

The Modern Food Industry in the U.S.: A case study of industrial sabotage

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Abstract: The U.S. food industry displays the ugly side of capitalism, manifesting numerous examples of what Thorstein Veblen (1921) termed “industrial sabotage.” The evolution of agricultural production from small family farms to huge industrial agribusinesses has been accompanied by toxic pesticide and herbicide use, unsafe industrial meat, and unsustainable farming practices. Meanwhile, industrial food production shifted diets from primarily whole foods to mostly ultra-processed food-like substances. Ultra-processed food is designed to be addictive by incorporating copious amounts of sugar, salt, fat, and flavorings, fueling the obesity crisis in the process. The solutions to our food problems lie along the lines suggested by Veblen, and involve putting the productive people of society, especially farmers, back in charge of production, while empowering the common people and their communities. Furthermore, government agencies with teeth and a series of targeted regulations can deliver on the promise of countervailing power suggested by John Kenneth Galbraith.

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Introduction

The food industry displays all the hallmarks of predatory capitalism and “industrial sabotage” (Veblen 1919). Veblen used this phrase to describe destructive behaviors by the captains of industry, who secure special advantages, restrict output, and engage in the “conscientious

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withdrawal of efficiency” (Veblen 1921, 4) to increase profits for the vested interests at the expense of consumers and workers. Such efforts are invariably supported by the political system. As Veblen (1919, 7) observed, “There are many measures of policy and management both in private business and in public administration which are not only considered excusable, but are deliberately sanctioned by statute and common law....”

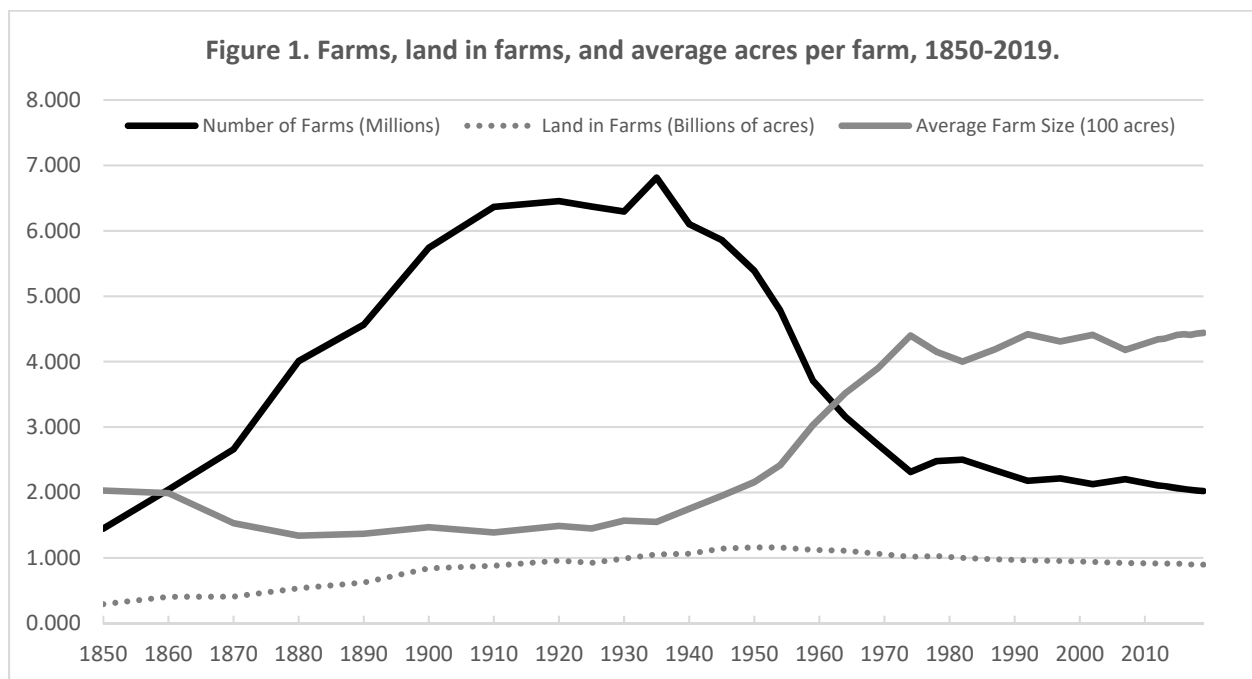
Industrial sabotage in the modern food industry takes specific forms. Industrial meat processors abuse workers and sell unsafe products. Industrial agriculture companies produce pesticides and herbicides toxic to people and the environment. Industrial food companies use misleading marketing and packaging to sell unhealthy, ultra-processed, food-like (Pollan 2008) substances laden with salt, sugar, fat and flavorings. The competition for profits promotes these unsavory behaviors under the approving eye of the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA), agencies closely allied with big agriculture and big food.

