

Impacts of Industrial Agriculture on the Economic and Cultural Future of Rural Iowa?¹

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I care about rural communities. I have spent my entire life living and working with farmers and others in rural communities. I grew up on a small dairy farm in southwest Missouri. I was fortunate enough to attend the University of Missouri where I received my BS, MS, and PhD degrees in agricultural economics. I spent 30 years as an extension agricultural economist on the faculties of four different Land Grant Universities. I held various titles and positions but always worked with farmers and people in rural communities. After I retired, the college town of Columbia Missouri eventually became too large to suit me. My wife, Ellen, and I moved to Fairfield Iowa about three years ago – a town of about 10,000 people. I wanted to spend what time and energy I have left living and working with people in rural communities.

I think Iowa still has more viable rural communities left than most other states. That was one reason I was willing to leave my home state of Missouri for Iowa. I didn't see many vibrant rural communities left in states where I had worked – in North Carolina, Oklahoma, and Georgia. I came back to Missouri in the late 1980s, hoping to find some communities like those I had left behind 20 years before. However, I found the farm financial crisis of the 1980s had pretty much decimated rural Missouri. I spend my last five years at MU working on a grant-funded project with rural communities in North Missouri. When Premium Standard Farms brought their big, concentrated animal feeding operations or CAFOs into North Missouri in the early 1990s, they pretty much destroyed the hopes of people in that area for rural revitalization.

During my later years in Missouri, I had several opportunities to visit Iowa. The traditional values of family farming culture seemed to be more deeply rooted in Iowa than in other areas where I had worked. The houses and businesses in rural Iowa still seemed to be well-kept and the small communities still seemed to be “alive” – and hopeful. Iowa had steadfastly rejected the large-scale confinement animal feeding operations, until growth in hog CAFOs in North Carolina and the incursion of PSF in North Missouri seemed to threaten Iowa's status as the leading hog producing state in the nation. In response, Iowa rolled out the welcome mat for CAFOs, which complemented its chemically-intensive, industrial corn and soybean operations. I guess Iowa farmers felt they had to maintain the proud status of Iowa as the “agricultural state.”

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That being said, when I moved to Iowa I thought, and still think, there was and is real hope for a rural renaissance in Iowa that could provide new hope for rural communities everywhere. Admittedly, some Iowa communities already look like those further south, but many of Iowa's rural communities are still good places to live. The air and water are still clean, the soil is still fertile, the landscapes are pleasing, the people are friendly, and the economies are still healthy. Good places to live are becoming scarce, and thus economically valuable. To realize this hope for rural renewal, however, Iowans need to understand what has led to the demise of rural communities elsewhere. Iowans need to understand what agricultural industrialization does to rural communities and where industrial agriculture is taking rural Iowa today.

First a bit of history. European settlers established communities primarily for the purpose of extracting economic value from the natural resources located in rural America. Of course Native Americans were already using the land, but their purpose was quite different from what the Europeans had in mind. Natural resources – such as land, minerals, landscapes, and climates – must be utilized, at least initially, in the geographic locations where they exist. So, the settlers traveled west, dispersing themselves across the countryside in relation to the productivity of the natural resources they sought to extract or exploit.

Some early settlements were mining and logging towns. However, the resource that brought settlers to most rural communities was agricultural lands – particularly in places with fertile soil, like Iowa. Distances between early community centers tended to reflect how long it took farmers and ranchers to travel into town to trade their surplus production for necessary supplies. But the size or density of rural populations was determined largely by the number of farmers or ranchers needed to tend the land. Rangelands of the West were sparsely populated, and vegetable growing areas around cities were densely populated. The Midwest was settled by diversified family farmers, which supported a corresponding density of population and size of rural communities.

Historically, non-farm economic activity in rural communities reflected the numbers and sizes of farms and farm families. More farm families supported more schools, churches, doctors, and other providers of social services. As early farmers moved beyond self-sufficiency and began to specialize and trade, communities evolved into economic centers. More farmers means more need for markets, credit, machinery, feed, and fuel. The farms grew larger in size, but also larger in numbers, and farming was still a “way of life” – not just a bottom-line business. Rural communities became places of refuge during the Great Depression of the 1930s, when the number of farms in the U.S. reached an all-time high. Rural communities were still considered good places to live and do business through World War II and the post-war years of the 1950s.

