

The Failure of Industrial Agriculture; The Path to a Sustainable Food Futureⁱ

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We live in an ever-changing world. In fact, change is sometimes said to be “the only constant in life.” However, some kinds of change are not ordinary or constant; some are revolutionary. I believe we are in the midst of such a change today, I call it a “great transformation.” I believe we are in the midst of a time of change at least as important as the industrial revolution, perhaps as great as the scientific revolution of some 400 years ago, and possibly a civilizational transformation greater than ever before experienced by humanity. These great transformations ultimately change virtually every aspect of human life. I believe one of those revolutionary changes will be in our relationship with animals. I think animals will continue to be a source of food for humans, but our relationships with food animals will be very different.

The Question of Sustainability

The great transformation today is being driven by the question of sustainability: How do we meet the needs of the present without diminishing opportunities for the future? When we ask this question honestly and factually, we must conclude that we are not meeting even the most basic needs of many, if not most, of the people in the world today and we certainly are not leaving equal or better opportunities for those of the future. This indictment is based on a litany of unprecedented environmental, social, and economic challenges, including: environmental degradation such as global climate change; natural resource depletion, including water, fossil energy, and key minerals; growing social and economic disparity, both within and among nations; and prolonged economic stagnation accompanied by a persistent threat of economic collapse. Our current way of life is not ecologically, socially, or economically sustainable.

A sustainable society and economy must be rooted in an understanding that everything of use to humans, including everything of economic value, ultimately must come from the earth – soil, minerals, air, water, energy.... Beyond self-sufficiency, we are also dependent on other people, on society, to get all of the things we need from the earth. Since we humans are biological beings, we are inherently dependent on the other living things of the earth for our nourishment and very survival. We are no less dependent of the living and non-living things of the earth today than when we were hunters and gathers; our connections are just less direct and more complex.

Our Unsustainable Food System

Nowhere is the lack of sustainability more important and yet less understood than in the American food system. They are too many of us now to go back to hunting and gathering. We must create a sustainable food system. Thankfully, a growing number of Americans are realizing

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something is fundamentally wrong with the ways we produce, process, and distribute food. Best-selling books, such as *Fast Food Nation*¹ and *Omnivore's Dilemma*,² *The End of Food*³ and *America's Food*⁴ document virtually all aspects of today's dysfunctional industrial, corporately-controlled, global food system. Video documentaries such as *Future of Food*,⁵ *Broken Limbs*,⁶ *Food Inc.*⁷ and *Fresh; The Movie*⁸ provided gripping images of the negative ecological and social impacts of an industrial food system on nature, society, and on the future of humanity.

The fundamental problem is the current industrial approach to farming and food production. Many people equate industrialization to the migration of people from farms and rural communities to find manufacturing jobs in urban areas. However, urbanization is only a symptom of the specialization, standardization, and consolidation of control that characterized the industrial model of economic development. Specialization increases efficiency by facilitating division of labor. Standardization is then necessary to routinization and mechanization of specialized production processes. Routinization and mechanization simplify management processes and allows consolidation of control into large-scaled, eventually corporately-controlled, enterprises. This is the process by which “economies of scale” have been achieved in agriculture as well as manufacturing. Admittedly, the industrialization of agriculture has increased its economic efficiency, but an industrial food system is not ecologically, socially, or economically sustainable, as is becoming increasingly obvious to more people.

In response to growing public concerns, the “agricultural establishment” has mounted a multi-million-dollar PR campaign designed specifically to defend “industrial agriculture” against growing public concern about a wide range of issues. The proponents of industrial agriculture have shifted from demanding that their critics rely on “good science” to relying on public relations to support their propaganda. Increasingly, “real science” is providing strong evidence for indicting industrial agriculture. And, large-scale confinement animal feeding operations, or CAFOs, are the epitome of industrial agriculture.