In addition to documenting the predatory side of the modern food industry, this paper argues that the solutions to these problems lie along the lines suggested by Veblen, in which we place the productive people of society, especially farmers, back in charge of production. Government agencies with teeth and targeted regulations can deliver on the promise of countervailing power suggested by John Kenneth Galbraith (1983). And, people and communities can be empowered so food markets better meet the needs of people, with the emphasis on providing healthy, sustainable food for all rather than profits for the vested interests.

From small, local farming to unsustainable industrial farming

There were dramatic changes in the structure of farming after World War II. In 1940, there were more than 6 million farms in the U.S., and most people purchased their food from nearby family

farms through local markets. However, as Figure 1 shows, the number of farms dropped precipitously beginning in the 1940s, and continued steadily in recent decades. Meanwhile, the average farm size more than doubled, as small farmers were replaced by large, agribusiness concerns.¹ This story mirrors the shift from small craft production to industrial production in goods industries, and the shift from small family shops to national chains and then internet behemoths in the retail sector. By 2019, the largest 3.9% of farms owned 25.4% of farmland and generated average sales in excess of \$1 million on property averaging 2910 acres in size.² The small family farm is rapidly becoming a thing of the past.



Small, diversified farmers are intimately connected to the land and animals. However, the industrialization of farming alienated modern farm workers from nature and resulted in brutal exploitation.³ The adoption of industrial methods in agriculture involves the use of specialized labor, heavy machinery, genetically modified (GMO) seeds, and vast quantities of fertilizers, pesticides and herbicides. Typical industrial farms till the soil, plant Roundup-ready GMO seeds (usually corn, soybeans, rice or wheat) engineered and sold by Monsanto,⁴ broadcast nitrogen-

based fertilizer derived from petroleum, and spray crops with pesticides and herbicides also sold by Monsanto. To optimize “efficiency,” fields are planted in entirely one crop (mono-cropping), which allows for the application of specialized machinery and chemicals.

Industrial agriculture is responsible for devastating negative consequences, including major contributions to climate change. According to the Intergovernmental Panel on Climate Change (2019, 7), “If emissions associated with pre- and post-production activities in the global food system are included, the emissions [from agricultural activities] are estimated to be 21-37% of total net anthropogenic greenhouse gas emissions.” These negative impacts result from energy use of machinery and shipping, methane emissions from feedlot livestock and rice cultivation, nitrous dioxide emissions from nitrogen fertilizer, deforestation for agricultural uses, reductions in carbon sequestration from soil erosion and degradation due to industrial practices (tilling, pesticide and herbicide use), and other factors.

Additional spillover effects could result in devastating disruptions to our food supply in the future. The destruction of beneficial insects, including pollinators such as bees and butterflies, due to neonicotinoid pesticides could dramatically reduce agricultural productivity, as will topsoil erosion due to tillage and soil damage. Algae blooms in waterways from fertilizer runoff and ocean acidification from CO₂ reduce fishery production, and so on.

The toxicity of the products of industrial agriculture for consumers is also problematic. Glyphosate, the main ingredient in the most widely used herbicide, Roundup, is connected to a number of cases of lymphoma and has a long history of causing problematic health impacts (Robin 2014). Glyphosate may also be driving the recent explosion of celiac disease and gluten intolerance (Samsel and Seneff 2013). As weeds became resistant to Roundup, Monsanto

marketed Dicamba as a substitute, but it too is a cancer risk according to the National Institutes of Health (Lerro, *et al.* 2020).

Industrial meat is also unsafe. According to the Centers for Disease Control and Prevention (2020), 100 people die each year from E.coli outbreaks, with industrial beef the major source. The U.S. averages 1.35 million infections and 420 deaths from salmonella each year. To kill salmonella, many chickens in the U.S. are washed in chlorine dioxide solution (bleach). In contrast, the U.K., which limits flock densities, transport times and the use of bleach in processing of chickens (due to an emphasis on hygienic standards that obviate the need), recorded no deaths from salmonella in recent years (Dowling 2019).

