining for nearly five decades, and there persists an increasing trend away from family farming toward industrial consolidation.²³ Few modern farms

understanding as evidenced by early political rhetoric. For example, Daniel Webster said in an 1840 speech, "We live in a country of small farms . . . a country in which men cultivate with their own hands, their own fee simple acres; drawing not only their subsistence but also their spirit of independence and many freedoms from the ground they plow. They are at once its owners, its cultivator, and its defenders." RONALD JAGER, *THE FATE OF FAMILY FARMING: VARIATIONS ON AN AMERICAN IDEAL* 16 (2004) (quoting Daniel Webster, *Report of the Agricultural Meeting, Held in Boston, January 13, 1840* at 29 (1840)).

21. See generally ROBERT A. HOPPE & DAVID E. BANKER, U.S. DEPT. OF AGRIC., *STRUCTURE AND FINANCE OF U.S. FARMS: 2005 FAMILY FARM REPORT* (2006) (discussing different categories of farms).

22. The Chipotle restaurant website features a "pop-up" which states, "Quite frankly, factory farms suck." Chipotle, <http://www.chipotle.com> (last visited Oct. 6, 2006).

23. HOPPE & BANKER, *supra* note 21. According to the Census of

are entirely the self-reliant, closed systems of our romantic notions. "American agriculture is changing rapidly—becoming more concentrated, more technically advanced, and more integrated with the input and marketing sectors."²⁴

Although the American family farm, as part of our communities and our culture, is deeply embedded in our national identity,²⁵ the definition of "family farm" has troubled researchers, scholars, and policymakers throughout the evolution of the farm in the twentieth century. We are, at our roots, a nation cultivated by farmers and plantation owners. Even before this nation was a nation, it was an agrarian society struggling to survive in the earliest years of colonial rule.²⁶ Subsistence was found in the fields and orchards. By the 1780s, colonists were producing surpluses, amassing wealth, and gaining political clout.²⁷ At the time of the American Revolution, 95% of the population earned their living from the land. Then, as for much of our history, the American way of life was also the

Agriculture, after peaking in the 1930s at approximately 6.8 million, the number of U.S. farms fell until 1975. After that period, the decline in the number of farms in the United States slowed until almost ceasing in the 1990s. The report also demonstrates that, between 1989 and 2003, farm size shifted toward the smallest and largest class of farms. Operations with gross annual sales of less than \$10,000 and large non-family farms increased in number; during the same period, farms considered "family farms" generating sales between \$10,000 and \$250,000 declined in number. *Id.* See Neil D. Hamilton, *Agriculture Without Farmers? Is Industrialization Restructuring American Food Production and Threatening the Future of Sustainable Agriculture?*, 14 N. ILL. U. L. REV. 613 (1994).

24. See, e.g., Robert A. Coulthard, *The Changing Landscape of America's Farmland: A Comparative Look at Policies which Help Determine the Portrait of Our Land – Are There Lessons We Can Learn from the EU?*, 6 DRAKE J. AGRIC. L. 261, 271-272 (2001) (discussing the role of the farm in our national identity, as well as the changing structure of American farms, citing COCHRANE, *supra* note 5, at 7-8). See generally Steven C. Bahls, *Preservation of Family Farms – The Way Ahead*, 45 DRAKE L. REV. 311, 323-324 (1997); Chen, *supra* note 3, at 1721.

25. See, e.g., Bahls, *supra* note 24, at 321-22 (discussing the mediocre success of contemporary farm policies targeting family farms because of the changing nature of agriculture in the post-New Deal era).

26. See, e.g., JAGER, *supra* note 20, at 3-28 (exploring the beginnings of agriculture in the new world, including the catastrophic agricultural failures of the initial Virginia Roanoke settlement and Jamestown; noting, "Our familiar and textbook understanding of the Jamestown and Plymouth Colonies ought to include the forthright admission that they constitute thoroughly tragic and embarrassing beginnings for a nation that was eventually to pride itself on its farming traditions.").

27. See COCHRANE, *supra* note 5, at 7-8.

farmer's way of life.²⁸

By the start of the twentieth century, agriculture was beginning to change, and, with it, rural America. By the 1930s, the urbanization of the United States and an increasing population had driven the percentage of those Americans living and working on farms to fewer than 50%.²⁹ As decades passed, especially from 1960 to 1990, urban centers continued to grow at a faster pace than their rural counterparts, accounting for more than 88% of the population growth in the nation.³⁰ In recent years, the number of Americans working on farms has dipped to less than 2% of the population.³¹

During the same time, the visage of the farm itself has undergone a dramatic transformation. The number of farms reached record numbers in 1935 and then fell sharply until the early 1970s.³² Advances in technology and production methods, increasing farm consolidation, and an attractive non-farm economy drew farmers away and led to a decrease in the number of farms in the United States.³³ The decline in farm numbers slowed but continued until the 1990s.³⁴

Fewer farmers meant fewer farms. More than 6.5 million farms were in operation less than a century ago³⁵, but by 2004, only 2.1 million farms remained.³⁶ Average farm size, on the other hand, has increased to 443 acres per farm.³⁷ The farms remaining at the end of the twentieth century were, on average, nearly three times larger than farms of 1935.³⁸

These statistics are revealing. An increase in farm size and a decrease in farm ownership expose an increasingly consolidated agricultural industry. Open *The Omnivore's Dilemma* to any page and the consolidation itself, as well as the impact of such consolidation, becomes overwhelmingly

28. Matthew M. Harbur, *Anti-Corporate, Agricultural Cooperative Laws and the Family Farm*, 4 DRAKE J. AGRIC. L. 385, 386 (1999); see also Chen, *supra* note 3, at 1727 ("In 1790, 1 out of every 20 of the 3,929,214 inhabitants of the United States was living in urban territory.").

29. Chen, *supra* note 3, at 1727.

30. See STATISTICAL ABSTRACT OF THE UNITED STATES: 1999, TABLE NO. 46, U.S. CENSUS BUREAU, (119th ed.) (1999).

31. Coulthard, *supra* note 24, at 272.

32. HOPPE & BANKER, *supra* note 21, at 6.

33. *Id.*

34. *Id.*

35. *Id.*

36. *Id.*

37. *Id.*

38. *Id.*

apparent.³⁹

Despite these seismic shifts in agriculture over the last century, the United States Department of Agriculture ("USDA") estimates that 98% of United States farms are family farms,⁴⁰ and these farms account for over 86% of the total agricultural output in the nation.⁴¹ The USDA includes large scale family farms in its umbrella of "family farms." Indeed, in the 2006 USDA report, the USDA detailed that large-scale family farms account for 59% of all production. Although the USDA's "family farm" umbrella includes the majority of farm enterprises, these family farms are, for the most part, not the idyllic family farm of America's collective imagination.⁴² Nowadays, fewer farms of a larger size account for greater percentages of production and food sale receipts than ever before.⁴³ This is, after all, the heart of agribusiness. As one commentator remarked on the changing role of the family farm:

As large corporations gain control of the markets for inputs and the distribution of farm products, farmers get a smaller piece of the pie. With their market power, huge agribusiness corporations are able to drive up the price of inputs such as seed and fertilizer. Farmers must strive to increase the size and efficiency of their farms to spread the cost of these higher priced inputs. At the same time, agribusiness corporations control the processing, marketing, and distribution of

39. For example, Pollan reports that nearly all of the corn in the United States passes through one of only twenty-five wet mills, and he comments on the consolidation of the meat-packing industry. POLLAN, *supra* note 2, at 69, 85-86.

