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The Future of Food Production

The process that food consumed in America goes through to make its way to our mouths is like a Rube Goldberg contraption. The seemingly straightforward process of growing, raising, harvesting, and slaughtering goes on every day, completely hidden from consumers. Very few Americans are aware of the highly complicated, mechanized, and convoluted journey that any given bite of food takes from its origins in nature (or some manipulated approximation of it) to its destination on our plates. Although some people criticize the state of our food system, it is clear that it grew to be the international machine that it is because of demand. More than 300 million Americans want lots of food, meat especially, and they want it cheap. So like every other production process in this country, our food system has been industrialized to produce maximum food calories for the American people at minimum cost. This industrialization of our food system has allowed for population increase and higher standards of living.

But there are significant problems with the industrial food system. Caught up in a drive to maximize production and profit, the industrial food system has grown to an unsustainable size. As food production has become increasingly industrialized, concern for the environment and the animals we eat has taken a backseat to expansion. Specialization, rather than integration, has become

the hallmark of America's farms. Rather than having chickens, hogs, corn, and hay all on one farm, all these things now reside on separate, much larger farms. There is, however, another, very separate food system that supplements the industrial food system: the local food system. Local food systems cater to people who believe that it is better to "buy local" or from a smaller, usually family-owned farm rather than from a supermarket with less-expensive mass-produced food.

There are few places where the two food systems are as visible and distinguishable as in Grinnell, Iowa. Poweshiek County has a range of farms in terms of size, as illustrated by Figure 1, taken from the 2002 Census of Agriculture County Profile of Poweshiek, Iowa. As a resident of Grinnell, I have become very familiar with the faces of the two food systems. Wal-Mart, Hy-Vee, Monsanto Seed, and Fremont Farms are the incarnations of our industrial food system, while Café Phoenix, the farmer's market, and the various family farmers who participate in Community Supported Agriculture programs represent our local food system here in Grinnell.

Through both reading and personal interactions and interviews, I have come across all kinds of opinions and arguments from proponents of both small-scale and large-scale agriculture. One theme that everyone agrees on is that our world is changing. Serious economic and environmental challenges are on the horizon. The current state of our food system in the United States is key to how well the industry will adapt when change comes. The American food system needs significant modification in order to

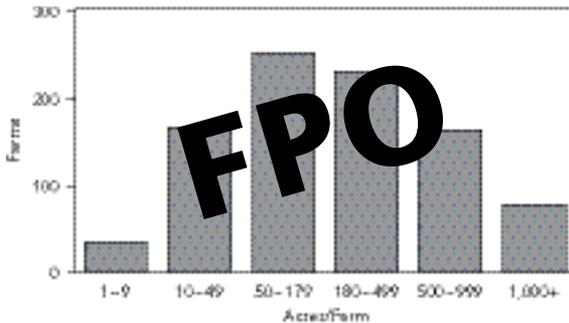


Fig. 1. Range of farms by size in Poweshiek County, Iowa (“2002 Census of Agriculture”).

guarantee that we can both eat healthfully and protect the natural workings of the planet. The most important change that could be made is a return to methods of food production that resemble nature’s traditional processes, rather than methods that manipulate nature in an effort to make it work like a factory.

In Grinnell, as has been the case across the country, there has been a strong trend in agriculture toward larger farms, fewer farms, and fewer farmers on each farm. According to the most recent county census of agriculture (taken in 2002), the number of farms in Poweshiek County has fallen 8 percent since 1997 and the average size of farms has grown 8 percent during the same time period. While growing bigger and industrializing, farms have also changed the nature of their operations to maximize efficiency and profit at all costs. Examples of this trend would be maximizing

cropland by demolishing buildings on the farm that used to house livestock or by planting on hilly ground that is prone to erosion. In effect, too much farmland is used to grow crops, and not enough of it is left for livestock to graze on, throwing off the natural ecosystem. This is supported by the 2002 Census of Agriculture of Poweshiek County, which shows that 85 percent of all farmland in Poweshiek County is used to grow crops while only 5.5 percent is open pasture. This great discrepancy begs the question, if so little land is used for pasture and so much is used to grow crops on, where and what do the livestock of Poweshiek county eat?

