

First Year Seminar Research Paper

Implications of pig factory farming

A concise study on how pig factory farms impact animals, humans, and the environment.

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16th November 2011

Abstract:

Factory Farms have become the norm concerning the way humans raise meat for their consumption. However, the transition from family farming practices to modern technological farming practices that has taken place within the last couple of centuries, has profound impacts, not only on the lives of the animals in these farms, but also on human beings and the environment. This research paper seeks to evaluate this transition with respect to its implications on pigs specifically, and also on humans and the environment. Consequently, the research paper has been broken into three different parts, tackling the three core themes of the question. Sub-divisions to each main point will be evaluated. The conclusion reached is that factory farming has adverse effects on the pigs, humans, and on the environment. A more humane approach towards raising animals for consumption and long-term thinking concerning waste management needs to be considered, in order to prevent the current negative externalities in the future.

Table of Contents:

<i>Introduction</i>	pg 1
<i>Impacts on pigs</i>	pg 1 - 3
i) Introduction.....	pg 1
ii) Breeding-Gestation.....	pg 1 - 2
iii) Farrowing.....	pg 2 - 3
iv) Nursery Pigs.....	pg 3
v) Grow-Finishing.....	pg 3
Conclusion on the impacts on pigs.....	pg 3
<i>Impacts on humans</i>	pg 4 - 6
Introduction.....	pg 4
i) Direct impacts on workers.....	pg 4 - 5
a. Toxins.....	pg 4
b. Psychological implications.....	pg 4 - 5
ii) Indirect impacts on humans.....	pg 5 - 6
a. The intake of chemicals given to the pigs.....	pg 5 - 6
b. Moral obligations.....	pg 6
Conclusion on impacts on humans.....	pg 6 - 7
<i>Impacts on the environment</i>	pg 7 - 9
Introduction.....	pg 7
i) Air pollution.....	pg 7
ii) Water pollution.....	pg 8
iii) Soil pollution.....	pg 8 - 9
Conclusion.....	pg 9

Conclusion.....pg 9 - 10

Introduction:

In 1868 Darwin recognized that there are “two major forms of domestic pigs, a European (*Sus scrofa*) and an Asian form (*Sus indicus*)”, which were cross-bred to improve the quality back in the early 19th century (Bhat 8). In subsequent centuries, a rising demand for pig meat in the Western hemisphere of the world necessitated increased breeding of pigs of the most valuable genetic pig species variety. This led to the development of so-called “factory farms”, in which livelihood is raised in a “building with facilities to manufacture a uniform product, without concern for individuality”¹ (Kriby xi). Traditional farms, as described by Ted Steinberg, used a system of farming that ultimately was not geared towards the profit- and time-maximization that is currently present in the pig factory farming sector. This transition from many small farms to a handful of very large farms (Background of Pork Production) within only a couple of centuries has profound impact on the animals, humans, and on the environment.

Impacts on pigs:

Directly impacted by this transition from traditional farming to factory farming are the hogs in these factory farms. Ted Steinberg’s history book on the environment in the United States of America described a scene in which hogs lived with the population in the city of New York. Steinberg also highlights in this chapter how the small family farms outside of the city would create a cycle of no-waste, with them selling meat and vegetables to the urban population. However, beginning with factory farming chickens in 1923 through Celia Steele (she increased her stock from 50 to 250,000 within 12 years) (Foer 104 – 105), factory farming techniques changed drastically. “The industry as a whole bears little resemblance to the diversity hog production system of old” (Starmer and Wise) and this includes the lives of the hogs on these farms.

According to the USDA/NASS report in 2006, there were 60 million hogs raised in the United States of America alone (Starmer and Wise). There was a great change in animal production and it saw “an expansion in concentrated animal feeding operations” (Gibson, Azzam, and

¹ Note that this is a combination of the definitions of “farm” and “factory”. Nevertheless, the meaning is clear, even though the author does not use a direct definition for “factory farming”.

Schoengold). This means that the amount of area per hog has decreased substantially over the past years. The process of growing hogs has become technical and thus the process of raising a pig has been separated into four different phases by the U.S. Environmental Protection Agency Breeding-Gestation, Farrowing, Nursery Pigs, and Grow-Finishing (Pork Production Phases).

The first phase is the “Breeding-Gestation”, in which the sow is in “heat”, meaning that she is willing to mate with a boar for reproductive process. “In confinement buildings, boars are often rotated between sow pens to make sure that all sows are bred while they were in heat” (Pork Production Phases). This highlights the mechanical and ‘orderly’ approach towards breeding. The sow is confined to the sow pen throughout this process. Consequently, the sow is not only vulnerable to the boar but also the human workers (as will be discussed later in the paper). The gestation length is 113 to 116 days (Pork Production Phase). Then the second phase starts with Farrowing.

