

## How Did We Get Here? Where Are We Going? Growing Together in Strength<sup>i</sup>

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There is a growing awareness among people in both rural and urban areas that something is fundamentally wrong with the American food system. For decades organic food advocates have been calling attention to growing health problems associated with the widespread use of pesticides<sup>1</sup> and various other chemicals,<sup>2</sup> growth hormones and antibiotics,<sup>3</sup> and more recently, genetically modified organisms in the production and manufacturing of food. The associated maladies include reproductive problems, various forms of cancers, heart disease, attention deficit disorder, and a variety of food allergies. More recently, foods recalled for contamination with E-Coli O157:H7, Salmonella, and various other food contaminants have raised growing concerns for food safety. One of the most recent incidents was the death of more than 20 people who ate cantaloupe contaminated with Listeria. In spite of persistent claims by the food industry and government to the contrary, it's becoming increasingly evident that much if not most of America's food is a threat to public health and much of it is simply not safe to eat.

So, how did we get to this point; how did one of the most affluent nations in the world end up with a food system that is making so many people unhealthy, if not outright sick. Because of my age and my life experiences, I have considerable first-hand knowledge of how we got here. I grew up on a small dairy farm in southwest Missouri. My brother still lives on that farm and continued to operate it as a small dairy farm. He was still milking less than 50 cows, until he retired about three years ago. When I left the farm for college in the late 1950s, agriculture was still dominated by small family farms, like ours, that produced primarily for local and regional markets. Commercial fertilizers and pesticides, developed from World War II technologies, were just coming on the scene. Factories that had been producing tanks were being retooled to produce farm tractors. Fossil energy was abundant and cheap; a “dollar's-worth” of gasoline meant “five-gallons.” However, farming was about to be transformed from a way of life into a bottom-line, industrial economic enterprise.

Many people relate industrialization to the migration of people from farms and rural communities to manufacturing jobs in urban areas. Obviously, we've seen such a migration in America. However, the shift to manufacturing and urbanization is simply a symptom of the specialization, standardization or simplification, and consolidation of control, which characterize the industrial paradigm of economic development. Specialization increases efficiency through division of labor. Standardization or simplification is then necessary to facilitate coordination and routinization of specialized production processes. Standardization and simplification allow consolidation of control into large-scale, corporate business enterprises. This is the industrial

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process by which “economies of scale” were achieved first in manufacturing and then later in agriculture.

Commercial fertilizers and pesticides allowed farmers to abandon diversified crop and livestock operations. Affordable tractors and farm machinery allowed farmers to cultivate more land and/or feed more livestock. Cheap fossil energy fueled the entire process. Farms could now be specialized, standardized, mechanized, and consolidated into fewer, larger, more-efficient farm businesses. By the time I graduated from college in 1961, agricultural industrialization was well under way. By then, I had been indoctrinated in “modern agriculture” and was committed to helping create a better agriculture for the American people as well as for myself. I took a job in agribusiness with Wilson & Co. Inc., the fourth largest meat packer in the U.S. at the time.

After three years with Wilson & Co., I had become disenchanted with the corporate world. So, I decided to return to graduate school at the University of Missouri, a Land Grant University. The historic mission of Land Grant Universities, as well for all government programs for agriculture, had been to provide food security for the nation by preserving family farms. Farm policy had been about keeping enough farmers on the land who were committed to taking care of the land to ensure that Americans would always be well fed. By mid-1960s, however, the public mandate for American agriculture had changed. We were no longer committed to saving family farms. Instead, we would make agriculture more efficient, by any means necessary – to help make food cheaper. Cheaper food would make it possible for all Americans to afford to buy enough safe and wholesome food to meet their needs. Agricultural industrialization seemed the most efficient means of providing national food security.

This was the beginning of America's “cheap food policy.” Government price supports and commodity payments were but the tip of the iceberg. In addition to publicly funded agricultural research and extension, the government subsidized crop insurance, farm loans, investments in buildings and machinery, and special “disaster” payments when other subsidies weren't enough. Such programs reduced the risks of farming so farmers could afford to abandon diversification in favor of specialization – first in either crops or livestock, then in specific crops or specific phases of livestock production. However, by removing much of the risk, much of the real profit potential also was removed from agricultural production. Costs of production dropped but so did profit margins per bushel, per hundredweight, and per acre. Government programs virtually forced American farmers to specialize, standardize, and consolidate into larger operations to survive economically. The government was committed to providing food security by making food cheap.