Industrial growing practices result in less nutritious food. A landmark study of nutritional data by Davis, Epp and Riordan (2004) demonstrated declines in vegetable nutrients of 6 to 38 percent from 1950 to 1999, including protein, calcium, phosphorus, iron, vitamin B2 and vitamin C. This is attributed to the “dilution effect,” which is the selection of plant varieties and practices to emphasize yield, rapid growth, appearance, and other non-nutrient characteristics. Similar processes can be found in meat production, where animals are bred to gain weight as rapidly as possible. Compared to the chickens of 1950, modern chickens grow in less than half the time to a greater weight on one-third less feed. To contextualize the rate at which modern chickens grow, Mark Schatzker (2015, 25) observes, “If humans grew as fast as broilers, a 6.6-pound newborn baby would weigh 660 pounds after 2 months.” Water and carbohydrates in industrial foods replace flavorful compounds, resulting in bland, less healthy meat and vegetables (Schatzker 2015). Chickens raised in confinement and fed a bland, high-calorie diet have markedly less flavor than free-range chickens. Anyone who has compared a homegrown tomato to an

industrially-produced tomato that was picked green and ripened with ethylene gas knows how different the flavors can be.

Industrial agriculture certainly resulted in dramatic increases in food production and reductions in food prices. However, these low prices were accompanied by significant costs to the environment and to people's health. We see similarly destructive results in the realm of industrial food manufacturing.

Industrial food manufacturing and sales

The U.S. farm bill heavily subsidizes industrially produced rice, corn, soybeans and wheat, with the subsidies going disproportionately to large, corporate farms. According to the non-profit EWG,⁵ the largest 1% of farms received 26% of farm subsidies and the average payment to each of these recipients was \$1,913,205. The largest 10% of farms received 78% of the \$240.5 billion in farm subsidies doled out from 1995-2020 (EWG 2020).

These heavily subsidized crops are then made into “ultra-processed foods” (UPFs)—ready-to-eat products that primarily consist of rearrangements of high fructose corn syrup, soybean oil, rice and wheat, flavored with salt and copious amounts of chemical flavorings. Cheap ingredients and industrial manufacturing means that processed foods cost 60 percent less than unprocessed foods (Burfoot 2019). UPFs also have an incredibly long shelf life, making them extremely profitable.

While we have long suspected that eating ultra-processed foods is unhealthy, evidence now demonstrates this conclusively. Using data from a nationally representative cross-sectional study, Martinez Steele *et al.* (2017) found that U.S. consumers got 57.5% of calories from ultra-processed foods—UPFs now dominate the American diet. The study also found that the more processed foods people ate, the less protein, fiber, vitamins (A, C, D and E) and minerals (zinc,

potassium, phosphorus, magnesium and calcium) they ingested, and the more sugars, carbohydrates and saturated fats they consumed.

Ultra-processed foods play a significant and perhaps the primary role in the obesity epidemic. In a sophisticated, randomized, controlled trial conducted by researchers at the National Institutes of Health, Hall *et al.* (2019) fed 20 healthy adults 14 days of ultra-processed foods and 14 days of minimally processed (whole) foods. The two diets were matched in terms of percentages of carbohydrates, fats, proteins, sugars, fiber, sodium and nutrients, and participants were allowed to eat as much as they wanted on either diet. Subjects on the ultra-processed diet consumed an average of 508 more calories per day and gained one pound per week, which they then lost after switching to the minimally processed diet. Note that the ultra-processed foods in this diet consisted of full meals (not just junk food). Similarly, in a meta-analysis of fourteen studies, Askari *et al.* (2020) found a significant association between UPF intake and being overweight. The rise of UPFs and obesity have real consequences: According to the CDC, obesity is a leading cause of heart disease, stroke, type 2 diabetes, and certain types of cancer.⁶

And yet, the drive to increase profits by selling ever-greater quantities of ultra-processed foods continues. The same forces of financialization that elevated shareholder value to the supreme goal of all U.S. corporate undertakings caused industrial food companies to maximize sales no matter the impact on public health (Moss 2013, 338-339). Companies design processed foods to be maximally addictive to grab the most “stomach share” (Moss 2013, xiii). As with cigarettes, the goal is to hook consumers on products they cannot resist. This is done via the creation of “hyperpalatable” food products which “are engineered to have more rewarding properties, which is achieved by increasing the levels of sugar, salt, fat, flavor, and so forth”

