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Food for Thought: Analyzing the Impacts of Livestock Factory Farming in the United States

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Abstract

The practice of large scale factory farming in the United States has raised moral and ethical questions since its establishment in the mid twentieth century. Though a relatively modern development in the field of agribusiness, factory farming has already accounted for drastic damage to both public and environmental health. Factory farming requires the unsustainable use of resources, gives off toxic waste, and poses a serious threat to public health. This paper aims the further analyze those damages, as well as investigate the lack of transparency and political corruption carried out by factory farm industry leaders. Major factory farming companies have allegedly withheld sensitive information regarding the true extent of the severity that large scale livestock production has had in contributing to climate change and environmental degradation, as well withholding information as to the impact factory farming practices has on the health of consumers. Being a major industry in the United States, factory farming businesses have held great influence in the action taken by politicians and government leaders when addressing these issues by way of financial bribing, corruption, and lobbying. New and alternative solutions to tackle these issues are still being developed. Such proposals include new legislation requiring complete transparency of factory farming practices and impacts in order for consumers to make completely informed decisions regarding their purchase of agricultural products.

Keywords: factory farming, agriculture, sustainability, politics, environmental sociology,
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**Introduction: More Than Just a Piece of Meat**

In the summer of 2015, I flew half-way around the world, from the east coast of the United States westward to Kauai, a small, rural island of Hawaii. I was working on a re-wilding project, helping give tours and oversee the grounds of the reserve. And during my time there, I received the invaluable privilege of getting to know my co-workers, two tried-and-true, native born Hawaiians. They taught me and my fellow interns how traditional Hawaiians live, often through cooking. They showed us how to fish for crabs, smoke meat, and steam fish. The problem was, I was a vegetarian. So while the graciousness of their enthusiasm for teaching me about their culture was something I more than appreciated, I was never actually able to eat any of the foods they made. And when they asked me why, I began to explain my reasons, how I felt animals are kept in terrible conditions in factory farms and believed meat was ruining the planet, and so on and so forth. And when I finished my spiel, both of them looked at me in confusion. They had never heard of factory farming, and were disgusted with the idea, having lived on a small island their whole lives, and hunted for their own food, taking what they need and nothing more. “No, this is no way for animals to live,” was the response I received. To them, their food was more than just food, it was a life to be honored; something that came from the earth and comes with a cost. Their words made me wonder, *what would come about if everyone thought about their food in the same way they did.*

In the United States, most Americans to do not give second thought about what goes on their plate, especially when it comes to considering the impacts that choice has on the environment. We pass through drive-thru after drive-thru, buying burger after burger. The influence and weight of that dollar spent on meat and the power it holds is often lost on the average American, as their chicken sandwich with bacon on top seems to be nothing more than a
quick and cheap dinner on a Thursday night. But, in actuality, the reason meat is so affordable in the United States is because of the extreme toll it takes on the environment and the health of people. The industrialized model of livestock cultivation has led to what is known today as modern factory farming, an industry which has been causing detrimental damage to both humans and the environment alike.

In Chapter 1 of this thesis, I will provide background and historical context on factory farming as being a relatively new mode of meat production in the ever expanding agribusiness sector. Since its establishment in the mid twentieth century, it has forever altered the way Americans produce and consumer meat products, such as beef, pork, and poultry. Factory farming was founded on the notion that traditional agricultural practices could be done better with machinery. It was a way to accommodate the needs of the time, when World War II had come to an end, industry was booming in the United States, technology was reaching unprecedented advancement, and urban areas were expanding across the nation. As people flocked to cities in search of work, the availability of farmers began to drop, and agricultural land became scarce. So, in order to produce the same amount of meat product in a cheaper, more concentrated fashion, animals were taken out of open-grazing fields and places in cramped factory units.

Throughout the course of this thesis paper, I will explain how the shift from natural cultivation to industrialized, factory-style methods of raising livestock did not come without a myriad of problems. Now that animals are being raised in mass quantities and meat was being produced at

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increasing levels, the ability to produce enough resources to maintain such operations becomes a challenge. As a result, more and more resources have to be allocated toward producing meat, creating many of the environmental problems we have today. In Chapter 2, I will explain these problems, such as issues related to land and water usage required for factory farming increasing at unsustainable rates, which could compromise the health and well-being of future generations. Pollution of water, land, and air have all been linked to factory farming, as well. Additionally, the amount of fossil-fuel based energy required to produce factory farmed meat is extremely high in comparison to the production of plant-based proteins, making it a huge source of anthropogenic-caused climate change.²

So, how does the factory farming industry get away with doing such damage, and how has the public remained so in the dark on this issue? This paper will answer such questions in Chapters 3 and 4, where answer lies in a lack of transparency, corrective action, and political responsibility. And in the Conclusion, I will offer up possible solutions to problems presented by factory farming, as well as what individuals can do to help, starting with how they think about their food.

Chapter 1: Farm to Fork: Setting the Stage and Running the Numbers on Factory Farming

Though the idea of cultivating livestock for human consumption seems to be a process carried out since man could pull up a chair to the table, the agribusiness model that is large-scale, modern factory farming as actually a quite recent development.³ The factory farming

³ Rollin, Bernard. "VI. Animals in Agriculture and Factory Farming." 2017
methods of today differ greatly from the traditional methods of animal agriculture, where the separation of factory and farm was distinct, and agriculture was not viewed through the lenses of an assembly line, but rather in the scope of operating in open green spaces.

This sudden and novel shift in livestock cultivating did not occur in a vacuum, as most things never do. It was not until the mid-twentieth century that the practice of industrial factory farming came about. In the United States, the technological boom that came after the end of the second World War brought about a new ideal of prosperity to the American people, one that often centered around the ideal of having a two car garage and meat at every meal. Simultaneously, industry was becoming unprecedented in its levels of production, often to satisfy these new ideals. Business models then become increasingly focused on the notion of turning out product as cheap as possible to sell as quick as possible. Livestock farming was not free from inclusion in this new technologically driven outlook. Raising livestock in confined, factory style spaces at increased concentration was becoming the normative operation. But prior to his time, the ability to factory farm would have been nothing but a mere imaginary concept because the technology and coinciding social conditions to produce meat as we do now simply just did not exist.

The intensification of technology based factory farming and social changes that came about after World War II primarily set the stage for this new wave of agriculture, and arguably, a new outlook of human perception on the relationship between man and animal. The end of the
war drove many workers out of their previous jobs in agriculture and into urban areas in search of higher wages and a better quality of life. These push and pull factors were only aggravated by the encroachment of growing cities on rural lands that would have been previously used for agriculture, thus raising prices on land. As open space became more scarce and expensive, the ability to continue to meet the agricultural demands of the United States becomes dependent on capacity to produce to same amount of product in a smaller amount of space.

Developments in coinciding fields of study in the mid-to-late twentieth century played a crucial role in the success of factory farming, and still does to this day. Specifically, the development of fertilizers, genetics, and antibiotics. Advancements in artificial selection processes made it possible for farmers to have control over the maximization of nutrient density in their animal products, increasing the desirability and quality of their output. Animals were also genetically to adapt to the intensified and abnormal conditions of factory farms. But having such a vast amount of animals confined in such cramped, indoor, close quarters creates a myriad of problems and challenges, such as feeding those animals and keeping them alive in the face of disease. The incredibly cramped conditions, unnatural living environments, and improper diets of factory farming raised animals commands a breeding ground for disease and ailments between animals living in these conditions. Without the ability to control such disease, it would be nearly impossible to continue to factory farm, as animals would be likely succumb to illness before being ready for slaughter. As antibiotics became available, farmers could pump animals with drugs to prevent diseases from taking out any significant portion of their animal stocks.