40. Beginning in 1947, a number of reports forewarned of the negative effects of a growing agribusiness sector. These reports led the government to differentiate farms by gross income to tailor policy decisions to the differing needs of farms. It was not until 1996 that a thirty-member commission, the National Commission on Small Farms, recognized the threat of growing consolidation and called for the USDA to respond to the needs of small farmers. Using agricultural data, the commission categorized farms as small family farms, large family farms, and non-family farms, allowing a more accurate discussion of policies that help the family farmer. See Coulthard, *supra* note 24, at 273-77 (discussing "A Time to Choose" and "A Time to Act," two attempts by the executive administration to clarify the discussion of agriculture policy).

41. HOPPE & BANKER, *supra* note 21, at 6.

42. The USDA classifies a "family farm" as "any farm organized as a sole proprietorship, partnership or family corporation." The definition does not include "farms organized as non-family corporations or cooperatives, as well as those farms with hired managers." Small family farms have annual sales of less than \$250,000, while large-scale family farms have annual sales of \$250,000 or more. *Id.* at 2.

43. See *id.* at 7-9.

farm products, enabling them to take a larger cut of the profits from food sales.⁴⁴

Though the ownership may not have significantly decreased the percentage of "family farms" (depending, of course, on how one defines "family farm") farming has nevertheless been irreversibly changed as "American agriculture has become the model of industrial efficiency."⁴⁵ Growing agribusiness and corporate integration have forced the once self-sufficient yeoman to bear the yoke of higher capital investments, increasing specialization, precarious markets and larger fields to survive.⁴⁶ Even if we still call these farms "family farms," what that means, as opposed to what many of us think of when we hear the term, is hardly what it once was.

For some time, the changing nature of the family farm has alarmed policymakers and rural communities. Cries to save the family farm garnered a great deal of attention throughout the last half of the twentieth century.⁴⁷ Indeed, the environmental and organic movements were influential in revolutionizing agricultural policies in the 1970s and 1980s.⁴⁸ But the trend toward a one-commodity farm, historically wheat but increasingly corn,⁴⁹ has persisted, as has the industrialization of even "organic" markets.⁵⁰

44. Alex E. Snyder, *Saving the Family Farm through Federal Tax Policy: Easier Said than Done*, 62 WASH. & LEE L. REV. 729, 740 (2005).

45. *Id.* at 738.

46. *Id.* at 738-39.

47. FarmAid, for example, began in 1985 as a call to "do something" for American family farmers. As the FarmAid website describes its history:

FARM AID started as an idea at the Live Aid Concert when Bob Dylan said on stage, "Wouldn't it be great if we did something for our own farmers right here in America?" Willie Nelson, Neil Young and John Mellencamp agreed that family farmers were in dire need of assistance and decided to plan a concert for America. The show was put together in six weeks and was held on September 22, 1985 in Champaign, Illinois before a crowd of 80,000 people. It raised over \$7 million for America's family farmers.

Farm Aid History,
http://www.farmaid.org/site/PageServer?pagename=aboutus_history (last visited Oct. 18, 2006).

48. See POLLAN, *supra* note 2, at 140-54.

49. See, e.g., Alexei Barrionuevo, *Crop Rotation in the Grain Belt*, N.Y. TIMES, Sept. 16, 2006 at C1 (noting the massive increases in acres of corn planted in several states, including North Dakota, which between 1986 and 2006 saw corn production jump by an astounding 222%).

50. Pollan's description of "big organic," which he distinguishes from pastoral farming, is biting. After watching Rosie, a free-range chicken he purchased in order to explore the process of food produced for organic retailers

Pollan's inquiry into what lies behind the grocery store's warehouse doors seems to beseech a return to a truly organic and pastoral way of food production; more precisely, a return to the "family farm" of our collective imagination. Though his analysis is told through his experiences on large industrially-oriented farms and feedlots and with a quirky Virginian farmer, Pollan relates the experience of American agriculture over the past century in such a stark simplicity that it defies logic to consider any conclusion but his: industrial and industrial organic farms have serious consequences.

D. INDUSTRIAL FARMING FOR INDUSTRIAL FOOD

Americans, as noted above, have an idyllic view of the "family farm."⁵¹ Observe the rhetoric of farming in food advertising. The upstart fast food restaurant, Chipotle, emphasizes "naturally raised" pork and chicken products, and its website focuses on the small scale farmers who raise them.⁵² Similarly, Gold-N-Plump, at least in Minnesota, advertises via its billboards and sponsorship of Minnesota Public Radio that its chicken is "fresh from the family farm to you."⁵³ Never mind that 95% of chickens (boilers) are produced under production contracts with fewer than forty firms.⁵⁴ American consumers, at

like Whole Foods, he described the cramped, unused range, which resembled more a front lawn, as: "Seldom if ever stepped upon, the chicken-house lawn is scrupulously maintained nevertheless, to honor an ideal nobody wants to admit has by now become something of a joke, an empty pastoral conceit." POLLAN, *supra* note 2, at 173.

51. See, e.g., JAGER, *supra* note 20, at ix (observing, "The family farm: it is way up there next to God and country, close to baseball and motherhood.").

52. See Chipotle, <http://www.chipotle.com> (last visited Nov. 2, 2006). Chipotle seems to be making an effort to obtain its products from non-factory farms. See Diane Halverson, *Chipotle Mexican Grill Takes Humane Standards to the Mass Marketplace*, ANIMAL WELFARE INST. Q., (Spring 2003), available at <http://www.awionline.org/pubs/Quarterly/sp03/0603p17.htm> (noting "At last, a restaurant chain not only lives up to its pledge to let pigs be pigs down on the farm, but advertises that commitment."); Jennifer Alsever, *Quest for a New Burrito*, DENV. POST, May 9, 2004 at 1K (discussing Chipotle's commitment to family farms and Chipotle leader Steve Ells' "quest" to convince producers to abandon factory farming).