For the most part, livestock, especially those commonly consumed like hogs, beef, and poultry, have been taken off the farm and now reside in an invention of the industrial food system: the Concentrated Animal Feeding Operation, or CAFO for short. In a CAFO hundreds of thousands of animals live together, eating the grain (corn for the most part) that is grown on the land where they use to graze. These CAFOs are a prototypical example of how the industrial food system has re-arranged nature to provide the ultimate value-added service: turning cheap, government-subsidized corn into protein and calories, in this case meat. During a phone interview, Professor Mark Honeyman of Iowa State University pointed out to me that by definition agriculture is the manipulation of nature to turn solar energy into caloric energy for our consumption. This logical assertion forced me to stop and ask myself why, if agriculture was by nature manipulating plants and animals, is there anything wrong with the way food is mass-produced in our country today? I quickly

reminded myself that there are different degrees of manipulation. The environmental impact of Barney Bahrenfuse, the owner of a 500-acre farm in Grinnell, keeping goats on his farm because they like to eat weeds is minimal because he is not changing anything about the goats' natural habits. Goats like to eat weeds. Greater degrees of manipulation often thwart the animals' natural instincts, reducing their existence to little more than converting grain into meat.

It should be added that small farms are not all good and big farms are not all bad. CAFOs recycle their animals' waste, just as Bahrenfuse does on his farm. The only difference is that while Bahrenfuse hauls his animals' waste across his smallish farm, CAFOs do not usually have farmland of their own and sometimes (because they do not depend on the soil in any way) are not even located anywhere near farmland, and thus have to truck the manure to a buyer, using precious fossil fuels in the process. In a paper entitled "Sustainability Issues of U.S. Swine Production," Professor Honeyman points out that to optimize sustainability, "The relationship of swine population to arable land is important. Large swine production units [CAFOs] built on small acreages or not part of farms that also produce feed grains can have manure utilization problems" (1415). This is certainly not a problem in Iowa, where fecund soil is everywhere. The CEO of Fremont Farms, Steve George, whose farm in Malcolm, Iowa, holds about 9 million hens that lay eggs for liquid egg products, does not have to look far to find a farmer in need of the waste his hens create. Animal waste is usually well dealt with by CAFOs; after all, it is not only

environmentally conscious but also profitable to sell your animals' waste as fertilizer.

There are, however, ways in which CAFOs are clearly less earth-friendly than traditional farming. First, they are generally farther from farmland that needs fertilizer, and so the animal manure needs to be transported, a considerable waste of fossil fuel. This also contributes to pollution and global warming, problems we all pay for. Another problem with CAFOs is the health of the animals they produce. Separating the animals from their natural habitat and constantly feeding them subtherapeutic levels of antibiotics weaken the animals' natural robustness. In addition, these practices create antibiotic-resistant bacteria, a threat to the health of humans as well as to the animals that host the resulting super-bacteria. There is much debate about what is the healthiest and safest environment for an animal. Steve George told me in a phone interview that he wouldn't want his chickens roaming around outside, because of all the dangerous pathogens that lurk outdoors. By keeping his hens indoors, he is able to protect them from disease and keep them big and productive by giving them feed with growth-promoting antibiotics in it. In the other camp are Barney Bahrenfuse and Suzanne Costello, who run B&B Farms in Grinnell (see Fig. 2). According to Bahrenfuse, they raise 600 chickens each year. They let their chickens peck around outside in addition to giving them feed that Barney grows and produces himself. As Costello put it, "One way of looking at it is there's this horrible world out there that we're all at war with," and then there's the way Bahrenfuse and Costello handle their chickens: "If



Fig. 2. Not-so-concentrated accommodations at B&B Farms.
Photograph by author.