11 R. K. Pachauri and Leo Mayer, Climate change 2014: synthesis report 2015
Concurrently, the advancement of fertilizers in agriculture during that time was necessary if ensuring factory farmers had enough food to feed the animals.\textsuperscript{12} Without the aid of fertilized crops, farmers would be unable to produce enough food to meet the demands of factory livestock. The development of fertilizers and their subsequent use in factory farming has been quite controversial, with studies showing that the increase in fertilizer use since the mid twentieth century has led to imbalances in direct ecosystems. In the \textit{Summary for Policy Makers} of the United Nations Intergovernmental Panel on Climate Change, it is explained how non-carbon dioxide gaseous emission, such as nitrous oxide (N2O) and methane (CH4), from excess fertilizer used in livestock production is exacerbating the effects of climate change.\textsuperscript{13}

The challenge of meeting these demands with fewer workers involved in agriculture planted the opportune seed for factory-style agribusiness to flourish. By 1993, only 1.7 percent of Americans were still engaged in agricultural production.\textsuperscript{14} And so, animals were brought increasingly closer together, brought indoors, and put on the assembly line. Machinery was now taking the place of the fleeting American farmer. New technology could allow for factory farmers to create new styles of holding cells for animals, more efficient mechanisms for getting food to those animals, and quicker ways for them to take that animals from the slaughter house to the grocery store shelf. Success of animal product production was now based on the ability to establish capital, rather than having the man power that was once thought necessary.\textsuperscript{15} Animals, such as cows, pigs, chickens, and other related animal products, were now thought of and spoken of in a language of units, metrics, and investments. Factory farming thus became what we know it as today, intensive industrial operations where large numbers of animals, primarily cows, pigs,
and chickens, are raised for meat in confined and often enclosed facilities. Gone were the days of free range and open cage, and the welfare of the animal became secondary, at best, to the ability to make profit.

Factory farming has become a solution to rising food prices over time, given that the ability to produce meat product has become cheaper under such conditions, compared to prices of meat produces in an open environment, which would require more land and labor.\(^\text{16}\) This increase in productivity and subsequent drop in cost lends to its popularity amongst both producers and consumers. With production and consumption numbers such as these being turned out on a yearly basis, one can assume the profits made off of factory farming are not to be anything but monumental. And this assumption would be more than correct. According to the United States Department of Agriculture (USDA), the beef industry alone turned out 60 billion dollars worth of beef products alone in 2015, \(^\text{17}\) with poultry following behind with outputs of 48 billion dollars. Hog values as of 2014 were estimated to have reached 26.5 billion dollars.\(^\text{18}\) The size and value of factory farming corporations has led to its establishment as a key player in the United States economy, both nationally and locally. In North Carolina alone, the pork industry has been growing over 20% annually as horizontal integration has led the state being home to the one of largest pork producing companies in the country.\(^\text{19}\) Through both horizontal and vertical integration, there has been a large merger of corporate ownership of farmed animals


over the past fifty years, leading to a select few key power players rising to the forefront of agribusiness.\textsuperscript{20} Vertical integration is defined as being the corporate ownership of the whole production process in and of itself, often from small scale substance growers to large-scale, profit motivated production. Horizontal integration occurs when one corporation absorbs another, often a competitor. And the pork industry is not alone in this economic growth, as the beef and poultry industry have been experiencing similar integration patterns. In the 1980s, about 33 percent of all cattle slaughtered was carried out by four major corporations. By 1990, that number had risen to 70 percent, and by 2000 had risen to 81 percent.\textsuperscript{21}

The business of factory farming has become one of the most prominent and influential industries in the United States. Today, according to the USDA, the United States produced 23.7 billion pounds of beef in 2015 alone, along with 24.5 billion pounds of pork, and 45.7 billion pounds of poultry that year as well.\textsuperscript{22} In total, a massive 94.3 billion pounds in meat products were produced in 2015, with numbers reaching similar peaks in previous years.\textsuperscript{23}

\textsuperscript{20} “Factory Farms, Adverse Effects of,” In \textit{Environmental Science: In Context}
\textsuperscript{21} Ibid.
\textsuperscript{22} Ibid.
\textsuperscript{23} Ibid.
And of this amount of meat produced, consumption rates of meat products by Americans reached soaring heights. In 2015 alone, the United States consumed 84.6 billion pounds of meat, with a known 20.6 billion pounds coming from pork and 38.8 billion pounds coming from poultry. More precise production and consumption amounts for 2016 are still be calculated by the USDA, with current numbers based on estimations of analogous amounts.

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24 Leder, Drew, "Old McDonald’s Had a Farm: The Metaphysics of Factory Farming."
The Environmental Protection Agency has since coined the acronym CAFO to describe factory farming facilities, which stands for Concentrated Animal Feeding Operation, and has set regulations and qualification standards for such operations to abide by and meet. Over 99 percent of the animals produced in the United States come from factory farming, according the ASCPA, American Society for Prevention of Animal Cruelty. As of 2016, larger factory farms can hold at any one time an estimated 10,000 pigs, 100,000 cattle, and 500,000 chickens. Between 1961 and 2007, meat production increased more than fourfold, with the average meat consumption per person more than doubling along with it. About 56 billion animals are

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slaughtered each year during production.\textsuperscript{27} And the resources required to feed these animals has only increased in conjunction. According to reports published by the United Nations Environmental Program, it takes, on average, 6 kilograms of plant protein to produce 1 kilogram of animal protein, which is why one-third of the world’s grain harvest is used to feed factory farmed animals.\textsuperscript{28}

The ability to produce enough food is just one of the many environmental stresses that must be considered when assessing the sustainability of factory farming in the United States. Factory farming requires massive amounts of water, grain, and energy to produce. Many of these issues are highlighted in the United Nation’s Millennium Ecosystem Assessment, outlined in \textit{Ecosystems and Human Well-Being: General Synthesis}. This document includes in-depth reports and analysis of many of the current environmental issues facing the world today, especially due to factory farming, including assessments of natural capital, ecosystem services, human well-being, and drivers of environmental change.\textsuperscript{29} When assessing the impacts of factory farming in the United States, it is important to keep in mind all these elements. There is much evidence to support the claim that factory farming is having significant negative on human well-being and on the environment, specifically water use, energy use, and land use to name a few.

\textsuperscript{27} G. Miller and Scott Spoolman, “Case Study: Industrialized Food Production in the United States” the First Green Revolution.” Living in the Environment.

\textsuperscript{28} Zuzworsky, Rose. "From the Marketplace to the Dinner Plate: The Economy, Theology, and Factory Farming."

This assessment found that in the 30 years following 1950, more land was converted to cropland than all the years between 1700 and 1850. And a significant portion of that cropland is used to grow feed for animals in factory farms. What the Assessment calls “cultivated systems,” being defined as areas where at least 30 percent of the land is in cropland, confined livestock production, or fresh aquaculture, now accounts for one-quarter of terrestrial surfaces on Earth. Additionally, since 1960, around the time when factory farming came about, water withdrawals from rivers and lakes have doubled. It is estimated that 70 percent of water used

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30 "World Agricultural Supply and Demand Estimates," United States Department of Agriculture
worldwide is for agriculture.\textsuperscript{31} Figure 3 above shows a map of cultivated systems from the Millennium Ecosystem Assessment, showing that a large portion of the United States has been converted to cultivated landscapes.

Taking into consideration all the presented history and data of how factory farming became the great economic, industrial, and agricultural influencer it is today, one can begin to analyze and assess the impacts that the current state of the industry has had on the sustainability of modern livelihoods, the well-being of humans, and the over-all health of the environment. Scientists have confirmed that climate change is indeed a human-caused phenomena that need be addressed with immediate action.\textsuperscript{32}

**Chapter 2: Assessing the Damage: Environmental and Sustainability Impacts**

Factory farming poses many threats to the environment and to the sustainability of resource use by humans. Since the expansion of the industrial livestock industry in the United States, many of the ecological systems and vital resources that are needed to sustain life on earth have been disrupted. Questions of the compromising of food security and public health at the hands of the livestock industry have also been raised over the years. The resource intensive and subsequent heavily polluting industry that is factory farming has led to land and soil degradation, water contamination and overuse, as well as issues of air quality and the exacerbation of climate change and global warming.