When I left graduate school with a Ph.D. in Agricultural Economics in 1970, I shared the commitment to make agriculture more efficient. During the first half of my 30-year academic career, I was a pretty traditional, bottom-line, free-market economist. I had been taught a successful farm had to be managed as any other bottom-line business, if it was going to survive. I told family farmers that their farms and families had to be treated as distinct and separate entities. Farming could no longer be viewed as a way of life; the only sustainable farms would be those that became agribusinesses. Quality of life was something farmers bought with farm profits, and what they bought was a personal matter that had no place in my vision of the economics of farming. I was doing what I thought was good for farmers as well as for society.

Looking back over the past 40-plus years, we see something very different from what I had been led to expect. Admittedly, industrial agriculture succeeded in making food cheap, as is loudly and widely proclaimed by the agricultural establishment. Americans spend less than 10% of their disposable incomes on food, less than any other nations, so they brag. Each farmer feeds 50, 100, or 150 Americans, depending on who is counted as farmers. However, it is long past time to confront the truth about the “success story” of American agriculture. In truth: the cheap food strategy of the past 50-years has failed dismally, not only in terms of its high ecological and social costs, but even in its most fundamental mission of providing national food security.

A larger percentage of Americans are hungry today than were hungry during the 1960s. The latest USDA statistics, for 2010, places total “food insecurity” at 15% with more than 20% of American children living in food insecure homes.<sup>4</sup> Non-government surveys place total “food hardship” for 2010 at close to 20%.<sup>5</sup> Without generous government programs, such as food stamps, the hunger statistics would be far more dire. This is not just a reflection of the current recession. The only time significant progress has been made in food insecurity over the past 30 years was during the unsustainable economic boom of the 1990s. We need to face reality; the experiment of agricultural industrialization has been a failure. We have proved we can't solve the hunger problem by making agriculture more economically efficient. People are not hungry because food prices are too high. They are hungry because they are poor and don't know how to produce or prepare their own food. Industrial agriculture makes those problems even worse.

Equally important, those who can afford to buy enough food to satisfy their hunger, too often end up buying foods that destroy their physical health. While their percentage of incomes spent for food has dropped by more than half since 1950s, the cost of American health care has more than doubled.<sup>6</sup> Health care currently costs the average American more than twice as much as the cost of food – not likely a mere coincidence.<sup>7</sup> The tipping point of public concern may well be the growing epidemic of obesity in America. Obesity is not simply a matter of personal inconvenience or embarrassment; it is closely linked to a whole host of diet related diseases, including diabetes, heart disease, hypertension, and several types of cancer. Recent government statistics classify two-thirds of American adults and nearly one-third of children and teens as being obese or overweight. And, the problem is getting worse. Since 1980, the number of obese adults has doubled. Since 1970, the number of obese children ages 6-11 has quadrupled, and the number of obese adolescents ages 12-19 has tripled.<sup>8,9</sup>

A 2005 New York Times piece drew widespread public attention to the problem of obesity by quoting the authors of an article in the *New England Journal of Medicine*: “Obesity is such that this generation of children could be the first basically in the history of the United States to live less healthful and shorter lives than their parents.”<sup>10</sup> Other scientists countered that better health care might offset the trend, but admitted that such care would be very costly. Many of today's children are likely to be very sick for most of their lives, even if they don't die younger.

A 2010 report by the Robert Wood Johnson Foundation, *F As In Fat; How Obesity Threatens America's Future*, documents how the growing prevalence of obesity has continued unabated, in spite of a host of programs mounted by government and nonprofit organizations to combat it, President Obama's White House Task Force on Childhood Obesity being but the latest

of many.<sup>11</sup> In terms of economic costs, obesity related illnesses are projected to claim about one in five dollars spent for health care in America by 2020 – erasing virtually all of the gains made in improving public health over the past several decades.<sup>12</sup> Health care in America already consumes more than 17-percent of our GDP,<sup>13</sup> and if recent trends continue, health care will claim more than one-third of total U.S. economic output by the year 2040. With an aging population, growing public demand for universal access to health care, and a ballooning federal budget deficit, America simply cannot afford the continuing economic costs of obesity.

The tendency is to blame obesity on people, specifically on the psyche or physiology of people who eat too many calories. The food industry has exploited this tendency to fend off questions regarding the overall integrity of the American food system. People who are overweight are accused of choosing unhealthy lifestyles and unhealthy foods, and as a result, eating more calories and burning fewer calories than is consistent with good health. The conventional wisdom seems to be that nothing is basically wrong with the food system; the problem is the unwillingness or inability of people to make good choices.