[the chickens] are getting fresh air, and they're getting greens . . . they're healthier beings and they're less susceptible. So the way we view it is, you beef up their health and you don't have to worry about it." Based on direct observation I would have to say they are right. It just so happened that on a drive-by tour of Fremont Farms (shown in Fig. 3), I observed a truck full of dead hens being covered for highway transport. Apparently about 10 percent of laying hens in CAFOs simply can't endure their situation and die, a fact that is built into the cost of production (Pollan 318). In the close confinement that CAFO-bound laying hens exist in, "Every natural instinct [is] thwarted, leading to a range of behavioral vices that can include cannibalizing [their]



Fig. 3. Fremont Farms in Malcolm, Iowa. Photograph by author.

cage mates and rubbing [their] breast[s] against the wire mesh until [they are] completely bald and bleeding” (Pollan 317). Bahrenfuse mentions no such problems among his chickens. Obviously there are many hundred thousand more chickens living at Fremont than at B&B, but that truckload stands in stark contrast to the three chickens at B&B that “crapped out,” as Bahrenfuse put it.

There is also evidence that CAFOs are as bad for the people who live around them as for the animals who live in them.

According to Honeyman:

More than 20 years of studies have consistently shown the negative influences of large-scale specialized farming on rural communities (Allen, 1993). Lobao (1990)

found that “an agricultural structure that was increasingly corporate and non-family-owned tended to lead to population decline, lower incomes, fewer community services, less participation in democratic processes, less retail trade, environmental pollution, more unemployment, and an emerging rigid class structure.” (1413)

In addition to these findings, large CAFOs, especially hog or beef operations, create public nuisances in other ways. Because there can be hundreds of thousands if not millions of animals living in a densely populated environment, their waste becomes a problem. CAFOs pool the animals’ feces in vast open cesspools that can cause huge environmental issues, in addition to attracting clouds of flies that plague anyone living nearby. It is clear that there are major drawbacks to the current industrial method of raising animals. But what choices do we have? There are more than 300 million people living in the United States who need to eat, and eat on a budget.

Proponents of large-scale agriculture argue that it is cheaper and more efficient to produce food following an industrial model. Judging by price tags, they may be right. Often vegetables at a farmer’s market fetch a higher price than those sitting in the supermarket do. But the supermarket is not the only place we pay for our industrially produced goods. Mark Honeyman pointed out to me, citing work by J. E. Ikerd, a professor emeritus of agricultural economics at the University of Missouri, Columbia, that many of the costs of mass-produced agriculture are hidden. For instance,

we all pay taxes to the government, which in turn spends billions of tax dollars a year subsidizing the industrial food system. Between 2003 and 2005 the government spent an average of \$11.5 billion per year on crop subsidies, 47 percent of which went to the top 5 percent of beneficiaries (“Crop Subsidy”). This means we are subsidizing a lot, and mostly the biggest agri-businesses. Family farmers, for the most part, receive no government subsidies. So when I told Bahlenfuse and Suzanne that I repeatedly heard from people involved in large-scale agriculture that family farming is nice, but ultimately not very profitable if even viable at all, Suzanne was quick to respond: “You take away [the industrial farms’] government subsidies—they don’t work. We don’t take any government subsidies, so who’s viable?” In fact, Steve George of Fremont Farms pointed out to me that they receive no government subsidies, which I verified online; according to the Environmental Working Group’s website, which gets its statistics from the United States Department of Agriculture, except for a paltry \$5,361 in corn subsidies between 1999 and 2000, Fremont Farms gets no government subsidies at all. No direct subsidies, that is. It is important to remember, however, that their operation is indirectly subsidized by the artificially low price of corn in their chickens’ feed. By subsidizing the largest producers, the government encourages large-scale agriculture to organize itself along the lines of a machine, operated with chemical inputs and minimal human management, and measured by output.