\textsuperscript{31} "World Agricultural Supply and Demand Estimates," United States Department of Agriculture  
\textsuperscript{32} R. K. Pachauri and Leo Mayer, “Climate change 2014: synthesis report,” 2015
Alterations and changes to the landscape of the United States due to agribusiness expansions is undeniable, simply based on the fact that mass amounts of land are required to factory farm livestock in the first place.\textsuperscript{33} According to the Environmental Protection Agency, as of 2007, factory farm facilities, comprising livestock animals and the land required in the cultivation of these animals, cover the equivalent of one quarters of mass of the United States.\textsuperscript{34} It is also estimated the one-fifth of the land in United States is cropland, and eighty percent of that cropland is used to grow feed for factory farmed animals. And in total, one-third of the planet’s surface is allocated for meat and livestock production.\textsuperscript{35}

And in order to make room for this mass amount livestock, mass deforestation and land conversion has taken place. Livestock is a significant cause for the conversion of wooded and forested areas into cropland for feed production. This mass cultivation of land has been shown to wreak havoc in the surrounding ecosystems and be a large contributor of carbon dioxide emissions into the atmosphere. An estimated 2.4 billion metric tons of carbon dioxide are emitted annually as a result of deforestation, lending to the increased concentration of greenhouse gases in the atmosphere responsible for climate change and the overall warming of the earth.\textsuperscript{36} Forests that once acted as carbon dioxide sinks are now unavailable, and the carbon dioxide they were containing is now being released. The degradation of land for livestock has also lent to desertification in more arid and dry areas. By removing or reducing the vegetative cover in these

\begin{itemize}
  \item \textsuperscript{34} "Agriculture." United State Environmental Protection Agency. July 9, 2015, https://www.epa.gov/sites/production/files/201507/documents/ag_101_agriculture_us_epa_0.pdf
  \item \textsuperscript{35} Koneswaran, Nierenberg. "Global Farm Animal Production and Global Warming: Impacting and Mitigating Climate Change."
  \item \textsuperscript{36} Ibid.
\end{itemize}
areas, desertification allows for increased levels of carbon dioxide to escape into the atmosphere, an estimated 100 million metric tons of carbon dioxide annually.\textsuperscript{37}

And once this land has been converted, soil disruption and contamination are extremely common, largely as a result of the mass amounts of waste that factory farms produce.\textsuperscript{38} And while in traditional methods of raising livestock, the manure and waste of these animals has helped with the natural fertilization and cycle of nutrients in the local ecosystem, this is far from the case in the modern-day meat production industry. Livestock factories have taken the animals off the land and concentrated them in unstable numbers within a confined space, therefore disrupting the natural nutrient manure cycle.\textsuperscript{39} Farmers then have to pay more money for chemical fertilizers and further contaminate the soil with harsh chemicals in order to replace the manure that would have come from the animals naturally grazing in the field. In some states, such as Iowa, manure does not go back into the depleted soil at all, creating the issues of hazardous waste management.\textsuperscript{40}

In areas where the manure is let back into the soil, problems of contamination and soil pollution have occurred.\textsuperscript{41} The contaminants in animal waste make their way into nearby water sources, animals, and plants. Often, this is caused by chemical substances that are given to the animals in factory farms leaching into the surrounding habitats when their waste is disposed of. Heavy metals, feeding additives, pesticide residue, fecal bacteria, medication and antibiotic residue, and other chemicals have been found in soil samples surrounding factory farm

\textsuperscript{37} Ibid.
\textsuperscript{40} Ibid.
\textsuperscript{41} Ibid.
locations.\textsuperscript{42} Sometimes, the amount of manure produced is too great for the soils to process and handle, especially in areas where large concentration of livestock and poultry are kept without a corresponding farmland area to spread the manure. It is estimated that 158 million tons of manure are produced by the livestock industry each year in the United States alone.\textsuperscript{43}

And factory farming not only requires the mass use of land resources in the United States, as well as around the world, but it also comes with a huge cost in terms of its use of water resources as well. This is especially a problem for areas in the United States that are prone to or already experiencing issues regarding the adequate availability of water. The state of California, for example, recently experienced one of, if not the worst, drought in the state’s recorded history. This severe drought led to California Governor Jerry Brown to call for an immediate implementation of statewide water conservation action across all households.\textsuperscript{44} Specifically, he called for a 25\% reduction of water use in all California homes.\textsuperscript{45} However, this effort to reduce water use and conserve the available resources overlooked a major factor: the factory farming industry. In California, 90\% of the total water used by the state is used for agriculture, much of which consists of crops grown to feed livestock.\textsuperscript{46} Specifically, 47\% of it is water used within the state is consumed for animal agriculture. Additionally, due to high contamination rates, the water used for animal agricultural cannot be replaced or recycled once extracted and used.\textsuperscript{47} Other water related activities within the state, such as watering lawns, drinking water, and taking

\textsuperscript{42} Ibid.
\textsuperscript{43} Ibid.
\textsuperscript{45} Ibid.
\textsuperscript{46} Fulton, Julian, Heather Colley, and Peter Gleick, “Assessment of California’s Water Footprint,” The Pacific Institute.
\textsuperscript{47} Ibid.
showers, only constitutes 4% of the total water consumed.\textsuperscript{48} Thus, by not including factory farming in conservation efforts, The Governor’s plans to conserve water in a way that would truly make a positive future impact would most certainly fall short.

California is not alone in its overuse of water for factory farming. Wherever you go in the United States, factory farming operations require mass amounts of water to produce incomparable portions of meat. To produce one-pound beef patty, about 1,800 gallons of water are required.\textsuperscript{49} Similarly, one pound of pork requires about 580 gallons of water to produce, and one pound of chicken requires around 470 gallons.\textsuperscript{50} Animal products, overall, use significantly more water to produce, largely because of the amount of grain and feed needed to be produced to maintain the animals until they are sizeable enough for slaughter, and plant protein converts utterly inefficiently into animal protein.

Factory farms not only pose a threat to the sustainability of water use in the United States, but it also causes significant damages to nearby water bodies by way of contamination.\textsuperscript{51} Water sources, such as rivers, lakes, streams, and groundwater reservoirs, can be polluted and destroyed by agrichemical runoff produced by livestock factories, specially by animals’ waste that has not been properly disposed of or handled. For instance, in the Chesapeake Bay ecosystem, fecal bacteria and pesticides were found to be contaminating the waters of the bay.\textsuperscript{52} These pollutants were found to be subsequently contaminating the aquatic life, specifically the seafood fished from the bay, leading to potential issues of food poisoning by animals and humans who consumed it. Chemical fertilizers in the manure were also found to be disrupting the

\textsuperscript{48} Ibid.
\textsuperscript{50} Ibid.
\textsuperscript{52} Ibid.
bay’s ecology, causing a proliferating and overgrowth of algae and potentially harmful microorganisms.53

A similar case occurred in North Carolina as well, with the state being one of the biggest producers of pork in the United States. A botanist at North Carolina State University linked manure spills from hog factories to the presence of a lethal phytoplankton propagating in nearby streams.54 This phytoplankton, named *pfiesteria piscidia*, produces a powerful toxin associated with the massive deaths of fish populations in these polluted waters. The high levels of phosphates found in livestock manure help to stimulate the growth of this phytoplankton. It was also found to make people who consumed that water extremely ill, with side effects such as abdominal pain, festering sores, weight loss, and memory loss.55 These two cases are just some of many instances of how waste produced by factory farmed animals can leech into precious water sources, whether it be by direct contamination or by seeping through contaminated soils.