An equally logical alternative hypothesis, however, is that obesity is a problem of society, particularly the pervasiveness of unhealthy, calorie-dense foods. Admittedly, many Americans have unhealthy diets and lifestyles. However, the industrial food system seems to limit the choices for many to foods that are high in calories but low in overall nutrition. Even problems of unhealthy lifestyles may be linked to diets lacking in nutrients essentials for good health. Unhealthy people just don't feel like exercising. In those cases where obesity is linked to specific medical problems, the problems may well be a consequence of eating food with chemical residues or additives, or eating manufactured “food-like substances” – such as high-fructose corn syrup and partially-hydrogenated vegetable oils. In fact, a growing body of scientific evidence indicates it's not people who need fixing; it is the food system.

For example, A USDA analysis of food consumption trends between 1909 and 1999 shows that during the first half of the twentieth century, as people worked less, they also ate less.<sup>14</sup> Americans consumed roughly 10% fewer calories per person in the late 1950s than in 1909. Calorie consumption leveled off during the 1960s. Beginning in the 1970s, however, total calories in the average American diet have trended persistently upward, while physical activities of all types obviously have continued to decline. Between 1980 and 2004, total daily calories per capita increased by 22%.<sup>15</sup> For the first fifty-years of the last century, people worked less and they ate less. During the last fifty-years, they worked less and ate more. Why did people behave logically for the first half of the century and illogically the last half? The human species hasn't changed much over the last fifty-years, but the food system certainly has.

It time for Americans farmers and consumers to confront reality. The most likely source of America's diet/health problem is the industrial, corporate food system. The upward trend in per capita calorie consumption in the mid-1900s corresponds directly with the industrial revolution in American agriculture, as I indicated previously. Some distinguished and thoughtful agricultural scientists of the time, including William A. Albrecht, warned of the negative consequences of industrial agriculture for human health. Albrecht was head of the Soils Department at the University of Missouri when I arrived there in 1957. Albrecht was particularly concerned with an overemphasis on nitrogen, prosperous, and potash (N, P, & K), would lead to

depletion of trace minerals, such as manganese, copper, boron, zinc, iodine, and chlorine. He wrote "N P K formulas, as legislated and enforced by State Departments of Agriculture mean malnutrition, attack by insects, bacteria and fungi, weed takeover, crop loss in dry weather, and general loss of mental acuity in the population, leading to degenerative metabolic disease and early death."<sup>16</sup> While President of the Soil Science Society, he wrote "A declining soil fertility, due to a lack of organic material, major elements, and trace minerals, is responsible for poor crops and in turn for pathological conditions in animals fed deficient foods from such soils, and mankind is no exception."<sup>17</sup>

However, the warnings of Albrecht and others were not heeded. The industrialization of agriculture happened quickly. By the turn of the century, agriculture was dominated by large specialized corn, soybean, cotton, wheat, and rice farms and large-scale confinement animal feeding operations or CAFOs. Farms had become factories without roofs and fields and feed lots biological assembly lines. With industrial agriculture, the health of the soil didn't matter all that much, and apparently neither did the health of people.

Research is beginning to verify the validity of the concerns of the early skeptics of industrialization. A University of Texas study compared nutrient levels in 43 garden crops in 1999 with levels documented in the benchmark nutrient studies conducted by USDA in 1950. The scientists found declines in median concentrations of six important nutrients: protein -6%, calcium -16%, phosphorus -9%, iron -15%, riboflavin -38%, and vitamin C -2%.<sup>18</sup> Organic foods provide a convenient proxy for pre-industrial industrial agriculture. 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.<sup>19</sup> 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.

The food processing and distribution industry obviously must share the blame for obesity and other diet/health problems. The industrialization of food processing, manufacturing, and distribution has coincided with the industrialization of agriculture. The large corporations that process and market our foods are concerned about profits – not diet or health. Food industry marketers know that humans have a natural taste preference, probably a genetic predisposition, for foods that are high in fat, sugar, and salt. Preferences essential for the survival and health of our primitive ancestors now make us vulnerable to economic exploitation. It's easier to market high-calorie foods, particularly when those foods are cheaper to produce.