The corporate propaganda campaign claims Americans have the safest food system in the world and that meat, milk, and eggs produced in CAFOs are safe and wholesome products. The scientific facts and government statistics tell a very different story. Recalls of food products contaminated with infectious bacteria have become routine. Periodic outbreak of Salmonella and E-Coli have sickened thousands of people across the country before the contaminated products could be recalled. In many cases, numerous strains of infections bacteria are found to be resistant to multiple antibiotics. Antibiotic resistance is a global crisis that increasingly is being linked to CAFOs, as they are ideal breeding grounds for antibiotic resistance. The deadly antibiotic resistant streptococcus bacteria called MRSA now kills more Americans than AIDS.

The corporate PR campaign claims that CAFO operators are responsible stewards of the environment. Reams of environmental data, much of it compiled by the EPA, tell a different story. For example, the EPA recently reported that 35,000 miles of streams in 19 states had been polluted by CAFOs.⁹ The number of pollution “impaired waterways” in Iowa have increased from 215 in 1987 to 642 in 2012, as CAFOs took over the Iowa hog industry?¹⁰ Pollution is inevitable with CAFOs: Too much waste is concentrated in spaces too small to be neutralized and assimilated by nature.

The PR campaign claims that CAFOs are an economic necessity in meeting the food needs of America and the rest of a hungry world. Decades of USDA data completely contradict this fallacy. According to publicly available USDA statistics, farmers are not producing any more meat, milk, or eggs with CAFOs than they were producing in the past, or could produce in the future; they are just producing more animals with far fewer farmers. Retail prices of meat, milk, and eggs have continued to rise over the past 20 years, as the numbers of CAFOs have risen. Any economic benefits from CAFOs have gone to investors in CAFO corporations, not to consumers, not to farmers, and certainly not to rural communities.

The PR campaign claims that CAFOs are the future of animal agriculture and the only means for farm families to pass on their farms to new generations of farmers. Nothing could be further from the truth. As farming operations industrialize, farms grow larger, which inevitably results in fewer farmers. By one means or another, some farmers must fail so the others can become larger. Eventually, even the largest farming operations come under control of large agribusiness corporations, as we have seen in poultry and hogs. There are virtually no independent poultry producers left, other than those who sell direct to their customers. More than 90% of the independent hog producers in the US were forced out of business as the hogs were moved in to CAFOs and came under corporate control. An industrial agricultural is not ecologically, socially, or economic sustainable.

Inhumane Treatment of Animals

The corporate PR campaign also claims that CAFOs operators are committed to the humane treatment of animals. The fact that CAFO supporters all across the country are trying to make it illegal to take pictures of animals in CAFOs tell a different story. Numerous scientific studies conducted over the past 50 years have documented the inevitable inhumane treatment of animals in large-scale confinement operations.¹¹ The mistreatment of animals is not only a result of overcrowding, but also includes unnecessarily painful invasive procedures, transportation and pre-slaughter handling, and even genetic selection of animals for maximum productivity.

Traditionally, animal agriculture was rooted in concept of “animal husbandry,” which was about caring for animals in ways that enhanced their ability to survive and thrive under the varying conditions of nature. Farm animals were kept in optimal environments for which they were biologically suited. In addition to an agricultural ethic of caring or stewardship, producers did well economically if the animals did well physically. Mistreatment or violation of the basic nature of animals decreased productivity and profits. When I was an undergraduate students in college in the late 1950s, I took courses in *animal husbandry*. However, by the time I returned to graduate school in the mid-1960s, *animal science* had replaced animal husbandry on college campuses and on farms.

Animal science focuses on production methods that consider animals as little more than biological machines in industrial animal factories. These industrial operations have perverted the previous economic incentive for animal husbandry by actually creating economic incentives for the mistreatment of farm animals. CAFO proponents claim that animals must be healthy if they are to gain weight or be otherwise productive. However, CAFOs rely on antibiotics, vaccines, and regulated ventilation systems to keep disease risks and poor air quality at economically acceptable levels. To CAFO operators, sick and dying animals are undesirable but necessary

economic costs of doing business in an industrial production system. Even though animal illness is still chronic and animal death losses are far higher in CAFOs, the economic efficiencies of large-scale, concentrated, industrial production more than offset the health-related losses.