According to the United States Drug Administration (USDA), in 2006 alone, more than 335 million tons of “dry matter” waste was produced on livestock farms in the United States.56 And unlike human waste, animal waste is not treated for pathogens, making it an extreme health threat to humans and the ecosystems. Instead, livestock farms are required to use man-made lagoons to capture the waste and keep it from contaminating nearby habitats.57 But, this water is still filled with bacteria, viruses, non-therapeutic drugs and antibiotics, and other residue.58 And it is often found that these lagoons are not properly maintained, making the chance for land and water contamination a very probably occurrence. For instance, a study published in the

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51 Ibid.
55 Ibid.
57 Ibid..
58 Carolan, “The Real Cost of Cheap Food,” 97
American journal of Public Health concluded that over half of Iowa’s 5600 manure storage structure were leaking at rates above the legal limit.⁵⁹

Excessive fossil fuel required to produce, package, and transport meat is also a major sustainability issue. For instance, consumers don’t generally think of mileage in terms of food. Rather, that is reserved for planes, trains, and automobiles. But, the amount of carbon emissions that factory farming produces is quite shocking. In the United States alone, it is estimated that the average individual requires 2000 liters of oil equivalents per year to sustain their diet, and animals products, such as meat, dairy, and eggs, constituting for half of this use.⁶⁰ All in all, this makes up nearly 19 percent of the total energy use for the nation each year, with the average mileage of food traveling about 1500 miles to reach our plates.⁶¹

The livestock industry in the United States is clearly not sustainable thus far in its use of resources. And unfortunately, its impacts on air quality and its carbon footprint are not any better. It is estimated by the World Watch institute that 51 percent of the greenhouse gasses emitted yearly come from the livestock industry, compared to that of deforestation which only account for 18 percent.⁶² And red meat, such as beef and pork, on average, is 150 percent more greenhouse gas intensive than chicken or fish. This is because of the resources required to produce factory farmed meat give off greater amounts of greenhouse gasses, as well as the addition of the livestock giving off greenhouse gases in and of themselves.

In the case of factory farming, and for cows especially, the main greenhouse gas offender is methane. Methane is a big contributor to the warming of the atmosphere and overall climate change, as it is even more volatile of a compound a therefore creates an even greater greenhouse

⁶¹ Ibid.
⁶² Carolan, “The Real Cost of Cheap Food”, 97.
effect 23 times greater than that of carbon dioxide. And factory farming puts a lot of methane into the atmosphere. This is due to the high concentration of forage, such as grass, in livestock diets, causing animals to release lots of gas from their bowels. On average, a single cow releases 70 to 120 kilograms of methane per year. Some scientists suggest that a way to mitigate this problem could include switching the diets of livestock from primarily forage based feed to a more grain based diet. However, this would mean the expansion of grain crop in the United States in order to meet this demand, resulting in the additional land conversion, and increased use of fertilizers and pesticides, which also would mean the release of greenhouse gases as well, specifically carbon dioxide, methane, and nitrous oxide. Chemical fertilizers used for growing grains for livestock tend to decrease their methane uptake and increase their nitrous oxide production, thus increasing atmospheric greenhouse gas concentrations. Natural lands serve as carbon sinks and absorb atmospheric carbon dioxide, but when these lands become heavily cultivated, they tend to absorb less of these harmful chemicals and release more greenhouse gasses into the atmosphere.

Even pasture raised and “free range” livestock poses a threat to the environment, even though it may not hold animals in such concentrated areas. It still contributes greatly to climate change and land degradation. For example, one-fifth of the Amazon rainforest has been destroyed in total, 80 percent of which is due to making room for cattle pastures. The remaining 20% of which is used to grow soybeans, much of which are used to feed the cattle being raised in the pastures. Even here in the United States, in places such as Iowa and Minnesota, feeding cows

64 Ibid.
65 Ibid.
66 Ibid.
67 Carolan, “The Real Cost of Cheap Food,” 100.
in open pastures requires a large amount of resources, especially in the winter months, making it largely unsustainable. Hay production and transportation has high energy costs, and managing these land areas depends greatly on the use of fertilizers. In terms of production input, pasture raised and grass-fed beef is even more greenhouse gas intensive that beef raised in concentrated feedlots. Grass-fed cows take twice as long to reach the ideal slaughter size compared to cows in concentrated feedlots, and therefore require much more resources during their life, and produce more methane along the way.

The “lagoons” utilized by factory farms in waste control have also shown to emit methane gas, with livestock waste accounting for one-fifth of the methane the United States emits. Livestock manure also contributes to 65 percent of nitrous oxide emissions, another volatile greenhouse gas. This chemical is found mostly in the fertilizer used to grow feed for livestock. The livestock eat the feed, and the nitrous oxide becomes concentrated in their waste. And fertilizer used to support animal agriculture will produce almost twice as much nitrous oxide than that of crops produced for direct human consumption. Nitrous Oxide (N2O) has roughly 300 times the global warming potential compared to that of carbon dioxide (CO2). Some scientists and members of the factory farming industry may argue against these points by saying that the meat produced today in factory farms, per unit, has a lower greenhouse gas intensity then it did ten years ago, reasoning that the process has become more efficient and “environmentally friendly”. But, this point is rendered moot when one takes into consideration the sheer volume of meat produced today compared to that of ten years ago. The per unit of greenhouse gas intensity may be lower, but the amount of meat produced is much greater, therefore resulting in the

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68 Ibid.
70 Carolan, “The Real Cost of Cheap Food,” 97.
71 Carolan, “The Real Cost of Cheap Food,” 98.
Factory farming industry still having increased its production of greenhouse gas emissions overall.\textsuperscript{72}

The unsustainable nature of meat production has left major gaps in the ability of the US to ensure that that environment is in a stable and safe condition for near-future generations. Farmers are feeding animals using resources greater than what the regional land resources can sustain, which is not only detrimental to the United States, but for other countries as well which have to pick up our slack.

The system of agriculture in the United States used to support the factory farming industry is largely composed of a method called monocultures, or mono-cropping.\textsuperscript{73} This method involves industrial, single crop farming of “commodity crops,” such as corn, wheat, rice, and

\textsuperscript{72} Carolan, “The Real Cost of Cheap Food,” 100.

\textsuperscript{73} Carolan, “The Real Cost of Cheap Food,” 170.
soybeans. These “commodity crops” are planted at extremely high volumes, often upon millions of acres at a time, and most of the crops produced are used by factory farms to feed livestock.\textsuperscript{74}

These plants are genetically similar, and have grown increasingly common in their use throughout the world due to their quick and high yield rates. The problem with these monocultures is that they can only produce these high yields in specific conditions, and due to their genetic similarity, are highly vulnerable to spreading plant-based disease.\textsuperscript{75} If conditions change or crop epidemics strike, these crops are easily prone to mass die-outs, which can lead to famine and food shortages. Mono-cropping decreases biodiversity, which is essential in creating resilience in the food system in the face of climate change.\textsuperscript{76} These crops are dependent on massive amounts of synthetic fertilizers and pesticides to survive, a process which has been shown to strip the soil of its nutrients. Farmers grow these same crops year after year, but because the soil has been stripped of its trace nutrients, farmers often use chemical additives in feed to compensate in the animals’ diet. These additives include selenium, arsenic, copper, and zinc, and when improperly mixed, they can become toxic. These chemicals become concentrated in manure, then build up in the soil, leech into the groundwater, and can then contaminate both aquatic and land life.\textsuperscript{77}

With all these land, water, and climate change issues considered, the level of food security could be in the United States is in serious peril. Not only does factory farming require the unsustainable use of resources, as well as the use of dangerous contaminants and chemicals, but it also creates a great imbalance in the allocation of food in the United States. The majority of food grown in the US is put toward feed animals, only to yield inefficient amount of animal

\textsuperscript{74} Ibid.
\textsuperscript{75} Ibid.
\textsuperscript{76} Ibid.
\textsuperscript{77} Fox, “Eating with Conscience”, 39.
products. It would be much more efficient to give those food resources directly to humans. And if the United States were to move away from more heavily meat based diet, the amount of resources used by the factory farming industry would drop, creating a more sustainable way of life. But before this happens, the curtain must be pulled back on the industry, people must become fully informed on the detrimental impacts of factory farming, and our dependency on meat must be understood.