However, the industrial technologies developed to fight World War II brought dramatic changes in American agriculture. Factories that had built tanks were converted to producing farm tractors, munitions plants switched to producing nitrogen fertilizer, and chemical warfare technologies were used to produce agricultural pesticides. These new technologies facilitated the industrialization of agriculture. A farm could now be managed as a bottom-line business rather than a multi-faceted way of life. Agriculture could be transformed into an industry

Contrary to popular belief, industrialization is not defined by the shift from an agrarian to a manufacturing economy and society. Urbanization is but a characteristic of industrialization. The

basic strategies of industrialization are specialization, standardization, and consolidation of control. Specialized functions are standardized so various tasks can be routinized and mechanized – as on assembly lines. This simplifies management and allows control to be consolidated into larger organizations to achieve “economies of scale.” This basic process was first employed in manufacturing, resulting in the assembly of large workforces in urban areas.

The industrial of agriculture had to wait for new chemical and mechanical technologies that allowed farmers to least tame, if not standardize, the vagaries of nature. With standardization and mechanization, management and control could be consolidated into larger specialized farming operations – resulting in economies of scale. Industrialization initially resulted in economic benefits in both manufacturing and industry, but both had unanticipated environmental and social consequences. For agriculture, the benefits have been fewer and the costs have been greater, because agriculture doesn't fit the mechanistic model of industrialization. Healthy living ecosystems, such as those on real farms, are inherently diverse, not specialized monocultures. Living things cannot be “standardized,” they are self-making, and thus cannot actually be controlled. In agriculture, industrialization inevitably had and still has unintended consequences.

Following World War II, millions of farm families were destined to abandon farming as a “ways of life” and transform their farms into industrial enterprises. We see the ecological consequences of this transformation in the pollution of air and water in rural areas with agrochemicals from large monocropping operations and biological wastes from animal factories or CAFOs. The primary economic advantage of industrialization comes from the ability of industrial operations to produce more output with fewer, less-skilled workers and managers. This meant fewer farmers and diminished economic opportunities in farming. We see the social and economic consequences in the demise of small and mid-sized family farms and the social and economic decay of rural communities, which had depended of farm families.

During the late 1950 and early 1960s, farms became fewer and larger and by 1970, farm numbers in the US had dropped by more than one-half from their peak in the 1930s. The global economic recession of the 1980s caused roughly one-fourth of the remaining farms to go out of business. Since then, farm numbers have continued to decline and average farm size and farming operations have increasingly come under the control of large, agribusiness corporations – through ownership as well as comprehensive contractual arrangements. Farms have been turned into biological factories and agriculture has been turned into an industry.

Some rural communities have survived as agribusiness centers, as the remaining farmers became more reliant on mechanization, markets, and purchased inputs. But, large operations are businesspeople; they buy wherever equipment and farm inputs are the cheapest, not necessarily in their local communities. In addition, it takes people, not just production, to support communities. It takes people to buy houses, cars, and clothes on Main Street; people to justify local doctors and health care, and people to serve on school boards and city councils. It takes kids to keep the local schools open and to regenerate the population of rural communities.

Some communities attempted to diversify their economy, and others abandoned agriculture entirely. Industry hunting became a preoccupation of many small town councils and chambers of commerce. Jobs, any kind at any cost, seemed to be a priority development objective of many

declining rural communities. Many of these development activities were rooted in nothing more than short-run exploitation of undervalued human and natural resources in rural areas. The number of “working poor” – workers with full time jobs who live below the poverty line – in rural areas has continued to rise. In addition, many manufacturing companies and branch plants that initially relocated in rural areas eventually have moved to other countries where laborers are willing to work even harder for far less money.

The highest remaining economic use for rural places has become as dumping grounds for the wastes of an industrial economy. Rural communities compete for “economic opportunities” such as prisons, urban landfills, and toxic waste incinerators. However, many rural communities, including many in Iowa, remain awash in the chemical and biological wastes of an industrial agriculture that no longer supports the local economy or community. Some rural communities dream of opportunities such as tourism, vacation homes, retirement communities, and rural residences. However, prisons, landfills, toxic waste incinerators, and industrial farming operations have destroyed any hope of “quality of life-based” development for many rural areas. This is the sad legacy of industrial agriculture in the South, the West, and increasingly across the Midwest. This is where industrial agriculture is taking rural Iowa. Most rural communities, including many in Iowa, are “places in search of a purpose.”

Ironically, the agricultural establishment continues to promote industrial agriculture as a rural economic development strategy. For example, concentrated animal feeding operations, or CAFOs are routinely touted as a means of bring jobs to economically depressed rural areas. Local leaders may even offer preferential tax assessments and tax credits as incentives. In fact, decades of real-world experience have confirmed that CAFOs inevitably employ fewer people than the number of independent family farmers they displace. Between 1980 and 2008, as CAFOs replaced independent farmers, USDA statistics indicate the number of beef cattle operations fell by 41%, hog farms declined by 90%, and dairy farms fell by 80%.