53. See Gold'n Plump, <http://www.goldnplump.com> (last visited Oct. 18, 2006) (noting, "Welcome to Gold-n-Plump—the family farm raised chicken that's 100% all natural."). Any number of similar advertisements can be found simply by walking through an aisle in the typical American supermarket or observing billboard advertisements for "farm fresh" products.

54. WILLIAM HEFFERNAN, REPORT TO THE NATIONAL FARMERS UNION: CONSOLIDATION IN THE FOOD & AGRICULTURE SYSTEM (Feb. 5, 1999), available

least to the extent they think about it at all, want to believe that their food comes from the type of "family farm" they romanticize in their imagination.

Through his exploration of commodity farms and feedlots, Pollan painstakingly demonstrates why our national ideal of the family farm is not quite what it's cracked up to be. Before we reach Pollan's critique, however, we will examine the farm, Polyface, and the farmer, Joel Salatin, offered by Pollan as redeemer.⁵⁵

Salatin, along with his family, farms in Swoope, Virginia, on a farm Pollan describes as a scene of "classic pastoral beauty."⁵⁶ Salatin is a grass farmer, and Polyface farm is "one of the most productive and influential alternative farms in America."⁵⁷ Polyface Farm produces tomatoes, sweet corn, and berries, in addition to several types of livestock: cattle, pigs, chickens, and even rabbits.⁵⁸ Salatin, however, describes himself "in no uncertain terms" as a grass farmer.⁵⁹ To say that Salatin is a "grass farmer" requires some additional explanation for the uninitiated.⁶⁰ Grass farming refers to the practice of grazing animals on various perennial grass species.⁶¹ For example, at Polyface, a "half dozen different animal species are raised together in an intensive rotational dance on the theme of symbiosis."⁶² To a grass farmer, grass is primal and primary: "The animals come and go, but the grasses, which directly or indirectly feed all the animals, abide"⁶³

at <http://home.hiwaay.net/~becraft/NFUarmCrisis.htm>.

55. See generally POLLAN, *supra* note 2, at 123–33 (describing Polyface Farm and Salatin). Joel Salatin is self-described as a "Christian-conservative-libertarian-environmentalist-lunatic farmer." *Id.* at 125. The Biblical connotation of the word "redeemer" is intentional. Not only is the farmer Pollan explores in this section a very religious person, but Pollan notes that Salatin sees himself as something of a modern day, food-supply Martin Luther. *Id.* at 260. The juxtaposition of biblical text and farming is a common one. See, e.g., Jim Chen, *Of Agriculture's First Disobedience and Its Fruit*, 48 VAND. L. REV. 1261, 1262 (1995) (discussing the frequent invocation of the Book of Genesis by American agricultural prescriptions).

56. POLLAN, *supra* note 2, at 124.

57. *Id.* at 126.

58. *Id.* at 125.

59. *Id.*

60. See *id.* at 125–26 (describing grass as the "foundation of the intricate food chain Salatin has assembled at Polyface").

61. *Id.* at 126.

62. *Id.*

63. *Id.* at 187.

In exchange for an intimate view of Polyface, Pollan worked on the farm for seven days.⁶⁴ The experience left him exhausted but clearly enamored with Salatin and Polyface.⁶⁵ Pollan's description of Salatin's farm is idyllic. The animals are happy,⁶⁶ not to mention tasty.⁶⁷ The farm is worked by a single family and a few interns, with the neighbors pitching in on occasion.⁶⁸ In short, after reading about Polyface farm, one thinks, this is how it should be.

Pollan's exploration of Joel Salatin's farm fits perfectly into our national notion of what a farm should be. Salatin's farm, lush and productive as it is, however, is not the typical farm supplying food to our industrial food supply. Despite an \$11 billion market in organics,⁶⁹ as Pollan notes, an "Iowa cornfield (and all the others just like it) is the place most of our food comes from."⁷⁰ It turns out, Pollan tells us, corn has a lot to do with how we eat today. The massive amounts of corn Midwestern farmers are able to produce is converted into a surprising array of products—from "chicken nuggets and Big Macs to emulsifiers⁷¹ and nutraceuticals."⁷²

64. *Id.* at 125.

65. *See id.* (describing Pollan's perception of Salatin). Reviewer David Kamp similarly noted Pollan's enchantment with Salatin. *See* David Kamp, *Deconstructing Dinner*, N.Y. TIMES BOOK REV., Apr. 23, 2006, at 14. Kamp described Pollan as "a nice-guy writer whose awe of Salatin is palpable." *Id.*

66. The animals' mental state is best illustrated by Pollan's description of Salatin's "pigaerator." POLLAN, *supra* note 2, at 217–18. As Pollan describes, over the winter, Salatin's cattle reside in a three-sided cattle barn. *Id.* at 217. Rather than muck the stalls, Salatin leaves manure in place and every few days covers it with a layer of woodchips or straw, as well as a few bucketfuls of corn. *Id.* When spring comes, Salatin turns the cattle out to pasture, and invites his pigs into the barn to aerate the compost. *Id.* The pigs joyfully root around for "forty-proof corn," where they are as "happy as . . . pig[s] in shit." *Id.*

67. Pollan describes eggs from Polyface chickens as having "magical properties," *id.* at 263, and the chicken as "out of this world," at least when Pollan serves as chef. *Id.* at 271.

68. *See id.* at 230–31 (noting that Salatin "regarded the willingness of neighbors to work for a business as the true mark of its sustainability").

69. *Id.* at 136.

70. *Id.* at 35. Iowa and Illinois lead the pack in corn production. *See* UNITED STATES DEPT. OF AGRIC., CROP PRODUCTION 2004 SUMMARY 4 (Jan. 2005), available at <http://usda.mannlib.cornell.edu/reports/nassr/field/pcp-bban/cropan05.pdf>. Several other states are rapidly increasing corn production. *See* Barrionuevo, *supra* note 49, at C1 (noting that in Kansas wheat is steadily being replaced by corn).

71. An emulsifier is a product added to a mix of oil and water to make the product stable. Jane Morris, *Evergreen Emulsions*, NATURE.COM, Aug. 11,

Pollan's exploration of "industrial farming" makes up the first section of his book, which he has aptly titled, *Industrial Corn*. Irreverent Iowa farmer George Naylor⁷³ let Pollan, and thereby, us, peek into the life of a more typical "industrial farmer." Naylor farms in Greene County, Iowa, just over an hour northwest of the capital Des Moines, on land first tilled by Naylor's grandfather in 1880.⁷⁴ Naylor's farm, like many in Iowa, is incredibly productive. On his 470 acres, he yields nearly 180 bushels an acre.⁷⁵ In other words, Naylor's farm provides sufficient caloric output to support 129 Americans.⁷⁶ The corn Naylor plants, however, is not what you would boil and drown in butter and salt on a late summer afternoon. Naylor is not planting sweet corn, but commodity corn.⁷⁷ Commodity corn is not something you want to eat.