**Chapter 3: Our Relationship with Food: Analyzing Environmental Sociology in America**

In order to fully understand the greater scope of America’s heavy hand in the factory farming industry, one must also understand not only the logistics of meat production and demand, but the sociological aspects of it as well. The current state of the meat industry was not created and does not exist in a vacuum. It is rooted in the relationship that Americans have with food and their environment, or lack there-of. Today, there is a huge detachment between people and knowing where their food comes from, what is in their food, and what impacts that food has on their health and the health of the environment. Human association with food is very much rooted in how we interact and view our environment, which is why environmental sociology is such a crucial factor to consider in assessing the propensity of our dependence on factory farming. But first, it is important to understand what exactly environmental sociology is in order to understand its weight.
The emergence of environmental sociology came about in response to a need to acknowledge the role of the biophysical environment on mainstream sociology. Sociologists William Catton and Riley Dunlap developed and wrote a series of articles about 40 years ago defining environmental sociology based on an anthropocentric perspective. They argue that modern sociology viewed society as separate from the ecological world, rather than as a part of

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79 Ibid.
it. Catton and Dunlap wanted to develop a new paradigm where humans considered sociological processes within the terms of the biosphere where nature and society met.\textsuperscript{80}

\begin{figure}[h]
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\includegraphics[width=\textwidth]{figure6.png}
\caption{Figure 6: From Living in the Environment. G. Miller and Scott Spoolman. 17th}
\end{figure}

It is essential to understand and consider this relationship between man and environment because it speaks greatly to the way that humans interact with the natural world and the view we as individuals take on when considering our responsibility in protecting it. This is often referred to as environmental stewardship, or environmental worldview, and it can vary from person to person depending on their ecological outlook. There are a variety of environmental worldviews, built from asking fundamental questions: Who am I? Why am I here? What should I do with my life?\textsuperscript{81} And our answers to these questions informs how we see our role in the world and protecting it. Most people today have a human-centered environmental worldview. This is also known as an anthropocentric world view. In this worldview, people see themselves as apart from nature, believing that nature is something that can be managed and used to meet the needs of

\textsuperscript{80} Ibid.
\textsuperscript{81} Living in the Environment. G. Miller and Scott Spoolman. 17th
society. Often, this means using the environment for economic and capitalistic gain, where unsustainable practices are used to meet increasing material demands. The problem with that world view is that it leads to a disregard for the limitations of earth’s ecological processes, causing detrimental damage to precious ecosystems.

And so, in order to fully understand how society works and truly grasp a thorough understanding of modern sociology, we must stop looking at humans as separate from the natural processes of the earth, but rather as a part of them. Otherwise, we will continue to perpetuate the idea that it is appropriate to use our natural resources unsustainably.

In today’s hyper-industrialized, technology ridden world, this is easier said than done. With millions, if not billions, of people living in concrete jungles, rather than actual jungles, it can be easy to lose sight of the fact that we humans are indeed animals, having evolved from the same ecological processes that all other animals have as well. But somehow, our continued development as a species has drawn us farther away from our roots, especially when it comes to our food. We have now come to see agriculture and livestock as economic commodities meant to be dominated by man. And in doing this, industrialized food production has developed a total disregard for earth’s natural processes and limitations. And as food has become more about convenience than quality, we have stepped farther away from the fresh and natural sustenance that nature provided, and further into the depths of artificially produced reparations. Processed, packaged, and preservative filled foods now stocks the pantry of the modern American home. And more often than not, if you ask people where their food comes from and what exactly is in it, the void of knowledge on what we are putting in our mouths and the impact it has on the earth becomes even more prevalent.

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82 Living in the Environment. G. Miller and Scott Spoolman. 17th
The high meat consumption of today is without a doubt influenced by cultural factors, especially in the United States. According to Barbara Willard and her analysis of meat consumption in America, there are a few key aspects of western culture that have especially driven the market for meat, leading to the mass industrialized livestock industry that we have today. One of these factors is what she calls “The Myth of Human’s Dominion.” She explains how the idea of having dominion over the earth is rooted in religion, specifically Christianity.\(^8^3\) It is at times interpreted from the Bible by Christian followers that God gave humans the earth for their use. And so, eating meat is a way for human to exercise that right of dominion, furthering the role as master over nature. Nature, and all that comes with it, is seen as something to be conquered, rather than cared for.

The factory farming industry has used this historical narrative of dominion to its capitalistic advantage, right down to their advertising. The commercials and ads we see for beef and pork show cattle ranchers as the purveyors and responsible-keepers of the animals in their land, showing images of happy cows in a pasture, grazing on perfectly kept green grass. The National Cattleman’s Beef Association even began the Beef Industry Environmental Stewardship Award, and have developed similar public relations campaigns portraying cattle ranchers as the “Caretakers All”, which was used in third and fourth grade educational curriculum.\(^8^4\) But nothing could be farther from the common reality of unsanitary and enclosed factory farm conditions where animals spend their whole lives cramped into metal pens, pumped with antibiotics and never seeing the light of day. But, the meat industry spends millions of dollar each year to make sure that is not the image that people have in their head. Because the images of the happy cows

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\(^8^4\) Ibid.
help not only keep people in the dark about the reality of their food, but helps to justify our continued purchasing of meat every time we walk into the supermarket.

Willard notes that our hyper-consumption of meat is also rooted in our western view of gender. Historically, meat consumption has been masculinized and used as a depiction of gaining power and strength. In western culture, red meat and beef are portrayed as having ample sources of “vitality.” But, prior to the mass industrialization of the livestock industry, meat was actually somewhat of a rare commodity. This also lends to the idea of meat being a symbol of status. The ability to buy and consume meat is often associated with economic success, as it was historically a luxury food item. This is especially ironic now that hamburgers and chicken fingers can be purchased on dollar menus across America. But this transition from meat being seen as a luxury purchase to it being abundantly available shows just how much has changed socially with our perceptions of food. Now that everything is so readily available, why bother to think twice about what impact it has on the environment? We now put so little effort into purchasing meat that the connection between us and our food has become greatly weakened.

This idea of dominion over nature has most certainly rolled over into our capitalistic system as well. Willard writes, “The overarching understanding of meat eating that I uncovered is deeply rooted in the American economic and philosophical system of capitalism, consumerism, and free will.” Things that we see as non-human life, we see as a possible source of economic gain. It also perpetuates the idea that taking dominion over animals and nature is necessary for the progress of society and the economy. Meat is used by societies as a reinforcement of man’s dominion over nature. Willard argues that this then subsequently places

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86 Ibid.
87 Ibid.
too much faith in technological solutions to fix the environmental problems we have today.\textsuperscript{88}

That rather than scaling back on our consumeristic ways to help become more sustainable and preserve the limited natural resources we have, we seek more development to try and find solutions. And rather than considering the environmental impacts of eating meat and choosing to abstain from eating it, we use our complex of dominion to justify our purchasing of a hamburger at the drive-through.

This irony in this clear dissociation between man and meat is that, in reality, it seems that man is more dependent on meat than ever before. So much so, that we have become socialized to believe that consuming animal proteins is a necessity. This idea has crept into America’s social outlook quite insidiously. When analyzing the perceptions of meat shown in today’s media and publications, from advertisements to government nutrition recommendations, one can see that meat is portrayed as a fundamental aspect of social life and nutritional value.\textsuperscript{89}

And as if it wasn’t bad enough that these ideals have been drilled in to the minds of Americans, the cultural and social normativity of meat consumption is now infiltrating the rest of the world. Even in areas, such as eastern Asia, where high consumption of red meat, and especially diary, is quite uncommon, we see those culinary habits becoming more and more popular. And unfortunately, so are the diseases that go along with it. Since globalization has opened the door the cross-cultural experiences, American foods and food chains have been popping up all over the world. Asia especially has been a hotbed for this epidemic, as their rapid urbanization and development is often paralleled with more western-style diets.\textsuperscript{90} As a result, a

\textsuperscript{88} Ibid.