The “Farrowing pen” is an area in which the sow is restricted to a certain space that is “so small that the sows cannot turn around” (Foer 170 – 171), which is justified for the protection of the litter (a group of piglets) so that the sow does not accidentally sit on the piglets and kill them. In a Farrowing pen, the sow is restricted to a total area of about 1m², which is approximately 3.28 ft² (Appendix 1). Other reasons provided for such a restrictive design are that it provides safety for the stockperson, allows easy access, treatment, and management of the sow and the litter, and is considered economies of scale due to the reduced space in the farrowing room (Farrowing House Design). These arguments, however, discount the extent of the reduced animal welfare which comes with the reduced amount of space available to the sows. PETA has shown in a number of different videos that sows, due to lack of stimulation, are essentially going crazy (PETA video). Additionally, it is shown that sadism and brutality towards pregnant sows, piglets and grown pigs is present at factory farms (Foer 181 – 188), as reports describing teeth clipping and castration of piglets without pain-killers to “ramming an iron pole a foot deep into mother’s rectums and vaginas” illustrate (Foer 181). With the pigs confined to a very small space, there is no escape for them from the mutilations inflicted by human beings and this is considered by many to violate the basic moral dignity of animals (Miller 93 – 97). Furthermore, a study concluded

that the disease rate is higher among sows in crates versus those loosely housed in groups (Kirby 189).

The third phase in the pork procedure process is nursery of the pigs after they have been weaned. “They are kept in a temperature-controlled environment, usually on slotted floors” (Pork Production Phases), meaning that the pigs are kept in a confined building for their nursery time and even through their fourth phase, after which they are sold. “Pigs are normally given around three square feet of space each and provided with ready access to water and feed” (Pork Production Phases). Pigs have very little space and “a single football-sized hog house can contain 800 to 1,000 hogs” (Hog Watch).

Once they have reached the age of about 1 month, the pigs are moved towards a “Grow-Finishing” building to reach market weight of 250 – 275 pounds (Pork Production Phase). “Marketing normally occurs at five to six months of age” (Pork Production Phase), meaning that within 20 to 24 weeks the pigs have reached their market weight to be sold to the slaughterhouses. During this time, the pigs are allowed to eat as much as they want but the food is limited to certain types that enhance the growth of “consumer-valued” parts of the pigs.

The German philosopher Immanuel Kant argued that “we have [an] indirect moral obligation to it [animals] because we have direct obligations to humanity” (Bernstein 150). This means that human superiority should not be used to inflict unnecessary pain on any living being. However, the breeding procedure over the past centuries has led to the pigs being unable to survive without the technological “protections” around them. “We are breeding creatures incapable to surviving in any place other than the most artificial of settings” (Foer 159). This undermines the unnatural development of the pig species. Furthermore, these species are unhealthy and sick their entire lives. Antibiotics are used to ‘prevent’ an early death of the pigs prior to market weight and growth hormones are injected to speed up the growth of the pigs (Kirby 224). This reality is particularly concerning given that “scientists say pigs have the intelligence and awareness of three-year-old children” (Kirby 224).

Implications on humans:

Humans are affected by pig factory farming techniques directly and indirectly. Workers in the pig factory farms, this includes the farmers and the people working in the slaughterhouses, are directly impacted by changes in the pig factory farming system. Consumers of these meats are indirectly impacted by the pig factory farms (the environmental impacts on humans will be discussed under the subsection of *Impact on the environment*). As such it is necessary to consider how factory farming impacts human well-being and welfare, as well as how it impacts animal welfare.

We will begin discussing the direct implications on humans. The farmers and workers in the pig factory farms are exposed to a number of toxins that are present due to the manure. The whole set up of the pig factory farm with the slotted floor means that the manure from the pigs is constantly present. More specifically, pigs' manure will flow to a level below them. This level is supposedly cleaned regularly but may not be in reality. Air quality is a huge problem for many workers because the manure decomposes into Hydrogen Sulphide which is toxic to humans. Small particles enter the air and the lungs, causing irritation of the lungs (Beyond Factory Farming). Health risks such as increased risk of asthma are associated with living close to a factory farm (Foer 112, 175). Also the emitting of toxic hydrogen sulfide fumes from the manure pits led to the death of 19 people in 1998 (NRDC).