To minimize the costs of mistreatment, CAFO operators strive to send animals to slaughter at younger ages, before chronic illnesses become critical or result in death. For example, the natural lifespan of a chicken is 7 to 20 years. A broiler chicken is sent to slaughter at 6 to 8 weeks and laying hens at around 18 months. The average lifespan of a dairy cow in a CAFO is only 4 to 5 years, about one-third as long as milk cows on traditional family dairy farms. The physical and mental welfare of sick and dying animals is given no consideration other than the impact on the economic bottom line.

A fundamental problem with CAFOs is that the quest for economic efficiency forces operators to concentrate too many animals in spaces too small to allow for humane treatment of the animals. During a recent visit to Poland, I had an opportunity to visit one of the World War II Nazi concentration/extermination camps: Majdanek, near Lublin. The rows of barracks, where people awaiting gas chambers had once been crowded, reminded me of the rows of chicken and hog houses that now dot the Midwest. The food animals, like the people at Majdanek, suffer through unnaturally short lives awaiting a cruel loading and ride to their death. There are no humane concentration camps. Industrial animal agricultural operations are inherently inhumane.

Food Insecurity

Perhaps the greatest failure of the industrial food system has been its absolute failure to achieve its most fundamental purpose by failing to provide food security. Food security is defined as having access to enough wholesome food to support a healthy, active lifestyle. Using this definition, a larger percentage of people in the U.S. are “food insecure” today than during the 1960s, with more than 20% of U.S. children living in food insecure homes.¹² In addition, the only foods affordable to many lower-income families are high in calories and lacking in essential nutrients, leading to an epidemic of obesity and other diet-related health problems.

Obesity-related illnesses, such as diabetes, heart disease, hypertension, and various forms of cancer, are projected to claim about one-in-five dollars spent for health care in the U.S. by 2020 – erasing virtually all of the gains made in improving public health over the past several decades.¹³ The irresponsible use of agricultural chemicals, growth hormones, antibiotics, and a multitude of additives in industrial foods add to the growing list of diet-related illnesses. We can't even afford the economic costs of more cheap food.

There is a persistent tendency, promoted by the agricultural establishment, to blame obesity and related illnesses on the lack of willpower of individuals. However, a USDA report of long-term consumption during the 1900s suggests an indictment of the current food system instead.¹⁴ During the first half of the twentieth-century, as people became less physically active, they quite logically consumed fewer calories – roughly 10% fewer calories per person per day in the late 1950s than in early 1900s. Per capita calorie consumption leveled off during the 1960s, even though physical activity obviously continued to decline. In the early 1970s, the number of total calorie consumption began a sharp and persistent upward trend, while physical activity continued to decline. Between 1980 and 2004, total calories per capita from all sources increased by 21%.

During the first half of the last century, Americans were *less* active and they ate *less*. During the second half-century, Americans were even *less* physically active but they ate *more*. The human species obviously didn't evolve that much over 100-years, but the food system most certainly did. The increases in calorie consumption and corresponding increases in obesity coincide directly with the acceleration and continued industrialization of American agriculture and the American food system in general.

Nutrient Dilution

Scientific studies by medical schools and public health institutions are beginning to confirm the link between nutrient deficiencies and industrially produced foods. A particularly revealing study was published in the *Journal of American College of Nutrition* in 2004. It compared nutrient levels in 43 garden crops in 1999 with levels documented in historic benchmark nutrient studies conducted by USDA in 1950. Declines in median concentrations of six important nutrients: protein -6%, calcium -16%, phosphorus -9%, iron -15%, riboflavin -38%, and vitamin C -2% were observed – even when measured on a dry weight basis.¹⁵ Research has shown that the nutrient dilution process begins at the farm level, as various studies have indicated that yield-enhancing technologies – fertilizers, pesticides, plant density, and irrigation – reduce the nutrient content of field crops.¹⁶