\textsuperscript{89} Arcari, Paula, "Normalised, human-centric discourses of meat and animals in climate change, sustainability and food security literature," Agriculture & Human Values 34, no. 1.

global diabetes epidemic has broken out. It is estimated that in 2010 alone, diabetes accounted for at least $367 billion in health expenditures.\textsuperscript{91} And unfortunately, in these lesser developed countries, the infrastructure to combat such a health issue on this large of a scale is nothing short of difficult.\textsuperscript{92}

So, why is no one stepping in to try and end this problem? It seems that every day, a new study comes out about rising diabetes rates, spikes in heart disease, and continued spikes in cancer patients seeking treatment year after year. Clearly, something is not working. And as consumers, citizens, and human beings, we would like to think that those who are representing us, especially out political leaders, have our best interest in mind. But, unfortunately this is not always the case. Because in the world of politics, and as exemplified in the next chapter, what is right is not always what is done.

**Chapter 4: The Politics of Food**

Underlying factors that influence what we eat and why we eat it may not be something that is obvious when we are putting our forks to the plate. But, as one can see, the reason for why meat has become such a staple in the American diet can be explained beyond a likening to taste. It has become a part of our lifestyle, so much to the point that being a vegetarian in the US is often considered alternative, or even a hindrance. Meat is everywhere. And its availability, as well as affordability is sometimes taken for granted. In fact, the tangibility of having meat at every meal is a luxury of the modern western world.

\textsuperscript{91} Ibid.

\textsuperscript{92} Ibid.
When people order a steak at a restaurant or buy a pack of chicken from the grocery store, they may consider certain things, such as the grade of meat or the cut. But, rarely does someone think about a more insidious aspect of their meat: the politics. Mixing meat and politics may sound strange, but in reality, the meat industry has its hand in American politics more so than one would think. Many of the political systems and operations happening today are greatly related to factory farming, and it is because of politics that Americans have such access to affordable meat in the first place. Whether the politics gave way to sociological influences, or vice-a-versa, is a bit of a chicken-or-the-egg situation. It is clear that they both offer push and pull when it comes to each other. But, in recent years, the politics of our food has become more prevalent than ever before.

Like many other large corporate industries, major factory farming business invest lots of valuable time and money into upping its political game, and they do this because government regulations and laws can have great influence over their everyday operations and subsequent financial profits. This is why, as will be further explored in this chapter, lobbying has become of the utmost importance for the factory farming industry, and is why many politicians and government officials are often seen to be working behind the scenes for the favor of the factory farming industry. The millions, if not billions, of dollars that factory farming invests in these political ventures does not go to waste. Money talks, and when it does, people listen, especially in politics. This increased governmental support for the factory farming industry has great influence over the food choices of the American people and helps the factory farming industry push their agenda onto U.S. diets.

The reality is, meat is everywhere in the United States. It is available to us at almost any place that sells food, whether it be beef, chicken, pork, or whatever other animal protein one may
fancy. Meat in America is easy to afford, which is why many people eat it for most meals of the day: bacon with our eggs in the morning, chicken in our salad for lunch, and a burger at dinner to finish off the day. As of March 2016, in the United States, a pound of ground beef sells, on average, for about $3.60 per pound and USDA choice steak goes for about $5.73 per pound.\textsuperscript{93} A pound of chicken breast sells on average for about $3.29 and pork chops sell for about $3.44 per pound.\textsuperscript{94}

The reason that meat is so affordable for Americans, and thus allowing it to become such a staple in the American diet, is because of various political factors at play, two of which are lobbying and subsidies. Subsidies are benefits given to an individual or a group, such as a business or corporation, usually in the forms of either cash or a reduction in tax payments.\textsuperscript{95} These benefits are meant to aid a business that would otherwise be disadvantaged or vulnerable to some type of economic burden.\textsuperscript{96} And the reason the government chooses to help alleviate these burdens is because the service provided in return is usually considered to be in the overall best interest of the general population.\textsuperscript{97} The money that the government is using for these benefits does not come from nothing. They are sourced from taxes, and that taxpayer money is then used by the government to fund subsidies.\textsuperscript{98}

There are many forms of subsidies given by the government in the United States, such as welfare, affordable loans for things such as houses and student loans, or reductions in healthcare

\textsuperscript{95} Investopedia Staff, "Subsidy," Investopedia, February 13, 2015, accessed May 15, 2017
\textsuperscript{96} Ibid.
\textsuperscript{97} Ibid.
\textsuperscript{98} Ibid.
payments for qualifying families.\textsuperscript{99} These are some of the more commonly known subsidies amongst taxpayers. Subsidies for the factory farming industry, and more importantly, the effect those subsidies have on consumer availability to meat, it much lesser realized. But in reality, those subsidies have become essential to maintaining the affordable prices of meat, and without them, prices would soar, turning that dollar menu into the fifty-dollar menu.

How these subsidies work is that they essentially pay farmers to grown food for factory farmed animals. It makes the corn and grain used for feed, as well as the water required to raise the animals and grow that food much cheaper than it would be if farmers had to pay for those resources at market value.\textsuperscript{100} These policies came about just before the mid twentieth century following a period of agricultural and economic difficulty brought on by unstable and unpredictable swings in the agricultural market.\textsuperscript{101} This raised questions of food stability and security within the US, bringing about a wave of policy to help mitigate such dangers to the national food supply chain.\textsuperscript{102}

And since that time, billion upon billions of dollars have been invested into the agricultural industry, especially on subsidies for raising animals for meat. Between 1995 and 2010, about two thirds of the $200 billion the U.S. government spends on food subsidies went to the meat and dairy industry, while less than one percent goes to fruit and vegetable agriculture.\textsuperscript{103} Meanwhile, only about $50 billions went to crops for human consumption and about $12 billion

\textsuperscript{99} Ibid.
\textsuperscript{102} Ibid.
\textsuperscript{103} Ibid.
for crops used in the production of ethanol.\(^{104}\) Farmers who grow fruits, vegetables, and tree nuts receive no regular direct subsidies.\(^{105}\)

As we know, factory farming and related agribusiness has led to a myriad of environmental problems. And as long as the incentive and ease of production from subsidies remains, it will remain extremely difficult to mitigate and fix the damage being done. But the link between cheap meat and environmental issues is often swept under the rug or kept in the dark like a deeply buried skeleton in the government and agribusiness’ closets. For example, according to general studies, animal agriculture is responsible for an average of 18 percent of the total greenhouse gas emissions annually emitted, even though some institution’s, such as the World Watch Institute, place this number at an upwards of 51 percent.\(^{106}\) 18 percent is also the estimated percentage of emissions given off by deforestation each year. Many world leaders and international organizations, such as the United Nations, have since collectively began to link deforestation with climate change and have begun public campaigns against loss of forests.\(^{107}\) However, there is still little to no support from such world leads and international groups for the mitigating of emission caused by factory farming and animal agriculture.\(^{108}\)

The United States Government has also been known to keep hush on the magnitude of this issue.\(^{109}\) In a report carried out by the United States Congress on nitrous oxide emissions stemming from the agricultural sector, emissions from livestock were only mention once.\(^{110}\) This is in despite of many studies that show factory farming contributing a significantly large portion

\(^{104}\) Ibid.
\(^{105}\) Ibid.
\(^{106}\) Carolan, The Real Cost of Cheap Food, 97.
\(^{107}\) Ibid.
\(^{108}\) Ibid.
\(^{109}\) Carolan, The Real Cost of Cheap Food, 98.
\(^{110}\) Ibid.
of nitrous oxide emissions, and further raises questions on what other knowledge is being kept behind closed doors and away from the public.  

Making certain crops and food more affordable creates an incentive to produce them, and even more so, an incentive to eat them. This is why subsidies are not only playing a controversial role in the perpetuation of environmental damage caused by factory farming, but it is also a major factor in the choices people make at the grocery store or the drive through, thus influencing the overall health of the nation. The indirect link between subsidies and public health is insidious, but when analyzed, becomes self-evident. When resources required to produce meat are more affordable than it would be to grow fruits and vegetables, an incentive is created. Subsequently, we find ourselves then consuming more of these cheap animal products derived from these few subsidizd crops.