(Tempels, Verweij and Blok 2017, 402-403). The food industry is masterful at designing such products. Potato chips and Cheetos feature “vanishing caloric density” where they melt in your mouth so quickly that your brain thinks you have not actually eaten anything; industrial yogurt and spaghetti sauce have more sugar in them than ice cream does; and, flavor and sweetness are adjusted to find the “bliss point” so products “pique the taste buds enough to be alluring but don’t have a distinct, overriding single flavor that tells the brain to stop eating” (Moss 2013, 34). Flavors are designed to be irresistible and are added to everything, including fruits, vegetables, raw meat and butter. Unfortunately, in addition to increasing consumption, industrial flavorings trick our bodies into thinking UPFs are nutritious when they are not (Schatzker 2015).⁷

UPFs are sold using misleading marketing. In 2020, a bag of Fritos contained the statement, “Fritos Corn Chips Can Fit into a Healthier Lifestyle. Fritos corn chips are cooked in corn oil. Corn oil, like olive, canola and sunflower oil, is predominantly made up of unsaturated fats....” Sun chips are labeled “Heart Healthy” despite containing large amounts of carbohydrates, sugars and fats and negligible amounts of vitamins and minerals. In such cases, food companies typically take one study that finds corn oil or canola oil to be somewhat healthier than lard or other saturated fats, and use this to imply their unhealthy products are actually healthy. The massive advertising campaigns selling UPFs such as fast food, snacks, sugary cereals, and candy to children push them towards a lifetime of unhealthy eating, given that food exposure early in life is crucial in determining tastes and preferences.

Sadly, even organic versions of industrial foods can be unhealthy. Natural flavorings in organic products are derived from the same chemical processes as artificial flavorings, and in some cases are less healthy and less sustainable than the artificial alternative (Jacewicz 2017). Organic pesticides and fungicides used extensively by industrial organic producers involve

concentrating toxic natural substances that come with serious potential health risks (Wilcox 2011).

The Ayresian notion of technological progress as a progressive force in society (Ayres 1961) is largely reversed in modern industrial food. Technology brought low food prices and increased output, but it also brought unsafe meat and unhealthy UPFs while contributing significantly to climate change. We need an immediate and substantial shift in direction.

Alternatives

When the predatory forces of society wielded by the vested interests overwhelm the productive forces, workers, consumers and communities suffer. The decline of food safety, quality and sustainability is tied directly to the rise of industrial agriculture and food and the capitulation of U.S. regulatory bodies. The solution lies in the direction Veblen (1921, 75) articulated when he argued that “the country’s productive industry [should be] competently organized as a systematic whole, and ... managed by competent technicians.” In this case, we need competent, independent government officials in the USDA and FDA along with a regulatory apparatus designed to deliver healthy, sustainable food for all. And, we need to return to a system in which food is grown by independent farmers with an intimate knowledge of soil, food and sustainability.

As Polanyi (2001) observed, social progress occurs when coalitions form within communities to demand change. We see such coalitions forming around food issues today. Communities are recognizing the importance of local farms both in terms of health and economic development by promoting farmers markets, which increased in number by 76% from 2008 to 2014.⁸ Consumers, tired of unhealthy, low-quality industrial produce, are patronizing farmers’ markets in record numbers. Community Supported Agriculture (CSA) farms, where consumers purchase a “share” of produce at the beginning of the season and receive their portion of the

bounty of fresh vegetables, fruits, meats and eggs each week, are also growing. According to the USDA, the number of CSA farms increased from 2 in the 1980s to 7398 in 2015.⁹

Increasing numbers of restaurants are becoming farm-to-table operations, benefitting from the improved flavor and freshness of local, organic produce. Such efforts can be at the core of a unified local food strategy. In Millheim, Pennsylvania, residents pooled their resources to fund a farm-to-table restaurant and brew pub, the Elk Creek Café and Aleworks, as the lynchpin of their local development strategy. By emphasizing quality food and beer made from local ingredients, as well as local music, Elk Creek quickly became a popular hub. Its growth spurred a rejuvenation in the downtown and helped local farmers. Millheim features a multi-farm CSA, Groundwork Farms, which coordinates to provide subscribers with almost all the food they need, all produced locally in a sustainable, organic fashion. Multi-farm CSAs allow farmers to specialize in particular aspects of the organic food market and to coordinate marketing, sales and delivery efforts, making them a particularly promising model.¹⁰