Organic farming provides a convenient contrast between sustainable and industrial agricultural practices. A review by *The Organic Center* of 97 published studies comparing organic and conventionally grown food indicated that “on average” organic foods are more nutritious than conventional foods.¹⁷ Conventional foods often contained more macro nutrients – potassium, phosphorus, and total protein – but organic foods were consistently and significantly higher in Vitamin C, Vitamin E, polyphenols, and total antioxidants, which are frequently lacking in American diets. Farms can be certified as organic after refraining from use of inorganic fertilizers and pesticides for only three years. It may take decades of organic farming to fully restore the chemical and biological health of “worn out” soils that have been depleted of essential nutrients by industrial farming systems.

Sustainable Foods and Farming

In response to a growing litany of concerns, a new sustainable food movement has emerged in America and elsewhere in the world. The sustainable food movement includes but is not limited to organic foods, and it continues to evolve and grow as an ongoing protest against the industrialization of the American food system. Sustainable approaches to farming have many names in addition to organic, including biodynamic, holistic, bio-intensive, biological, ecological, and permaculture. Such farmers and their customers share a common commitment to creating a new food system that is capable not only of producing nutritious and healthful food but also capable of sustainability or permanence through commitments to renewal and regeneration of the natural and human resources upon which good food production inevitably depends.

The organic movement began in the U.S. in the 1960s but didn't gain widespread support until the sustainable agriculture movement emerged in the 1980s. Organic food sales in the U.S. grew rapidly during the 1990s and early 2000s, averaging 20%-plus per year and doubling every three to four years. With the economic recession of 2008, growth rates declined and stabilized at

around 10% per year, reaching \$31.5 billion in sales in 2012.¹⁸ While organic sales still account for less than 5% of total food sales in the U.S., organic fruits and vegetables now claim more than 12% of their market – an impressive accomplishment.

The local food movement emerges as organic foods began to move into the large, impersonal retail markets. Local foods reflect the desire of an increasing number of consumers to reconnect with those who produce their food, and through their farmers, reconnected with the land, with the earth. The local food movement began with roadside stands, farmers markets, and CSAs. A 2008 food industry study estimated that sales of local foods had grown from \$4 billion in 2002 to \$5 billion in 2007 and were projected to reach \$11 billion by 2011.¹⁹ The growing popularity of local foods is most visible in the growing numbers of farmers markets and Community Supported Agriculture organizations or CSAs. USDA statistics indicate the number of farmers markets in the U.S. increased from 1,755 to 8,144 between 1994 and 2013, increasing more than four-fold in less than 20 years.²⁰ Current estimates by the *Local Harvest*²¹ organization indicate there were 2,700 CSAs in the U.S. in 2009, compared with less than 100 in 1990.²²

The future potential of the local food movement can be seen in the growing number of local foods collaborations between farmers and consumers. Examples include food buying clubs, local food networks, food box schemes, regional food hubs, and a variety of farmer-owned cooperatives. *Grown Locally*,²³ *Idaho's Bounty*,²⁴ *Viroqua Food Coop*,²⁵ and *the Oklahoma Food Cooperative*,²⁶ are examples. The Oklahoma Food Cooperative website lists 20 similar cooperatives in other states. The USDA Agricultural Marketing Service lists more than 230 multi-farm “food hubs.”²⁷ By cooperating, farmers can offer a wide variety of local products with purchase and delivery options ranging from CSA shares to on-line orders of individual items. The local food movement is evolving to better meet the needs of more people – both farmers and consumers. These new food systems range in scope from local to state or regional in size and from a dozen or so to hundreds of farmer/consumer members.

Various natural food retailing surveys have shown that approximately one-third of American consumers today are looking for alternatives to industrial foods, specifically foods that have ecological, social, and economic integrity, and their numbers are growing.²⁸ Over time, with supportive changes in public priorities and policies, regional, national, and global networks of sustainable, community-based food systems could well replace the current industrial, corporately controlled global food system. The agriculture establishment tells us there is no viable alternative to industrial agriculture, but instead, it's industrial agriculture that is not a viable alternative.