It is much harder to offer a solution to our increasingly problematic food system than it is to point out its flaws. Some

experts, like Bill McKibben, point to local food systems as a more earth-friendly and sustainable solution. Others, like Mark Honeyman, propose many “modest-sized” diversified family farms. Both are plausible solutions, but critics claim that an industrial food system is the only way to feed a country with the size and appetite of the United States. Yet smaller farms do not necessarily mean less food. The solution is integration. Rather than having one huge corn farm and another huge pig farm, we should have several smaller integrated farms that would produce the same number of hogs and acres of corn. Instead of agriculture existing in enormous monocultures, farms would resemble independent ecosystems. This would simplify and reinforce the nutrient cycle and the health of the farms as a whole. Some might say that this would just be backtracking several decades in agricultural history. But really any change made to improve sustainability would be progress.

The key to implementing a more sustainable future for our food system, is a multilateral effort by both government and consumers. To reshape our food system, there needs to be a concerted effort by the government to refocus subsidies along with greater awareness on the part of consumers; ultimately, the consumers have the greatest effect on what the food system produces while the government influences how they do it. Many of the individuals I interviewed noted a growing movement toward local, fresh, chemical-free foods. Tom Lacina, of Pulmuone Wildwood, noted the continual increase in sales of organic foods in the United States. Mark Honeyman observed the proliferation of niche pork markets such as antibiotic-free and grass-fed pork.

Locavore, a noun that means “one who seeks out locally produced food,” was the 2007 Word of the Year in the *New Oxford American Dictionary*. The local food movement is clearly alive at Grinnell. Many professors and students are conscious of what they eat, and during the growing season local foods are plentiful. From May until October there is a fledgling farmer’s market in town. Some local restaurants, most notably Café Phoenix, make a point of buying local whenever possible. But there are also strong signs of the entrenched industrial food system. Wal-Mart and Hy-Vee supply cheap, mass-produced food, mostly to the townspeople of Grinnell, who generally do not have the economic means that people at the college do. This trend is not unique to Grinnell. As Tom Lacina put it, “The top half of the society is willing to pay for local, pure, organic. They have the time to shop; they have the education to shop.” But fresh, chemical-free food should not be limited to those with the money and awareness needed to shop locally. Government subsidies to encourage more smaller farms to produce goods for smaller regions could effectively strengthen local food systems and perhaps even result in the kind of affordable prices that supermarket shoppers enjoy today.

There is a clear set of goals for our food industry that Americans must collectively work to achieve. Our food system must achieve sustainability, meaning it should be able to operate indefinitely in its current state. Our food must be produced in a manner that respects the plants and animals that we consume, and the system must reward the farmers as well. The key is to re-create a system of farming that mimics nature rather than a

factory. But there are still daunting obstacles in the way of progress. Most Americans enjoy the quantity of cheap food available in supermarkets across the country. To ensure change, Americans have to cast off the myopia that allows us to enjoy the state of our food system without worry for the future. As a country we must plan ahead for a time when cheap fossil fuel, antibiotics, and government subsidies will not keep a grossly unnatural food system running smoothly.

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Works Cited

- “2002 Census of Agriculture, Country Profile: Poweshiek, Iowa.”
*United States Department of Agriculture, National Agricultural
Statistics Service*. United States Department of Agriculture,
2008. Web. 5 Jan. 2008.
- Bahrenfuse, Robert (“Barney”), and Suzanne Costello. Personal
interview. 14 Dec. 2007.
- “Crop Subsidy Program Benefits.” *Environmental Working Group Policy
Analysis Database*. Environmental Working Group, 2008. Web.
5 Jan. 2008.
- George, Steve. Personal interview. 27 Nov. 2007.
- Honeyman, Mark. Personal interview. 18 Dec. 2007.
- . “Sustainability Issues of U.S. Swine Production.” *Journal of
Animal Science* 74 (1996): 1410-17. Print.
- Lacina, Tom. Personal interview. 7 Dec. 2007.
- “Locavore.” *The New Oxford American Dictionary*. 2nd ed. 2005. Print.
- Pollan, Michael. *The Omnivore’s Dilemma*. New York: Penguin, 2006.
Print.

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