So if we don't eat it, how exactly is this corn feeding us? That is the complicated question Pollan spends the remainder of the *Industrial Corn* section discussing. Into the story march industrial agricultural giants such as Cargill,⁷⁸ ADM,⁷⁹ and

2005, <http://www.nature.com/materials/news/news/050811/portal/m050811-1.html>.

72. POLLAN, *supra* note 2, at 103. See The Nutraceuticals Institute, <http://foodsci.rutgers.edu/nci/#what> (last visited Nov. 6, 2006) (defining nutraceuticals "often referred to as phytochemicals or functional foods" as "natural, bioactive chemical compounds that have health promoting, disease preventing or medicinal properties.").

73. Pollan populates his book with farmers one would love to meet. Pollan's description of Naylor as the "fiery prairie populist" and shambling Gentle Ben sporting pinstriped overalls makes him an inviting character. POLLAN, *supra* note 2, at 33. Who wouldn't want to meet Naylor, who tends toward "incontrovertible pronouncements," such as, "That is just the biggest bunch of bullshit! Only the New York Times would be dumb enough to believe the Farm Bureau still speaks for American farmers!" *Id.* In another breath, Naylor notes his refusal to "launder money for Monsanto." *Id.* at 36.

74. *Id.* at 33.

75. *Id.* at 33, 36.

76. *Id.* at 34.

77. See *id.* at 58–63 (discussing commodity corn).

78. Cargill is the largest privately held company in the world. *Id.* at 63; see also *The World's 250 Largest Family Businesses*, FAMILY BUS., 2004, available at <http://www.familybusinessmagazine.com/topglobal.html> (last visited Nov. 6, 2006) (noting that Cargill is the ninth largest family business in the world and the world's largest privately held company). Cargill describes itself as an international provider of food, agricultural and risk management products and services. Cargill, <http://www.cargill.com/> (last visited Nov. 6, 2006).

79. Archer Daniels Midland Company, or ADM, describes itself as "one of the world's largest agricultural processors of soybeans, corn, wheat and cocoa." See Archer Daniels Midland Company (ADM), <http://www.ADMworld.com/> (last visited Nov. 6, 2006).

General Mills,⁸⁰ along with that iconic agriculture giant, “the corn-fed American steer.”⁸¹

Pollan begins with the steer, an animal not suited to eating corn but bred to do so anyhow.⁸² About three-fifths of the commodity corn in this country goes to feeding livestock.⁸³ A good chunk of those three-fifths goes to feeding our hundred million beef cattle.⁸⁴ The average steer can convert thirty-two pounds of feed into four pounds of flesh *each day* in the Confined Animal Feeding Operation (“CAFO”).⁸⁵ Pollan has a special relationship with one of those steers, which he purchased as a calf from a cow-calf operation in South Dakota, followed, and found at a feedlot in Garden City, Kansas.⁸⁶

Had Pollan purchased that steer a decade ago, the steer would not have spent nearly as much time, if any, in a CAFO. The transition from finishing cattle on ranches or farms to finishing them on CAFOs owes much to corn.⁸⁷ As cheap corn piled up, it became less expensive for a CAFO to buy corn than it cost a farmer to grow it.⁸⁸ Because CAFOs could finish animals so much more cheaply, farmers got rid of livestock.⁸⁹ As they did so, they replaced the acres on which livestock had roamed with more corn.⁹⁰ More corn further drives down the cost of corn. Perhaps this is not quite a treadmill, but it is certainly not a virtuous cycle. Moreover, the formerly closed ecological system of livestock consuming farm waste and the livestock’s waste contributing fertilizer, becomes two distinct operations, each with an ecological cost—a waste problem in the CAFO and a fertility problem on the farm.⁹¹ Pollan takes it yet

80. General Mills markets such popular brands as Betty Crocker, Häagen-Dazs, Pillsbury, Green Giant, Old El Paso, and Cheerios. See General Mills, <http://www.generalmills.com/corporate/company/index.aspx> (last visited Nov. 6, 2006). General Mills also owns the organic “Cascadian Farms” brand. POLLAN, *supra* note 2, at 144–45.

81. POLLAN, *supra* note 2, at 64.

82. *Id.* at 64, 68.

83. *Id.* at 66.

84. *Id.*

85. *Id.* at 80–81. See also *id.* at 67–68 (describing CAFOs).

86. *Id.* at 66, 72.

87. *Id.* at 67.

88. *Id.*

89. *Id.* at 67–68.

90. *Id.*

91. *Id.* at 68. For a discussion of the deleterious impact of CAFO to air and water quality, see Warren A. Braunig, Note, *Reflexive Law Solutions for*

another step:

This biological absurdity [abandoning the closed system], characteristic of all CAFOs, is compounded in the cattle feed yard by a second absurdity. Here animals exquisitely adapted by natural selection to live on grass must be adapted by us—at considerable cost to their health, to the health of the land, and ultimately to the health of their eaters—to live on corn, for no other reason than it offers the cheapest calories around and because the great pile must be consumed.⁹²

But not even America's appetite for corn-fed beef can deal with the mountains of corn. About another fifth of the corn farmers like Naylor produce goes into wet mills.⁹³ The most valuable product produced by those wet mills is the now ubiquitous high fructose corn syrup.⁹⁴ Pollan tells us that 530 million bushels of corn each year are converted into 17.5 billion pounds of high-fructose corn syrup—enough for each American to consume about sixty-six pounds per year.⁹⁵

"Valuable" should not be confused with "nutritious". Indeed, high fructose corn syrup offers no nutritional value and has been maligned as contributing to the obesity epidemic.⁹⁶ Researchers mastered the conversion of cornstarch to syrup in the 1970s.⁹⁷ High fructose corn syrup started pouring into soft drinks in the 1980s, when manufacturing methods improved so that use of high fructose corn syrup became less expensive than using other sweeteners.⁹⁸ Now that it is in soft drinks,

Factory Farm Pollution, 80 N.Y.U. L. REV. 1505 (2005).

92. POLLAN, *supra* note 2, at 68.

93. *Id.* at 86. Corn "wet milling" is a multi-step process of separating the corn kernel into starch, germ, fiber and protein in a wet medium.

94. *Id.* at 103.

95. *Id.* at 103–04.