Admittedly, the communities where CAFOs locate may experience minor increases in *local* employment. However, low wages and poor working conditions typically result in CAFO workforces composed largely of *immigrant* workers desperate for employment. A University of Wisconsin study found the percentage of immigrant workers on Wisconsin dairy farms increased from 5% to 40% between 1998 and 2008, years of rapid growth in dairy CAFOS.ⁱ Workers who migrate into CAFO communities add cultural diversity but add a far larger burden on local public services than their meager wages yield in local tax revenues – particularly for public schools, police protection, and public health care. Even without tax subsidies, higher costs for road maintenance due to heavy truck traffic, increased water treatment costs, and other public infrastructure expenses more than offset any increase in local tax revenues.

CAFO operators don't show a preference for local grain or local suppliers of feed, machinery, or other production inputs. They buy wherever prices are lowest, which typically is not in their local communities. The only kinds of economic development attracted to “CAFO communities” are other environmentally polluting and socially degrading industries. In 1960, farmers were still more than 8% of the U.S. workforce but are less than one percent today. Rural communities have suffered both economically and socially from this loss of traditional farm families. More than 50 years of research, using a variety of socioeconomic criteria, has consistently

verified that communities supported by small to mid-size family farms are better places to live, both economically and socially, than are communities dependent on large farming enterprises.ⁱⁱ

However, there is growing resistance to industrial agriculture in rural communities, and perhaps more important, growing concerns among the general public about the negative environmental and public health consequences of industrial agriculture. Controversies such as those surrounding genetically engineered crops, inhumane treatment of farm animals, and routine feeding of antibiotics to animals in confinement have eroded public trust in American agriculture. The defenders of so-called modern agriculture have employed top public relations firms to try to repair their tarnished public image – to “increase confidence and trust in today's agriculture.”ⁱⁱⁱ For example, *Food Dialogues* is a campaign sponsored by the U.S. Farmers and Ranchers Alliance—an industry organization whose funders and board members include Monsanto, DuPont, and John Deere. The campaign features the “faces of farming and ranching”^{iv}—articulate, attractive young farmers, obviously chosen to put the best possible face on the increasingly ugly business of industrial agriculture.

These mounting public concerns are supported by a growing body of highly-credible scientific evidence. For example, a 1998 EPA study found 35,000 miles of streams in 22 states and groundwater in 17 states had been polluted with biological wastes from concentrated animal feeding operations.^v Pollution levels are likely even higher today and the number of “impaired waters” in Iowa has tripled since the late 1980s, as industrial farming systems, such as factory farms, have replaced traditional family farms?^{vi} The Des Moines Waterworks recently filed notice on intent to sue four Iowa counties for failing to protect the city's water supply contamination by agriculture pollution originating in drainage tiles beneath farm fields.

With respect to public health, a recent U.S. Center for Disease Control and Prevention study reviewed dozens of studies linking routine feeding of antibiotics in concentrated livestock operations to people being infected with antibiotic resistant bacteria, such as MRSA. “Use of antibiotics in food-producing animals allows antibiotic-resistant bacteria to thrive,” they concluded. “Resistant bacteria can be transmitted from food-producing animals to humans through the food supply.”^{vii} Antibiotic resistant is also spread in rural communities, including in to rural medical facilities by people who work in CAFOs and through contaminated water, soil, and air.

Odors is probably the most frequent complaint associated with CAFOs. Proponents claim that while odors from CAFOs may be an occasional nuisance, they are no different from other agricultural operations which, by their nature, emit dust particles and odors into the air. In fact, the anaerobic process by which animal manure decomposes in the large manure pits and cesspools associated with CAFOs are quite different from aerobic decomposition of manure in open fields. Chemical compounds associated with noxious odors from CAFOs include ammonia, nitrous oxide, and hydrogen sulfide.

The evidence linking noxious odors to health problems for people who work in CAFOs are too strong to be denied. Numerous scientific studies by reputable health institutions have also linked air pollution from CAFOs to a variety of respiratory ailments in people living near CAFOs. CAFOs have been shown to be particularly detrimental to the health of children in

nearby schools. New technologies to control odors, promised for decades, but no effective controls have been deemed “economically feasible.” The Sierra Club, Iowa Citizens for Community Improvement, and Humane Society of the U.S. have recently sued the EPA for failure to enforce the Clean Air Act by regulating air emissions from CAFOs.^{viii} Hopefully, this case will bring the compelling evidence that odors from CAFOs represent public health risks to widespread public attention.