Also a study conducted by Temple Grandin argues that "ordinary people can become sadistic from the dehumanizing work of constant slaughter" (Foer 231). The fact that killing and cutting a cow, for example, takes only 7 min highlights the speed and the 'manufacturing' style behind slaughterhouses. The main problem, next to the physical health, is the psychological and emotional health of the workers. The dehumanizing nature of the work surrounding factory farmed animals leads to emotionally troubled workers. It is not unlikely for an animal to be skinned alive, with estimates suggesting that up to 4 million cows are skinned alive within the United States each year (Foer 228 - 233). Furthermore, workers in so called CAFOs (Concentrated Animal Feeding Operations) not only treat the humans inhumanely but their work includes cutting off the tails of piglets without any anesthetics (Pollan Omnivore's Dilemma 218-219). This is very painful for the piglets and their frightful squeaks of pain (PETA video) emotionally damage the workers and cause psychological ailments such as anxiety, anger, and depression.

Everyone is indirectly impacted by factory farming techniques. The most unknown and undocumented impact are caused by eating the meat of pigs raised on factory farms. Avoidable food-borne illnesses estimates go up to 76 million cases each year in America (Foer 139). This means that each year in the United States of America alone 76 million people get sick as a direct result of eating contaminated food. This not only impacts the health of the general population but also has wide economic impacts due to employees not being able to do their jobs. Thus these avoidable food-borne illnesses economically damage the country and, as Foer points out in his book, it is irritating that there are no regulators stepping in to reduce the cases and to demand monetary compensation from the meat-processing plants. Moreover, it shows that the current system concerning hygiene policies is not applicable to reality (Foer 154 – 156).

Another wide-range health issue is the non-therapeutic use of growth hormones, antibiotics, and GMOs (Genetically Modified Organisms) in these CAFOs. Antibiotics are widely used in factory farms (Kirby 265 – 266) in order to confine so many pigs to such a limited space (Klotins). Also, as noted earlier in the research paper, the current breeds of the pigs have nothing in common with the old, traditional breeds of pigs. They have a very weak immune system, meaning that without these medications and the artificial world created around them these pigs would not be able to survive. In his book, David Kirby describes a scene in which the animals have to live in conditions that ultimately make them sick (36 - 39), meaning they rely on the pharmaceutical companies to prevent an 'early' death. It goes on that the sanitary procedures were there not to protect the humans from pig-diseases but the other way, meaning that anything could kill these pigs, showing essentially how weak their immune systems are.

However, one of the greatest problems with the range of hormones, antibiotics, and GMOs used is that there are no long-term studies available considering the effects of these chemicals on humans. The WHO (World Health Organization) determined that “dietary factors account for at least 30 percent of all cancers in Western countries and up to 20 percent in developing countries” (Cancer Project). There have been studies that “showed that vegetarians were about 40 percent less likely to develop cancer compared to meat eaters” (ibid) and a number of these have been developed that should explain this

'phenomena'. One of the possible answers is that people are harmed by the intake of different traces of chemicals from pharmaceuticals through the meat of the pigs (and other animals). As Foer highlights in his book: "we are conducting a big experiment on our children by giving them a cocktail of chemicals without having established any specific research towards their effects on the human body" (Foer 139 - 140). "The UCS (Union of Concerned Scientists) calculated 24.6 million pounds of antibiotics were fed to chickens, pigs, and other farmed animals, only counting *nontherapeutic* uses. They further calculated that fully 13.5 million pounds of those antimicrobials would currently be illegal within the EU" (Foer 141). Humans need to get antibiotics prescribed by a doctor but no studies are conducted on the 'chemical cocktail' impacts absorbed through the intake of meat products.

Moral obligations and emotional denial have an impact on the meat-eating population too, even though this is more sub-conscious. What is striking is how humans are very selective when coming to the animal that is consumed for meat. Controversies surround the general idea of factory farming units, which some view as ethically right (Miller 62 – 73) while others view it as unethical and morally wrong (Miller 85 – 89). This goes back to the question "what, and how, do other animals feel?" (Johnson 108). Ethics is a very personal topic and it impacts people in different ways, because there is not general social consensus for it. However, Foer poses the question "why do we not eat dogs", to which most people react with shock and disgust (Foer 24 – 29). But Foer shows through this that we humans have developed a hierarchy in the animal world based on personal preference. Humans, thus, decided that from the large pool of potentially edible animals, only a handful of them should be eaten in western society. Therefore, all things considered, there is an ethical and moral impact from factory farming and eating meat in general.

It has become evident that factory farming units have a dire impact on the human population. This impact is directly evident at first glance. Physical and psychological implications from working at these plants have led to a rise in diseases and changes in the emotional well-being of the workers. This has profound impacts that are not confined to the individual person but actually lead to an economic loss for the country and a financial burden placed on the health sector. The diseases that come from these CAFOs can be reduced through an increase in hygiene, but, as Foer discovered, the standards are very low to guarantee the quality of the meat. Moreover, the chemical intake from eating factory

farmed meat in general has not been proven un-harmful through long-term scientific studies. As such, there might be medical risks involved which are not being considered currently.