96. See, e.g., Sally Squires, *Sweet But Not So Innocent*, WASH. POST, Mar. 11, 2003, at F01 (noting concerns about the rising consumption of high fructose corn syrup, and concerns about how fructose is metabolized in the human body). See also Corby Kummer, *Sweet Tea*, ATLANTIC MONTHLY, June 2006 at 125 (noting that "[h]igh-fructose corn syrup has been blamed for any number of ills, primarily its role in the 74 percent increase in obesity that this county has seen since 1991, according to the Centers for Disease Control and Prevention."). Research on the impact of high fructose corn syrup (versus regular sugar) is ongoing. As Kummer points out in *Sweet Tea* "researchers have determined that fructose, unlike glucose, does not stimulate the production of insulin or leptin, and does not suppress ghrelin, a hunger stimulus." *Id.* at 125–26.

97. Kummer, *supra* note 96, at 125.

98. Squires, *supra* note 96, at F04.

Americans collectively consume tons of it.⁹⁹ Common sense, backed by empirical research, indicates that a reason for the increasing obesity numbers is our penchant for sweet drinks but not for vegetables.¹⁰⁰

Why do we have so much corn syrup and so few vegetables? Despite high-fructose corn syrup's complicity in the obesity epidemic, as Pollan points out, "we subsidize high-fructose corn syrup in this country, but not carrots."¹⁰¹ The irrationality of this policy should be no surprise at this point, but Pollan puts a fine point on it: "While the surgeon general is raising alarms over the epidemic of obesity, the president is signing farm bills designed to keep the river of cheap corn flowing, guaranteeing that the cheapest calories in the supermarket will continue to be the unhealthiest."¹⁰²

If corn syrup is complicit in the obesity epidemic, then by implication, George Naylor, likeable as he is, is complicit in the epidemic as well. As noted above, Naylor's farm can supply 129 of us with cheap calories. Whether or not it can continue to support Naylor, however, is a separate question.¹⁰³ Naylor is able to continue to farm this land and produce extraordinary amounts of corn only because of government support in the form of subsidies.¹⁰⁴ In fact, Pollan, citing statistics from Iowa State University, reports that it costs nearly a full dollar more to produce a bushel of corn than Naylor can earn selling it.¹⁰⁵ As the price of fossil fuel increases, the disparity between what Naylor has to spend to produce corn and what he's able to get for it is likely to increase.

99. Between 1977 and 2004, soft drink consumption in the United States has increased by 135%. Samara Joy Nilson and Barry M. Popkin, *Changes in Beverage Intake Between 1977 and 2001*, 27 AM. J. OF PREVENTATIVE MED. 205 (2004). Researcher Odilia I. Bermudez notes that her work might contribute to the "rapidly growing body of evidence about unintended deleterious effects of some popular beverages, and may motivate food researchers in the search for strategies to halt or somewhat alleviate the current obesity epidemic facing the American public." *Id.*

100. Only 40% of our population consumes the recommended servings of vegetables each day. Patricia M. Guenther, Kevin W. Dodd, Jill Reedy, & Susan Krebs-Smith, *Most Americans Eat Much Less than Recommended Amounts of Fruits and Vegetables*, 106 J. OF THE AM. DIETETIC ASS'N 1371 (Sept. 2006).

101. POLLAN, *supra* note 2, at 108.

102. *Id.*

103. *Id.* at 34.

104. *Id.*

105. *Id.* at 53.

Despite the tough time Naylor has eking out a living growing corn, he is, apparently, onto something. On September 16, 2006, the *New York Times* reported that farmers in the "wheat belt" are turning away from wheat and toward more "lucrative" crops like corn and soybeans.¹⁰⁶ Corn is now being sown in "traditional wheat country, where growing corn and soybeans was once almost unthinkable."¹⁰⁷ This trend should not be surprising to thoughtful readers of Pollan's book. As George Naylor is quoted as saying, "[y]ou can fire me, but you can't fire my land, because some other farmer who needs more cash flow or thinks he's more efficient than I am will come in and farm it. Even if I go out of business this land will keep producing corn."¹⁰⁸ The *Times* attributes the growth in acreage to better seed technology, more favorable subsidies,¹⁰⁹ changing consumer tastes, and most importantly, the growth of ethanol and biodiesel.¹¹⁰

As the *Times* article illustrates, absent changes in farm policy, and in particular, subsidies, the increasing disparity between what it costs to produce a bushel of corn and what a farmer can earn on a bushel of corn will not disappear. This absurdity is not lost on Pollan. The current price supports for farmers encourages the production of corn at the expense of other crops even when the production of corn is "upside down," that is, when it costs more to grow than it will fetch at market.¹¹¹

E. IN THE MIDST OF PLENTY, WANT

Part of Pollan's impetus for writing this book, according to the introduction, is his observation of our collective national eating disorder. This disorder became apparent, for Pollan, in 2002, when America suffered a "collective spasm of what can only be described as carbophobia seized the country."¹¹² He's referring, of course, to the *Atkins craze*: that is, the avoidance of

106. Barrionuevo, *supra* note 49, at C1.

107. *Id.* For example, in North Dakota, the production of corn has gone up 222% since 1986. *Id.*

108. POLLAN, *supra* note 2, at 54.

109. Barrionuevo, *supra* note 49, at C9. The *Times* reports that subsidies to corn producers amounted to \$4.6 billion in 2005 and \$2.9 billion in 2004.

110. *Id.* at C9.

111. POLLAN, *supra* note 2, at 53.

112. *Id.* at 2.

carbohydrates, such as bread and pasta.¹¹³

Bulimia nervosa,¹¹⁴ commonly referred to as bulimia, is a particularly pervasive and painful eating disorder.¹¹⁵ People with the disorder consume large amounts of food (binge) and then do something to get rid of it (purge). Some bulimics vomit or take laxatives, others exercise excessively, and some do a combination.¹¹⁶ In this way, individuals with bulimia consume sometimes massive amounts of food but are nonetheless inadequately nourished. Bulimics are at risk for multiple health problems, including tooth decay and gum disease (from stomach acid), osteoporosis, kidney damage, heart problems and death.¹¹⁷

The national eating disorder Pollan recognizes bears a striking resemblance. We are surrounded by growing piles of corn-based food and rates of childhood obesity are skyrocketing, yet many children in this country, especially children from lower socio-economic classes, go to bed hungry.¹¹⁸ This juxtaposition of piles of food accompanied by inadequate nutrition reverberates throughout our country.

Indeed, Pollan carefully documents the first part of this phenomenon. He reports that, since the Nixon administration, "farmers in the United States have managed to produce 500 additional calories per person every day (up from the 3,300 already substantially more than we need)."¹¹⁹ Our farmers produce so many calories, in fact, that our land grant schools struggle to come up with new uses for the surplus. Corn (and

113. Gary Taubes, *What If It's All Been a Big Fat Lie?*, N.Y. TIMES, July 7, 2002, at 22 (describing the Atkins craze).

114. See WebMD, *Bulimia Nervosa – Topic Overview*, http://www.webmd.com/hw/health_guide_atoz/hw49747.asp (last visited Feb. 18, 2007).