As a last line of defense, the industrial agricultural establishment proclaims that industrial agriculture is necessary to keep food prices affordable and to “feed the world” during a time of rising global population. However, there is no indication that industrial agriculture has produced any more food that could have been produced with more sustainable methods, only that it has employed far fewer farmers. For example, there were chronic surpluses of production beef, pork, milk, and dairy products before CAFOs replaced family farms. It makes no difference whether a field or corn is part of 100-acre farm or a 10,000 acre farm with respect to its potential to produce. Any production costs advantage of industrial agriculture has been more than offset by higher marketing margins and profits elsewhere within the corporate food supply chain of which industrial agriculture is a crucial link.^{ix} Over the past 20 years, an era of intensive agricultural industrialization, U.S. retail food prices have risen faster than overall inflation rates.^x

Perhaps most important, industrial agriculture has failed in its most fundamental purpose: providing food security. The percentage of “food insecure” people in the United States is greater today than during the 1960s – early in the current phase of agricultural industrialization.^{xi, xii} Furthermore, the industrial food system is linked to a new kind of food insecurity: unhealthy foods. A recent global report by 500 scientists from 50 countries suggested that “obesity is [now] a bigger health crisis than hunger.”^{xiii} There is growing evidence that America's diet-related health problems are not limited to poor consumer food choices or processed “junk foods” but begin with a lack of nutrient density in food crops produced on industrial farms.^{xiv}

It's clearly time for fundamental change in American agriculture. The growing litany of farm/food problems today cannot be solved by redesigning the USDA “food pyramid,” placing warning labels on junk foods, or imposing more stringent regulations on farmers. Today's problems are deep and systemic. Thankfully, a new and fundamentally different kind of agriculture is emerging to meet the ecological, social, and economic challenges of agricultural industrialization. The new farmers may call their farms organic, ecological, biological, holistic, or biodynamic. Their farming methods may be called agroecology, nature farming, or permaculture. They all fit under the conceptual umbrella of sustainable agriculture. They are committed to meeting the food needs of all in the present without diminishing opportunities for those of the future.

The strength of this movement is most visible in the growth in sales of organic foods, although some types of “organic farms” may not be sustainable. Sales of organic foods grew by more than 20% per year during the 1990s and early 2000s, before leveling off at around 10%-12% annual growth following the recession of 2008. Organic foods now amount to around \$35 – billion in annual sales, something less than 5% of total food sales.^{xv} A comprehensive review, in the journal *Nature*, compared organic and conventional crop yields in “developed” countries, concluding: “Under certain conditions—that is, with good management practices, particular crop

types and growing conditions—organic systems can ... nearly match conventional yields.”^{xvi} The challenge in the United States and the so-called developed world is to create a food system that will meet the basic food needs of all without degrading its natural and human resources. Ecological and social sustainability, not just yields, is the logical motivation for organic agriculture in the so-called developed world.^{xvii}

Furthermore, industrial agriculture is not needed to “feed the world.” Small, diversified farms already provide food for least 70% of the global population and could double or triple yields without resorting to industrial production methods.^{xviii} As Fred Kirschenmann of the Leopold Center for Sustainable Agriculture at Iowa State University points out, numerous global food studies sponsored by the United Nations have exposed the myths of industrial agriculture. For the example, much of the increased food production attributed to the Green Revolution was exported rather than used to alleviate domestic hunger. Recent global studies call for supporting sustainable farming systems, such as agroecology.^{xix, xx}

Much has been lost, but there are still many vibrant and viable rural communities left in rural Iowa. There are places that still have clean water, clean air, scenic landscapes, and people who care about the land and about each other. These are “quality of life” communities. Such places are becoming increasingly scarce in America and thus are becoming increasingly valuable. There are still positive possibilities for rural Iowa, and for other rural communities – for those who are willing to support the new food and farming system that contributes to a desirable quality of rural life. Rural people need not continue to live with the sense of impotence and dread brought on by agricultural industrialization.

The success of this new vision for rural America and Rural Iowa, depends on people of rural communities taking charge of their own destinies. Success will not be quick or easy and they will need the support of those in urban areas if they are prevail. The advocates of industrial agriculture will not give up without a fight, and they have tremendous political and economic power. Advocates for rural communities should not expect to win every battle, but with each battle they will form new enduring personal relationships within and among communities. These relationships of integrity will empower communities to fight the next battle, and the next battle, and with each battle, their communities – and coalitions among communities – will grow stronger, until eventually the advocates for quality of life communities will win the War.

The tide of public opinion has turned against industrial agriculture. The preponderance of scientific evidence against industrial agriculture will eventually become so large that it cannot be denied. The legal system eventually must respond to reality, as it eventually responded to the evidence linking tobacco smoking to public health. It took several decades to change tobacco policy even after the evidence against the tobacco industry was clear, but change eventually came. Industrial agriculture is a threat to the future of rural Iowa. The people of rural and urban communities must come together to meet the threat and create a better, more sustainable future.

End Notes

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