As meat is more incentivized by these subsidies, it subsequently becomes a more prominent aspect and staple of the American diet. But it is no secret that increased consumption of meat, red meat especially, is directly related to a myriad of health issues. Aside from the ethical and environmental issues that come with increased meat consumption, the danger is poses to the health of humans is another cause for concern. Studies show that diets high in animal protein are linked to heart attacks, atherosclerosis, strokes, and certain cancers. It is also connected to diseases such as osteoporosis, gout, and an increased susceptibility to gall-bladder and kidney disease. Much of this is due to the high cholesterol, saturated fat, and iron content found in animal protein, which studies show humans are not even designed to consume and

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111 Ibid.
113 Ibid.
digest in the first place. Studies show that in wealthier, more developed nations where high meat consumption is much more common, such as western nations like the US, there are high rates of colon and breast cancer and heart disease related deaths. Meat eaters are also found to be twice as likely to develop dementia once they get older compared to their vegetarian counterparts.

And as if meat wasn’t harmful enough in and of itself, factory farmers do not exactly do their due diligence in delivering a clean and “natural” product to customers. Animals in these facilities are jam-packed into irresponsibly close quarters where diseases resulting from poor diets and beyond unsanitary conditions are easily spread. As a result, cattle, pigs, and chickens are pumped full of hormones and antibiotics. Farmers will also use chemical and dangerous substances to help animals grow faster. This is especially common in raising cattle. These synthetic growth hormones, such as trenbolone acetate, a synthetic testosterone, and zeranol, a synthetic estrogen, are commonly used. And these substances do not die along with the cows upon slaughter. They remain in the meat; which people then eat. This is why meat consumption has also been linked to early onset puberty in young girls and boys.

Over time, government agencies have eventually stepped in and placed protective laws and regulations on the use of these types of harmful substance in the interest of protecting the health of the public. For example, in Oakland, California, federal agents seized one hundred pounds of sausage made from cattle deemed to be what is known as 4-D meat: diseased, disabled, down, and dying. The use of 4-D meat is illegal for human consumption in the United States for the

\[115\text{Ibid.}\]
\[117\text{Fox, M. W, “Eating with Conscience: the bioethics of food,”}\]
\[118\text{Ibid.}\]
\[119\text{Ibid.}\]
\[120\text{Ibid.}\]
many health risks it poses, but it often still ends up in fertilizers, pet food, or livestock feed. But, there is much debate as to whether 4-D meat should still be used at all. In a study conducted by veterinarian Leslie Williams, it was found that dogs that consumed products made with 4-D often either got sick from Salmonella and E.coli, or became carriers for the bacteria.¹²¹

The use of the hormone clenbuterol, which was used in livestock to create leaner carcasses, had become a significant cause for concern due to the serious health risks it posed and medical abnormalities it was creating in children, leading to it being outlawed in 1995. But, prior to its outlawing, clenbuterol was a growth hormone used in the meat industry. The drug itself is a beta agonist designed to stimulate unnatural rapid growth in livestock.¹²² It is poisonous to humans, sending some who consumed it into the emergency room. It has been linked to everything from respiratory arrest and heart attack-like symptoms, to nausea and dizziness, breathing interruptions, and even death.¹²³

This all came to light as a result of a 1994 investigation into veal calves by Gail Eisnitz, whom at the time was the chief investigator for the Humane Farming Association based out of California.¹²⁴ What was also significant about her investigation into the use of clenbuterol was not only the horrific side effects of using and consuming the hormone itself, but also the government’s knowledge and response to the issue. Following the uncovering of certain documentation, she found that, in fact, the US federal government had been secretly investigating clenbuterol in calves in leading veal companies across the country, but had been withholding their findings from the public.¹²⁵ Why this information was withheld is unclear, and

¹²¹ Ibid.
¹²² Fox, M., “Eating with Conscience: the bioethics of food”, 118.
¹²³ Ibid.
¹²⁴ Ibid.
¹²⁵ Ibid.
frankly, raises suspicions. But, following Eiznitz’s release of this secret investigation and an independently conducted clenbuterol analysis, the government outlawed the use of the hormone. However, this does not mean the rules are always followed. The illegal use of hormones still goes unchecked and unnoticed. Fraud and disregard for public health by factory farming businesses and continued used of dangerous and illegal hormones is all too common. Clearly, there is a serious lack of transparency between the actions of the factory farming industry and the knowledge of the public.

The question then becomes; how can they get away with this? And how have they come to hold so much influence over the American public and government? Much of the answer to these questions lies in the millions of dollars factory farming industry leaders spend on lobbying.

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127 Fox, M. W., “Eating with Conscience: the bioethics of food,” 121
And in the land where money talks, lobbying is its mouthpiece. Lobbying is why the government continues to promote meat as part of a “balanced” diet, and is probably why it will continue to do so for a very long time. In 2015, the U.S. Department of Agriculture and the U.S. Department of Health and Human Services announces that it would not include considerations of environmental sustainability in its monthly report. This not only allows them to fail in recognizing factory farming as a major climate change contribute, but also gives way for them to continue to promote an animal protein-centric diet.

The estimated $894 billion dollars that the meat industry contributes to the US economy clearly has its political pull. In 2014 alone, the factory farming industry put forth about $10.8 million in contributions to political campaigns, as well as another $6.9 million directly put towards lobbying the federal government in their favor.

This close relationship between the government and factory farming has been blurring the lines of food and nutrition guidelines for decades. In 1977, the Senate committee report on nutrition recommended that Americans decrease their consumption of foods high in fat, namely eggs and meat. As expected, this resulted in deep disapproval from factory farm industry leaders. The American National Cattlemen’s Association openly disagreed with the Senate’s decisions, urging the Senate to review their claims, taking specific disapproval with the term “decrease.” The Senate abided by the request, and eventually released a second edition of the report more to the likening of the meat industry. The chair of the Senate committee, Senator George McGovern,

\begin{enumerate}
\item[130] Ibid.
\item[131] Ibid.
\item[132] Ibid.
\end{enumerate}
stated that he “did not want to disrupt the economic situation of the meat industry and engage in a battle with that industry that we could not win.” And since that time, factoring farming has had a hand in altering food guidelines and pyramids produced by the government year after year. Meat is continually promoted as an “essential food group” despite evidence of health issues related to meat consumption. Between the amount of monetary influence at its disposal and the fear of legal repercussion, it seems the meat industry has the government in the palm of its hand.

Chapter 5: Conclusion - Looking to the Future

Factory farming and its deeply rooted history into America’s agricultural sector have evolved into a major economic, political, and social power player in today’s modern world. And roots such as that are hard to dig up once they become too invasive. Brought about in parallel with an ever expanding nation, large-scale livestock cultivation has most certainly done its best to grow along with the population and desires of the people. So much so, that in the western world, eating meat at every meal is now the expected norm.

But we must ask ourselves if it is all worth it. At what cost are we continuing to support an industry that has been proven to wreak so much havoc on the health of the earth and its people? As one of the biggest contributors to climate change, pollution, deforestation, greenhouse gas emissions, and more, it is clear that this desire for meat is clearly working in contradiction for our desire to continue to live on a healthy planet. At some point, something has got to give. Our mindsets need to change, and we must stop looking at meat as a necessity or determinant of our cultural standing. And, clearly, we cannot depend on our political leaders to make the decisions to fix these problems for us. With their hands in the back pockets of the

133 Ibid.
factory farming industry, it is unlikely that politicians will do much to mitigate the environmental damage caused by the meat industry anytime soon. Rather, where the change begins is with the individual.

This is all a lot to digest, putting it lightly. And when faced with situations such as this, as individuals, we can feel powerless. The mere thought of trying to change something that has become such a powerful status quo seems too daunting to bear. But we need not carry the weight of this factory farmed world on our shoulders. Because, in fact, there are very viable and powerful steps one can make to fight the damage done by the animal farming industry, and they begin in our very own kitchens.