115. The National Institutes of Mental Health reports that an estimated 1.1% to 4.2% of females suffer from bulimia. See NAT'L INST. OF MENTAL HEALTH, *THE NUMBERS COUNT: MENTAL DISORDERS IN AMERICA* (rev. 2006) (citing the American Psychiatric Association Work Group on Eating Disorders, *Practice Guidelines for the Treatment of Patients with Eating Disorders*, 157 AM. J. OF PSYCHIATRY 1 (1 Supp. 1-39) (Jan. 2000)), available at <http://www.nimh.nih.gov/publicat/numbers.cfm#>.

116. See WebMD, *Bulimia Nervosa – Topic Overview*, http://www.webmd.com/hw/health_guide_atoz/hw49747.asp (last visited Feb. 18, 2007).

117. *Id.*

118. The prevalence of childhood obesity and childhood hunger are explored *infra*.

119. POLLAN, *supra* note 2, at 103.

other crops) is now used not only to feed us but to feed our cars in the form of ethanol and bio-diesel.¹²⁰ Apparently, we're doing that same process in reverse: Just a few weeks ago, Iowa State University, Iowa's agriculture college, announced that its researchers are working on a project to cheaply and quickly convert fuel ethanol into the purer, cleaner alcohol that goes into alcoholic drinks, cough medicine, mouth washes and other food-grade alcohol.¹²¹ From food, to fuel, and back again.

Despite this abundance, Pollan also recognizes that the issue of hunger perversely pervades our country, noting that "getting rid of [the piles of corn] contribute[s] to obesity and to hunger both."¹²² How is it that we have so much food that we are using it to run our cars and make cough medicine, but we cannot keep our children adequately nourished?¹²³

Childhood obesity rates are alarmingly high. So too, however, is the number of children who go to bed hungry in this country. While hunger and obesity trends in this country are commonly regarded as separate phenomena, recent findings have indicated that the two trends may be linked. Although counterintuitive, in what has come to be known as the "hunger-

120. See, e.g., Andrew Pollock, *Redesigning Crops to Harvest Fuel*, N.Y. TIMES, Sept. 8, 2006 at C1. The article discusses the "new mission of crop scientists" to tailor corn and other crops for use in ethanol and other biofuels. As Pollack reports, corn is not the only crop that can be used to produce ethanol. Scientists are focusing on developing other crops (especially grasses), as well improving corn's performance in ethanol (by designing varieties with higher fermentable starch content). *Id.*

121. Amy Lorentzen, *Iowa State Scientists Turn Ethanol Into Food-Grade Alcohol*, USA TODAY, Aug. 27, 2006, available at http://www.usatoday.com/tech/science/2006-08-27-ethanol_x.htm. Getting drunk on corn alcohol is hardly new. Pollan begins his chapter, "The Consumer: A Republic of Fat" by noting that in 1820 the typical American was putting away half a pint of corn whiskey every day. POLLAN, *supra* note 2, at 100.

122. POLLAN, *supra* note 2, at 63. Citing a coming crisis of Malthusian proportion, Steven Shapin, reviewing Pollan's book for the *New Yorker*, criticizes Pollan for paying too little attention to the issue of hunger. Shapin is otherwise quite positive in his review of the book. Shapin, *supra* note 2. Thomas Malthus theorized that the growth of the world's population will eventually exceed the capacity of the earth to produce food. See RONALD D. KNUTSON, J.B. PENN, & BARRY L. FLINCHBAUGH, *AGRICULTURAL AND FOOD POLICY* 143 (5th ed., 2004) (citing D.V. GLASS, *INTRODUCTION TO MALTHUS* (London: C.A. Watts & Co., 1953)).

123. This is to say nothing of our use of food as a political bargaining chip. See Barrionuevo, *supra* note 49, at B9 (explaining that "American presidents used wheat to support Allied troops in both world wars and tried to wield it as a diplomatic weapon against the Soviet Union. Huge wheat surpluses regularly helped the United States balance its trade deficits.").

obesity paradox," the "contradictory concepts of hunger and obesity are now known to coexist within the same person and within the same household."¹²⁴

In the United States, food insecurity is a widespread and growing problem.¹²⁵ Food insecurity exists when the availability of safe and nutritious food is limited or uncertain, generally due to economic circumstances.¹²⁶ Hunger, a potential consequence of food insecurity, is the actual uneasy or painful sensation that is caused by the involuntary lack of food.¹²⁷ In 2004, nearly 12% of American households were food insecure.¹²⁸ Of the food insecure households, about one-third (4.4 million households) were food insecure to the point that one or more household members were hungry.¹²⁹

The numbers surrounding food insecurity are especially disturbing with regard to children. Unfortunately, and not altogether surprisingly, rates of food insecurity are substantially higher in households headed by single women with children and in households below the poverty line.¹³⁰ According to the USDA, an estimated 13 million children (17.8% of the children in the United States) lived in poverty in 2004, and nearly fourteen

124. Lee M. Scheier, *What is the Hunger-Obesity Paradox?*, 105 J. AM. DIETETIC ASS'N 883 (2005).

125. In our post 9/11 world, the term "food security" has a dual meaning. In its more current sense, it refers to the possibilities of the food supply being a possible terrorist target. Critics of our consolidated and industrial food supply argue it is especially vulnerable to terrorist attack. Joel Salatin, Pollan's yeoman farmer, argues, "Every government study to date has shown that the reasons we're having an epidemic of food-borne illness in this country is centralized production, centralized processing, and long-distance transportation of food. You would think therefore that they'd want to decentralize the food system, especially after 9/11. But no! They'd much rather just irradiate everything instead." POLLAN, *supra* note 2, at 230. A recent outbreak of E. Coli, linked to spinach grown in California, amplifies Salatin's point. See Gardiner Harris, *F.D.A. Warns Of Outbreak And of Eating Bag Spinach*, N.Y. TIMES, Sept. 15, 2006, at A14. A discussion of these two additional notions of "food security" is beyond the scope of this review.

126. CTR. ON HUNGER AND POVERTY, BRANDEIS U., & FOOD RESEARCH AND ACTION CTR., *THE PARADOX OF HUNGER AND OBESITY IN AMERICA* 1 (2003), available at <http://centeronhunger.brandeis.edu/pdf/hungerandobesity.pdf#search=%22Center%20on%20Hunger%20and%20Poverty%2C%20Paradox%20of%20Hunger%20and%20Obesity%22>.