Sustainable Animal Agriculture

Among the most profitable of the new sustainable/local alternatives are grass-based, free-range, and pastured livestock and poultry – alternatives to CAFOs. Pastured and free-range poultry production became popular because of growing concerns about health and food safety and about inhumane growing conditions in industrial poultry production. Grass-based livestock operations initially gained popularity because of low investment requirements and low cost of production. However, it has become increasingly popular because of growing evidence of important health benefits in grass-fed products compared with products from animals fed in confinement. Pastured and free-range livestock production also allows producers to avoid

hormones and antibiotic concerns and to meet the humane standards of production demanded by an increasing number of consumers.

Producing hogs on deep-bedded facilities provides another viable alternative to the slatted floors, cramped crates, and manure lagoons and pits associated with CAFOs. Studies at major agricultural colleges in the U.S. have shown that hogs can be produced in deep-bedded hoop-houses just as efficiently as in CAFOs; they just require better management, which means employing more intelligent, thoughtful, caring hog farmers. Studies at various universities have shown grass-based dairy farms to be more profitable than confinement dairy operations, in fact, among the most profitable of all farming operations. When farmers take the initiative to process and market their own meat, milk, and cheese directly to discriminating consumers, their profits are often multiplied.

The success in marketing animal products from humanely-raised, grass-based, operations are not limited to direct sales by livestock and poultry producers. Among the most successful suppliers of humanely-raised meat products to restaurants is *Niman Ranch*, which buys humanely-raised animals from more than 650 farmers and ranchers.²⁹ One of the largest restaurateurs who purchases from Niman Ranch and other suppliers of humanely-raised animal products is the *Chipotle* chain of “up-scale,” fast-food restaurants.³⁰ Nearly all up-scale restaurants and many mid-prices restaurants regularly feature “local-grown” items on their menus. Grass-based and humanely-raised labels are added bonuses for the local farmers and ranchers who supply them. Numerous studies have shown that many consumers are willing to pay premium process for humanely raised animal products. One highly credible European study estimated the humanely-raised price bonus for organic eggs to be more than 40%.³¹

Consumers are willing to pay premium prices because sustainable animal production is fundamentally different from CAFOs. Sustainably raised farm animals have space to move about in well-ventilated buildings or freedom to roam outdoors in fresh air and sunlight as appropriate for their species and weather conditions. In sustainable operations, the animals are naturally healthy, not routinely sick, and don't require the routine use of antibiotics. Animals are treated when they are sick to restore health, rather than to keep them alive and promote growth. And equally important, the animals are treated with dignity and respect.

A Matter of Principle

Obviously, some producers comply with standards of humane animal production for purely economic reasons. However, many more treat their animals well because they believe in animal husbandry rather than animal science. They treat their animals with dignity and respect as a matter of principle – of ethics. I personally believe that at some point in the great transformation toward sustainability we will regain the lost sense of interdependence with our food animals, as well as with the whole of nature and of humanity. Ultimately, we are all critically interconnected and we will thrive and survive only to the extent that we recognize and respect our mutual dependencies with the animals and other living things with which we share the earth.

Sustainability is concerned *specifically* with humans – the present and future well-being of humanity. However, the sustainability of humanity is inseparable from the sustainability of the other non-living and living beings of the earth. A sustainable food system must be rooted in a

deep reverence and respect for all things of nature – specifically but not solely humans. Nature does not exist for the benefit of humans any more than humans exist for the benefit of nature. Humanity is not sustainable unless human societies contribute to, or at least do not detract from, the overall health and well-being of the whole of nature of which humans are a part. The path away from industrial agriculture to a better, sustainable food system for the future is a path that ultimately will require that we treat food animals and the other living things that we depend on for our food with dignity and respect.

End Notes

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