However, highly processed foods, fast foods, and sedentary lifestyles obviously aren't the only significant factors contributing to obesity. Numerous studies have shown significant reductions in nutrient density of crops at the farm level with increasing use of modern yield-enhancing technologies – fertilizers, pesticides, high plant density, and irrigation.<sup>20</sup> This so called "dilution effect" apparently is well known among plant scientists, although rarely mentioned in relation to diet and health outside of organic circles.<sup>21</sup> The primary sources of the cheap food calories in our supermarkets and fast food franchises today are plants and animals from farms relying on modern industrial yield-enhancing technologies, rather than inherent soil fertility. If

the essential nutrients aren't in the soil they aren't going to be in the feeds for animals or the plant or animal based foods for humans.

Perhaps most challenging to the conventional wisdom of obesity, an international group of scientists recently studied obesity and overweight trends, over a period of five decades, in 8 species of animals that live in close proximity to humans. The study included laboratory animals, but also cats, dogs, and feral rodents. All but one of the 24 populations studied became more obese.<sup>22</sup> The researchers speculated on various possible causes, but one academic reviewer concluded, "We clearly now have evidence that things outside this realm [diet and exercise] can shift the body weight distributions of an entire population."<sup>23</sup> The other species, particularly the wild species, don't eat highly processed foods or fast foods and don't spend their days in front of the TV or playing video games. However, they all eat foods grown on the same soils as the soils that feed their human neighbors. The basic nature of animals hasn't change that much in 50 years, but our systems of farming and production certainly have.

The indictment of industrial agriculture in this paper also has been well documented in a wide variety of popular sources over the years. Best-selling books, such as *Fast Food Nation*<sup>24</sup> and *Omnivore's Dilemma*,<sup>25</sup> have awakened mainstream society to the dramatic changes that have been taking place in our food system. Video documentaries such as *Future of Food*,<sup>26</sup> *Broken Limbs*,<sup>27</sup> *Food Inc*<sup>28</sup> and *Fresh; the Movie*<sup>29</sup> provide gripping images of the negative ecological and social impacts of an industrial food system on nature, society, and on the future of humanity. The HBO Network has a new multi-documentary project underway linking the rise in obesity and other diet related health problems to the industrialization of agriculture. They all tell the same story of a food system that pollutes, extracts, and exploits in the process of generating profits – a food system lacking in environmental, social, and economic integrity. The industrialization of agriculture has created an ecological, social, and economic disaster.

During the farm financial crisis of the 1980s, I came to the realization that the kind of agricultural economics I had been taught and was teaching certainly wasn't good for family farmers. The so-called *progressive* farmers had borrowed heavily at record high interest rates to expand their operations during the export driven economic boom years of the 1970s. When the economy fell into economic recession during the 1980s, export markets collapsed, commodity prices fell, and many of these farmers were caught with large debts at high interest rates they simply couldn't repay. Stories of farm bankruptcies and foreclosures sprinkled the national network news programs. Occasional suicides by bankrupt farmers captured both local and national headlines. It wasn't just poor managers who were failing. Farming for the bottom line, for economic efficiency, had led to widespread financial and personal failure for *good* farmers.

After a while, I began to realize the financial failure of family farms was not only destroying farm families, it was also destroying the viability of many rural communities. It takes people to support communities, not just production. It takes people to shop on Main Street, serve on volunteer fire departments, sit in church pews, keep local schools open, and keep a doctor in town. As I dug deeper into the causes of the farm financial crisis I also became aware of the negative environmental and ecological consequences of industrial agriculture. Farming fencerow-to-fencerow with chemical-intensive, industrial farming methods caused soil erosion, water pollution, and pesticide poisoning of people and wildlife. Eventually, I was forced to

conclude that this way of farming wasn't good for farmers, it wasn't good for rural communities, it wasn't good for society, and it wasn't good for the future of humanity. Only later would I learn that industrial agriculture wasn't even capable of meeting the nutrition needs of people. There had to be a better way to farm and a better way for me to make a living.

In my search for a better way to farm, I discovered the concepts and realities of sustainable agriculture. In my search for economic viability in farming, I discovered a paradigm or model for agriculture that has social, ecological, and economic integrity. I came to understand that a sustainable agriculture must be capable of meeting the needs of the present without diminishing opportunities for the future. Industrial agriculture failed every test of sustainability – ecological, social, and economic. I spent the rest of my academic career learning, educating, and advocating a new vision for a sustainable American agriculture. Since retiring from the University of Missouri almost twelve years ago, I have had the privilege of speaking at 25-35 different venues a year, and most of those were conferences attended by people who in one way or another share my hopes for a fundamentally better future for agriculture and for America.