![Figure 8: Sabate and Soret, "Sustainability of plant-based diets: back to the future"](image)

Where we choose to spend our money is powerful, whether we realize it or not. As basic economics shows, markets are based on supply and demand, which is why were we place the demand speaks volumes. We have the ability to voice our opinions on factory farming simply by
the choices we make every day. Going to the grocery store, ordering at a restaurant, be it any
time we are faced with a decision to buy food, we are given the opportunity to put our
purchasing power as consumers to good use. Choosing a veggie option over a meat option may
seem like a minor decision in the moment, but imagine the impact it will have over time if one
continued to abstain from consuming meat.

By choosing to pass up on the animal protein, the ability for humans to make strides
toward treading more lightly on this earth becomes much more feasible. Studies show that a
plant based diet can result in major reduction on the carbon footprint of the individual person. To
put it into perspective, on average, by eating a plant based diet compared to a meat-based diet, a
person can save 162,486 gallons of water in a year, all while simultaneously cutting their carbon
footprint in half.\textsuperscript{134} The average meat-eating American has a carbon footprint of around 3.3 tons
of carbon dioxide emissions per year.\textsuperscript{135} For vegetarians, that number drops to 1.7 tons per year,
and for vegans, it is even lower at 1.5 tons per year.\textsuperscript{136} And in a report published by Joan Sabate
and Sam Soret, it is estimated that replacing animal protein with plant based protein sources can
reduce greenhouse gas emissions anywhere from 19\% to 30\% on a global scale.\textsuperscript{137}

And, as if these environmental incentives weren’t reason enough, the health benefits that
have been found to come about from plant-based diets appears to be the work of magic.
Extensive research has shown that a plant based diet is not only extremely nutrient dense, but can
help prevent, and even treat, many of the diseases and ailments brought on by a meat-based

\textsuperscript{134} Malorie Macklin, "Why Plant-Based Foods Will Win the Sustainable Food Race and Help Fix our
Broken Food System," One Green Planet, June 3, 2015.
\textsuperscript{136} Ibid.
\textsuperscript{137} Joan Sabate and Sam Soret, "Sustainability of plant-based diets: back to the future," American Society
Heart disease, stroke, diabetes, and cancer rates are found to drop in those who abstain from animal-based protein. Plant based diets are also shown to protect against autoimmune, bones, kidney, and brain diseases. Plus, by not eating meat, you are avoiding the possibility of consuming the harmful hormones and antibiotics that are injected into cattle during the process of raising livestock.

All evidence simply shows that an animal protein-based diet is not necessary for vitality. And if anything, is a hindrance to the ability for us as humans in thriving. Avoiding hamburgers and hotdogs will not cause your bones to crack and crumble. In fact, some of the greatest athletes of all time have reached their success all while following a plant-based diet. Tennis superstar Serena Williams, Olympic Gold medalist Carl Lewis, and NFL defensive end David Carter are just some of the athletes proving that the body is capable of incredible things while working on a diet free of meat.

And maybe all this is hard to imagine, which is part of the problem. We are so in the dark about the dangers that factory farmed meat poses that the impact it would have to not do so is often difficult to conceptualize or even consider. And even more so, we have been convinced by the government, big agribusiness, and societal norms that meat consumption is necessary for us to thrive. We need to eradicate this notion. It is time for the antiquated association of meat and prosperity to be cut.

Going beyond personal impetus to shift society toward a plant-based diet may still be necessary, however, even in the face of all this evidence. There are still changes that could be, and should be, made to our agricultural systems, especially at the government level, that could

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139 Ibid.
140 Ibid.
have compelling effects on the damage from factory farming and help promote decreased meat consumption on a larger, more powerful scale.

Firstly, just by altering the subsidies that create incentives for farmers to engage in factory farming, the ability and desire to farm and purchase meat with diminish. In the same way money talks in terms of where we as consumers choose to spend our money, it can also speak volumes right back to us. If perhaps consumer choice is not enough in and of itself, making meat more expensive by removing subsidies on water and grain used for raising livestock will make the decision for us. In one study conducted to estimate the cost of a hamburger without the existing taxpayer subsidies, it was found that dollar menu cheeseburgers, in actuality, cost way more than a dollar. After calculating all the hidden costs covered by subsidies, the study placed the value of that cheeseburger at over $200.\(^{141}\) This number seems insane, but it is more or less true. Many other similar studies place the true market value of items like cheeseburgers anywhere from around $50 to $200 as well once subsidies are removed.

In addition to proposing a push toward pricing meat at its truer cost, lowering the prices of plant-based, low fat foods could help promote more environmentally friendly choices. Studies show that consumers will eat healthier food if it is made more affordable.\(^{142}\) In one study, just lowering the price of low-fat snacks by a matter of 10, 25, or 50 cents had a significant impact on consumer choice.\(^{143}\)

To be clear, removing subsidies isn’t about taking away the free-will of consumers to purchase meat. It’s not supposed to be some sort of cruel and unusual punishment. It is simply leveling the playing field. As previously explained, farmers who grow fruits and vegetables

\(^{141}\) Carolan, *The Real Cost of Cheap Food*, 102.
\(^{142}\) Carolan, *The Real Cost of Cheap Food*, 74.
\(^{143}\) Ibid.
receive no direct subsidies from the government, putting them at a disadvantage when compared to farmers who choose the livestock farming route. By making those subsidy levels equal, the true cost of fruits and vegetables compared to the true cost of meat becomes more equitable. This does not mean we wipe clean all agricultural subsidies overnight. The economic repercussions would need to be weighed in order to devise a plan on making this transition. Perhaps it would happen quite suddenly, or perhaps it would need to happen gradually over time. Either way, the end results could have major environmental benefits for years to come.

Another viable solution to this problem comes in what is called a “reflexive law” solution. This proposed plan of action comes from Warren A. Braunig in his report published by the New York University Law Review. In his piece, aptly titled “Reflexive Law Solutions for Factory Farm Pollution,” Braunig proposed a clearing of the smoke and mirrors masking the effects of factory farming on the environment from the knowledge of the consumer. Frankly put, reflexive laws work by way of injunction.¹⁴⁴ These policies require the public disclosure of information, whether it be in the form of hazard warnings, raw data, or environmental labels.¹⁴⁵ According to Braunig, they work by having a “shaming effect” on polluters, thus pushing them to think twice when it comes to their practices. Simultaneously, these policies also empower the consumer, along with business partners and shareholders, to show their disapproval with factory farming pollution and make more environmentally conscious investments.¹⁴⁶

By increasing transparency, consumers are then able to make increasingly informed decisions regarding their food purchases, now able to take into consideration not just the nutritional value of their food, but the environmental impacts of it as well. An added benefit of

¹⁴⁵ Ibid.
¹⁴⁶ Ibid.
reflexive laws, according to Braunig, is that they are faster and cheaper to implement than command-and-control regulation, and he feels reflexive laws would create and more politically copacetic approach to mitigating the environmental pollution caused by factory farming.\textsuperscript{147} This is especially important to consider when looking at the weariness of government to create any kind of indignation towards factory farmers, given their close relationship. This sufficient approach could be deemed much more tolerable by all parties.

The most important thing to remember is that a solution is possible and our efforts are not futile. And what should be taken away from all this is that there is hope for change. Something can be done to fix these problems. And, fortunately, it starts with you. It is people who have the power to bring about change that can make the world a better place for those who come after us. And we owe it to them to do so. And we owe it to the animals, who suffer needlessly.

We face conflict every day as humans. Stressors that enter our lives, from unstable political climates, to environmental issues, to personal problems. It can be overwhelming. But we must remember the power we hold in the choices we make. No one individual is perfect. But we do the best we can, when we can. The ability to change this problem is more than possible. In fact, its right at our fingertips. It’s at the checkout line at the grocery store, it’s how we cast our votes, it’s in the small choice we make each day. And, with some solidarity, those small choices can add up to a collective and radical advancement for environmental justice and overall good.

\textsuperscript{147} Ibid.
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