127. *Id.*

128. MARK NORD, MARGARET ANDREWS, & STEVEN CARLSON, USDA, ERR-11, *HOUSEHOLD FOOD SECURITY IN THE UNITED STATES* 4-5 (2004).

129. *Id.* at 5.

130. *Id.* at 8.

million children lived in food insecure homes.¹³¹ Seven million or 17.6% of households with children under age eighteen were food insecure in 2004.¹³² Of course, the consequences of food insecurity can greatly affect children. Research indicates that even mild malnutrition experienced by children during critical growth periods can impact their behavior, school performance, and cognitive development.¹³³

Many children who suffer from hunger or food insecurity are also overweight or obese. The percentage of young people who are overweight has more than tripled since 1980.¹³⁴ Recent studies have found that 17% of children and adolescents between the ages of two and nineteen years old are overweight.¹³⁵ The numbers are even more alarming for adults. Over sixty-six percent of adults are overweight, of which 32% are obese.¹³⁶ Of course, research shows that being overweight or obese can have severe health consequences, increasing the risk of hypertension, diabetes, heart disease, stroke, osteoarthritis, and even some cancers.¹³⁷

It is not true, however, that obese children are meeting their nutritional needs every day. Researchers are starting to unravel the link between food insecurity and obesity.¹³⁸ Several

131. Second Harvest, Child Hunger Facts, http://www.secondharvest.org/learn_about_hunger/child_hunger_facts.html (last visited Nov. 20, 2006).

132. *Id.*

133. See CTR. ON HUNGER, POVERTY, STATEMENT ON THE LINK BETWEEN NUTRITION AND COGNITIVE DEVELOPMENT IN CHILDREN (1998), available at <http://centeronhunger.brandeis.edu/cognitive.html>.

134. Dep't of Health & Human Services, Ctrs. For Disease Control and Prevention, Overweight and Obesity Home, <http://www.cdc.gov/nccdphp/dnpa/obesity/index.htm> (last visited Feb. 18, 2007).

135. NAT'L CTR. ON HEALTH STAT., PREVALENCE OF OVERWEIGHT AMONG CHILDREN AND ADOLESCENTS: UNITED STATES, 2003-2004, available at http://www.cdc.gov/nchs/products/pubs/pubd/hestats/obese03_04/overwght_chil_d_03.htm.

136. NAT'L CTR. ON HEALTH STAT., OVERWEIGHT, available at <http://www.cdc.gov/nchs/fastats/overwt.htm> (last visited Feb. 23, 2007).

137. Ctrs. for Disease Control and Prevention, Overweight and Obesity Home, *supra* note 134.

138. William H. Dietz, *Does Hunger Cause Obesity?*, 95 PEDIATRICS, 766, 766-67 (May 1995) (detailing a case study of a seven-year old girl who was 220 percent overweight and suggesting that obesity and hunger are linked because of consumption of low-cost, high-fat foods and/or the body's physiological response to episodic food insufficiency). See also Adam Drewnowski & S.E. Spector, *Poverty and Obesity: The Role of Energy Density and Energy Costs*, 79 AM. J. CLINICAL NUTRITION 6 (Jan. 2004) (looking at how energy density and energy costs related to poverty and obesity and hypothesizing that limited economic resources shift dietary choices toward energy-dense foods); Christine

reasons have been suggested for this link. While some have suggested that the body may be physiologically responding to food insufficiency by conserving fat,¹³⁹ another commonly proposed explanation suggests that healthier diets simply cost more and are beyond the economic reach of the poor.¹⁴⁰ Brandeis University's Center on Hunger and Poverty has recently suggested that a lack of adequate resources for food could result in weight gain in several ways: the need to maximize caloric intake by consuming lower-cost foods with higher levels of calories, sacrificing food quality for food quantity, overeating when food is available, and/or the body's physiological adaptations to conserve fat when faced with episodic food insufficiency.¹⁴¹ Whatever the reasons for the link, obesity trends in the United States continue to increase.¹⁴²

Pollan directs little attention to the problem of hunger in American, or in the world, for that matter.¹⁴³ What Pollan does point out, however, is instructive to an understanding of the hunger-obesity paradox. Specifically, Pollan reveals that a significant amount of the corn produced on Naylor's farm (and others like it) goes into value added products.¹⁴⁴ Pollan helps us see that while General Mills (or Cargill or ADM) is coming up with more ways to make a \$5.00 cereal-bar-nutritional-supplement-breakfast-snack product from 5¢ worth of corn, millions of children are not getting basic nutrition. The obesity

M. Olson, *Nutrition and Health Outcomes Associated with Food Insecurity and Hunger*, 129 J. NUTRITION 521 (Feb. 1999) (connecting food insecurity with obesity in a study of 193 randomly-selected women); Marilyn S. Townsend et al., *Food Insecurity is Positively Related to Overweight in Women*, 131 J. NUTRITION 1738 (June 2001) (finding that the prevalence of overweight in women increased as food insecurity increased); Scheier, *supra* note 124, at 883 (summarizing the findings of several different studies connecting hunger and food insecurity with obesity).

139. See Dietz, *supra* note 138, at 766 (suggesting that the obesity-hunger link may be due to the consumption of high-fat and high-carbohydrate food or the body's physiological adaptations to food insufficiency).

140. See Drewnowski & Spector, *supra* note 138, at 9-11. See also Scheier, *supra* note 124.

141. THE PARADOX OF HUNGER AND OBESITY IN AMERICA, *supra* note 126, at 2.

142. Ctrs. for Disease Control and Prevention, *Overweight and Obesity Home*, *supra* note 134.

143. This omission is the main criticism of Steven Shapin's otherwise wholly positive review in *The New Yorker*. See Shapin, *supra* note 2.

144. POLLAN, *supra* note 2, at 92 (noting "[i]n many ways breakfast cereal is the prototypical processed food: four cents worth of commodity corn . . . transformed into four dollars worth of processed food. What an alchemy!").

epidemic teaches us that some kids surely are getting plenty of soda and other "cheap" food, but the hunger side of the paradox shows us that those calories are insufficient. Pollan talks about the "hidden costs" of our food system, and we must include the obesity-hunger paradox as one of those costs.

F. CONCLUSION: SO, WHAT'S FOR DINNER?

The first line of *The Omnivore's Dilemma* poses the question, "so what's for dinner?"¹⁴⁵ Since the book has been out, Pollan has traversed the requisite interview circuit, including a National Public Radio interview with Teri Grosse (Fresh Air).¹⁴⁶ In his interviews, Pollan emphasizes the benefit of eating locally—when choosing between organic and local, Pollan says choose local.¹⁴⁷

Pollan is not the only one arguing for a more local food shelf. Brian Halweil, for example, in his book, *Eat Here: Reclaiming Homegrown Pleasures in a Global Supermarket*,¹⁴⁸ makes a similar argument. Halweil describes the economic, environmental, and health problems associated with agribusiness. He sees a solution to the broken agricultural

145. *Id.* at 1.