Hospitals are prescribing healthy food to people with diet-related health conditions such as diabetes, obesity and hypertension, and partnering with CSAs to provide some of that food.¹¹ Employers are subsidizing CSA shares to encourage employees to eat healthier as part of wellness campaigns (Rossi, et al. 2017). Local governments are imposing taxes on sugary drinks, and countries around the world are installing labels warning consumers about the dangers of UPFs.¹²

The current U.S. government and the captains of industry running Big Food and Big Agriculture remain huge barriers to progress. But, with organized community efforts, the industry can be changed. Each of us can do the following to encourage the necessary changes:

- Join a CSA and buy most of your food from local farmers and butchers;¹³

- Eat healthy, whole foods instead of unhealthy UPFs;
- Patronize local farm-to-table restaurants; and,
- Pressure local officials and representatives to enact meaningful regulations regarding farm policy, sustainability, and food labeling.

At minimum, we should subsidize healthy local food over unsustainable, ultra-processed food.

In addition, engineers and researchers need to reorient their efforts from attempting to maximize industrial food production to attempting to provide healthy, sustainable food for all. The backbreaking work of local, organic, sustainable farming could be supported via the development of specialized machinery and techniques, much in the way industrial farming was supported.

If enough consumers change their habits, and if enough pressure is exerted on our elected officials, we can begin moving away from a food system that is unhealthy and unsustainable. Furthermore, food can be a rallying cry for broader progressive change. Everyone cares about what they put into their body. As I can attest from work with students and the local community, once people are aware of the predations of big agriculture and big food, along with the benefits of fresh, local whole foods, they cannot continue to support business as usual.

Notes

1. Source: USDA, National Agricultural Statistics Service, Census of Agriculture (through 2017), and Farms and Land in Farms: 2019 Summary (February 2020).
2. Source: USDA, Farms and Land in Farms 2019 Summary, February 2020, https://www.nass.usda.gov/Publications/Todays_Reports/reports/fnlo0220.pdf, accessed December 8, 2020.
3. See, for example, Marosi (2014).

4. Monsanto was recently purchased by Bayer, the huge, German chemical company.
5. EWG stands for Environmental Working Group.
6. <https://www.cdc.gov/obesity/data/adult.html>, accessed 12/10/2020.
7. There is now substantial evidence that flavor is linked to nutrition. We find items flavorful when they contain things our body needs. Therefore, artificial flavor in essence tricks our body into thinking something is good for us when it is not. See Schatzker (2015) and Provenza *et al.* (2015) for more detail.
8. USDA, Economic Research Service, using Agricultural Marketing Service, Farmers' Market Surveys.
9. See the USDA 2015 Local Food Marketing Practices Survey, part of the Census of Agriculture, at https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Local_Food/index.php.
10. Groundwork Farms coordinates with farmers and local businesses to offer vegetables, fruits, eggs, raw milk, meats, cheeses, herbs, flowers, and breads. This type of cooperative endeavor involves overcoming the individualism that is characteristic of many farmers, something that has been problematic for a very long time. The early institutionalist economist William R. Camp identified the pernicious effects of absentee ownership and "the farmer's archaic every-man-for-himself individualism", suggesting farm cooperatives as the best way to reverse power imbalances, stabilize farm incomes and remove the predatory elements from food markets (Vaughn 2001, 148).
11. In 2019 and 2020, the Dreamcatcher Farm CSA in Lewisburg, Pennsylvania provided more than 3000 pounds of fresh vegetables to patients enrolled in the Geisinger Hospital Fresh Food Farmacy program.
12. For example, France recently enacted policies to reduce food waste and to promote sustainability (Chrisafis 2016), and they are pushing for these policies to be instituted throughout the European Union.¹ France also adopted the Nutri-Score food label system to call consumers' attention to healthy and unhealthy foods, something that is now being considered in most EU countries.
13. Paul (2018) notes that CSAs raise incomes and reduce risk for farmers, which corroborates my own experiences with the local CSAs I work with (Groundwork Farms in Millheim and Dreamcatcher Farm in Lewisburg).

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