People ask me if I am optimistic about the future. My answer is that I am not necessarily optimistic but I am hopeful... and hope is more important than optimism. Hope comes with the knowledge that something is possible, even if it's not going to be quick and easy, or even certain to succeed. Hope comes from the realization that something makes sense, regardless of how it turns out. After decades of doubt, I once again have hope for the future of American agriculture. My hope is kept alive by my continuing involvement in the sustainable agriculture movement. The movement includes farmers who call themselves organic, ecological, biodynamic, holistic, practical, innovative, or just plain family farmers. What they have in common is their commitment to creating an agriculture that can meet the needs of the present without diminishing opportunities for the future. To do so, they know they must restore the health of the soil to produce healthy crops, healthy livestock, healthy farms, and healthy people.

The numbers of farmers in the movement is growing each year, as is evident at the dozens of sustainable agriculture conferences held annually all across the North American continent and around the world. At least six “sustainable agriculture” conferences in the U.S. and Canada each draw more than 1,200 participants each year, with a few reaching 2,500 to 3,000. The larger conferences typically are organized by grass-roots organizations and the vast majority of those attending are farmers and their customers. Sustainable agriculture conferences drawing 500-700 are far from rare and conferences drawing 100-250 people per year are too numerous to attempt to count, including conferences in virtually every state in the U.S. The size and numbers of such conferences is growing each year.

People ask me if I think it's possible to feed a growing global population with organic farming or other approaches to sustainable agriculture. My standard answer is that I don't know, at least not with certainty. However, I know that we can't feed the world with agriculture that is inherently dependent on fossil energy in a world that is running out of fossil energy. The American food system currently accounts for about 20% of total fossil energy use with about a third of the total used at the farm level. I then go on to point out that many organic and sustainable farmers have yields just as high and costs just as low as their conventional farming neighbors. The primary difference is that sustainable farming is more “management intensive”

than industrial farming, meaning that will take more thoughtful, caring farmers to feed the world sustainably. So, what's wrong with having more thoughtful, caring farmers?

It might cost American food consumers a bit more for food produced sustainably – when we pay the ecological and social costs along with the economic costs of our food. However, food prices have likely risen more as a consequence of diverting half of the U.S. corn crop to ethanol production than would result from a transition to sustainable agriculture. Furthermore, some of the most credible global food studies indicate that sustainable farming practices are in fact the best hope for hungry people in the poorest and most densely populated areas of the world.<sup>30</sup>

Most people underestimate the potential of the sustainable food movement because they tend to associate it with farmers markets, CSAs, and roadside stands. However, farmers are beginning to move beyond traditional niche markets to form multi-farm CSAs and various other types of cooperatives and alliances to access higher-volume markets. Independent food processors, distributors, and marketers are also beginning to realize they face the same kinds of challenges from a corporately controlled, global food system as do independent family farmers and also have the same kinds of opportunities to help create a new sustainable food system. Food industry studies indicate approximately one-third of American consumers are willing pay premium prices for healthful and nutritious foods that have ecological, social, and economic integrity.<sup>31</sup> With these new allies, the sustainable agriculture movement now embraces tens of thousands, if not hundreds of thousands, of like-minded advocates and active supporters scattered across the continent.

Concerns for food safety, health and nutrition, global climate change, fossil energy depletion, economic globalization, social inequity, corporate consolidation of the food system, confinement animal feeding operations (CAFOs), and genetically modified organisms (GMOs) are creating a growing demand for fundamental change in the American food system. The Slow Food movement, for example, is a worldwide organization with about 100,000 members in over 150 countries. Slow Food's approach to agriculture, food production and gastronomy is defined by three interconnected principles: “Good: a fresh and flavorsome seasonal diet that satisfies the senses and is part of our local culture; Clean: food production and consumption that does not harm the environment, animal welfare or our health; Fair: accessible prices for consumers and fair conditions and pay for small-scale producers.”<sup>32</sup> *Good*, *clean*, and *fair* are becoming the watchwords of the sustainable foods movement.

The advocates of industrial agriculture are economically and politically powerful. So, the transition from industrial to sustainable will not be quick or easy. But we know that it is possible, we know that it makes sense, and we know that multitudes of like-minded people across America and around the world are committed to making it happen. We know the industrial food system is not good for farmers, consumers, or for rural or urban Americans of the present or the future. It is destroying both the physical and economic health of our nation. It simply doesn't make sense any more. No amount of economic or political power could withstand a consumer and taxpayer revolt supported by the people of both rural and urban America. The hope for the future is in the people who have a new and better vision for the future and have the courage to work together to make their common vision a reality. I hope this conference may be an important step in turning the hope for a better future into reality.

## End Notes

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