146. The interview is available free at <http://www.npr.org/templates/story/story.php?storyId=5336252>. Transcripts can be purchased from the National Public Radio site as well. See also *One Thing to Do About Food: A Forum*, THE NATION: THE FOOD ISSUE, Sept. 11, 2006, at 16 (featuring an essay by Michael Pollan in which he urges readers to pay attention to the farm bill).

147. This argument comes through in Pollan's "Open Letter to Whole Foods." Pollan's description of Whole Foods in the book, while not harsh, can perhaps best be described as ambivalent. Whole Foods co-founder and C.E.O. John Mackey was deeply troubled by the way Whole Foods came across in *The Omnivore's Dilemma*, and was moved to write an "Open Letter to Michael Pollan," which is available on Whole Food's website at www.wholefoodsmarket.com/blogs/jm/archives/2006/05/an_open_letter_1.html. (Mackey also sent Pollan a \$25 gift certificate to compensate for the less than tasty asparagus featured in Pollan's "big organic" meal). Pollan responded. In Pollan's response, available at <http://www.michaelpollan.com/article.php?id=80>, he castigates Whole Foods for providing a "misleading" statistic on the percentage of locally produced food available at Whole Foods markets. In Pollan's responsive "Open Letter" he notes that a "decentralization of the food system is not just a matter of sentiment or political correctness but of national security." But see David Roberts, *Eat the Press: An Interview with Foodie Author Michael Pollan*, GRIST, May 31, 2006, <http://www.grist.org/news/maindish/2006/05/31/roberts/index.html> (quoting Pollan disclaiming that he is "telling anybody what to do").

148. HALWEIL, *supra* note 2.

system in the burgeoning local food movement, which shortens the distance between farmers and the people who buy their food. Halweil argues that the local food movement will benefit family farms and offer substantial health, safety, and environmental advantages. Yet another recent book, *Civic Agriculture: Reconnecting Farm, Food, & Community*, raises many of the same issues.¹⁴⁹

Pollan and these other authors posit that eating locally will reduce the fossil fuel cost of our meals, and that is almost surely true. Pollan in particular argues that "local food . . . implies a new economy as well as a new agriculture—new social and economic relationships as well as new ecological ones."¹⁵⁰ These authors all share the goals of local production, seasonal eating, and a more direct link from farm to fork.

Laudable as these goals are, any large scale restructuring of our food supply chains would doubtless require a corresponding dismantling of the current food system. George Naylor, the Iowa corn farmer "gruffly" dismisses the notion of producing any crop other than corn.¹⁵¹ "What am I going to grow here, broccoli? Lettuce? We've got a long-term investment in growing corn and soybeans; the elevator is the only buyer in town, and the elevator only pays me for corn and soybeans."¹⁵² Toxic as the current system may be,¹⁵³ dismantling it is not going to be easy.¹⁵⁴ Furthermore, none of these changes can occur absent

149. THOMAS LYSON, *CIVIC AGRICULTURE: RECONNECTING FARM, FOOD AND COMMUNITY* (2004).

150. POLLAN, *supra* note 2, at 257.

151. *Id.* at 54.

152. *Id.*

153. The impact of industrial farming on the environment is shameful. Pollan explores some of the environmental impact. For example, he notes that in roughly one lifetime, George Naylor's farm has lost nearly half—or two feet—of its topsoil. *Id.* at 33. Naylor also "sheepishly" admits to applying near two times the recommended levels of synthetic nitrogen fertilizer. *Id.* at 46. That excess nitrogen contributes to global warming (via acidifying rain), runs off into the water supply, occasionally causing "blue baby" alerts in Des Moines, and ultimately pours into the Gulf of Mexico, adding to the dead zone. *Id.* at 47.

154. To be fair, neither Pollan, nor the other cited authors, suggests that it will be. In fact, Pollan at one point in the book suggests that we need not dismantle the current food system. The goal he articulates is to recognize the "value of a diversified food economy." *Id.* at 261. Just a few pages earlier, however, he hints at a more ambitious goal as he notes Joel Salatin's belief that a "local food economy . . . is indispensable to the survival of his [Salatin's] kind of agriculture (and community) not to mention to the reform of the entire global food system." *Id.* at 240 (emphasis added).

significant changes to our agriculture policy.

Perhaps more importantly, we do not have substantial evidence that small farms or farmers who sell produce locally, or family farms are any easier on the environment.¹⁵⁵ As Pollan recognizes, "just because food is local doesn't necessarily mean it will be organic or even sustainable."¹⁵⁶ If our goal is improved environmental practices, we need to be tougher on farmers.¹⁵⁷ "No matter how attractive the image of farmers as 'steward of the land' may seem, we simply cannot expect any private actor to protect the social interests in the environment."¹⁵⁸ And if your goal is improved environmental practices through government regulation, consider what the easier regulatory environment is: 100 small farms each working 100 acres or ten large-scale farms each working 1000 acres.¹⁵⁹

Lastly, exactly how we're going to provide food security (enough calories for adequate nourishment) is an issue already challenging food policy makers and is a question largely unexplored in this book. Reform of our food supply, without serious consideration of this issue, would be irresponsible, to say the least.

The Omnivore's Dilemma is a beautiful and provocative book which seems to want to change the way we eat. Getting there, getting *all* of us there, however, isn't yet plotted. If we're lucky, that will be Michael Pollan's next book.

155. See, e.g., Jim Chen, *Get Green or Get Out: Decoupling Environmental from Economic Objectives in Agriculture*, 48 OKLA. L. REV. 333 (1995). Chen argues for a decoupling of "environmental protection [and] agricultural protectionism," and phrases his agenda in this article as "bringing the long arm and fist of environmental law to the farm." *Id.* at 352. He argues, "[a]t the heart of every agroecological fallacy is the frequently invoked by rarely tested assumption that small farm size and family ownership guarantee sound stewardship." *Id.* at 340-41.

156. POLLAN, *supra* note 2, at 257.

157. Farmers are thought of as particularly hostile to environmental regulation. See Chen, *supra* note 155, at 333 (quoting agricultural legal scholar Antonio Carrozza). Pollan's heroic Salatin is an absolute model of stewardship, and he is adamantly adverse to government regulation.

158. *Id.* at 342.

159. *Id.* at 337 (noting that smallness and family ownership bear a negative correlation to environmental protection; non-family corporations outperform family landowners in soil conservation and erosion control.).