Impacts on the environment:

Some of the many arguments used against factory farming units and CAFOs are based on the environmental implications from its practice techniques and their practice of managing the waste produced. Waste control is one of the big problems in current factory farming units, because of the sheer number of pigs present (on average about 10,000 per farm) (Factory Hog Farming) and the amount of manure present (a pig at 200 lbs produces about 13 lbs per day = 130,000 lbs of manure per day for an average farm) (Joshua Baldwin). There are different environmental concerns that can be broken into three categories: air, water, and soil pollution.

Air pollution is a big issue in modern times because air pollution is not constrained to a certain area. This is the reason that air pollution has so many negative impacts and there are no conventional methods to reduce it immediately. Air pollution can only be tackled in the long-term and, once it occurs, its negative impacts can only be managed but never stopped. One of the main problems coming from the pig factory farms, and from CAFOs, is that the way of treating the waste and manure generated has adverse effects on air pollution. Traditionally “swine manure was handled as a solid” (Common Manure Handling Systems), which means that the manure needed to be collected, stored, and allowed to be composted over a couple of months. Now, pig manure is often stored in so-called “Liquid Manure Storage” or in “Lagoons” that are exposed to the environment. This means that fumes emitted from these places directly enter the air which causes air pollution. Air pollution from pig manure takes different forms with the most prevalent being either dried particles or chemicals entering the air. Foer reported in his book that different respiratory diseases such as asthma increase substantially in the population living near a factory farm (Foer 112). Chemicals added to the manure to “reduce odor” (Common Manure Handling Systems) change the ‘organic’ composition of the manure and these chemicals, when entering the air, have adverse effects on the environment such as acid rain, etc.

Water Pollution throughout the United States has been connected to factory farms and to the Manure handling procedures. The main problem with the current constructions is that they might be leaking into the water eco-system or heavy rainfalls might lead to the handling system overflowing uncontrollably. The problem when manure leaks into the water system is not only the contamination and possible spread of diseases to humans (NRDC) but also even more profound impacts on the water eco-system. The main problem comes from the nitrates in the pig manure. When they enter the water system, it leads to an algae bloom that uses up most of the oxygen in the water, leading eventually to the death of other living organisms (namely fish) in the water eco-system. This process is called 'eutrophication' in the Chemical and Biological field. A spill of 25 million gallons of manure in 1995 caused the death of 10 million fish (NRDC). These shocking impacts on the waters eco system take years to reverse. It is estimated that 35,000 miles of river systems in 22 states have been contaminated through the leaking of manure (Foer 179). Another reference to the air pollution is that Ammonia, which forms through the dumping of nitrogen in water, can travel for up to 300 miles through the air, re-enter the water or ground system and cause further harm to the system (NRDC). Furthermore, which highlights the failure of the current construction of the open-air waster lagoons (Common Manure Handling Systems) is that these "are prone to leaks and spills" (NRDC). This means that there is a design problem towards handling the manure from the CAFOs and it shows that the government is currently not willing to tackle the problem decisively.

The last sub-topic about the environmental impact of pig factory farms is soil pollution. Soil pollution is another delicate issue when coming to spills and leaks of manure. The problem here, as with air and water pollution, is that it is not concentrated at a specific area that can be cleaned to prevent further impacts on the environment. Traditionally, manure would be used and then applied as a fertilizer on the soil to re-enter nutrients to the soil (Steinberg 52 - 53). Applying manure to the soil has positive impacts on the soil it gives nutrients, especially Nitrogen and Potassium, back and improves the fertility of the soil. However, side-effects such as "the addition of heavy metals, organo-chlorines and too many salts" (FAO) on the soil can be categorized as soil pollution, due to their adverse effects on the soil's pH balance and mineral balance. Furthermore, it should be noted that the soil is composed of more than a handful of minerals that it would gained from the manure fertilizing and 'mineralization'. "The main dangers of the application of manure are runoff manure or

manure components into surface water and leaching of nitrate and P (Phosphorous) into the ground water” (FAO). This statement ties back in with the previous paragraph in which the different problems with eutrophication are outlined. Also it is not easy to prevent leaching of the soil or to clean up after applying intentionally or accidentally too much manure to the soil. Soils in the Netherlands have become saturated with a phosphate compound, meaning that the soil can no longer take in more Phosphate and leaching occurs (FAO). This, again, leads to phosphate entering the water system and subsequently into the surface water, which then leads the phosphate to enter the air system.

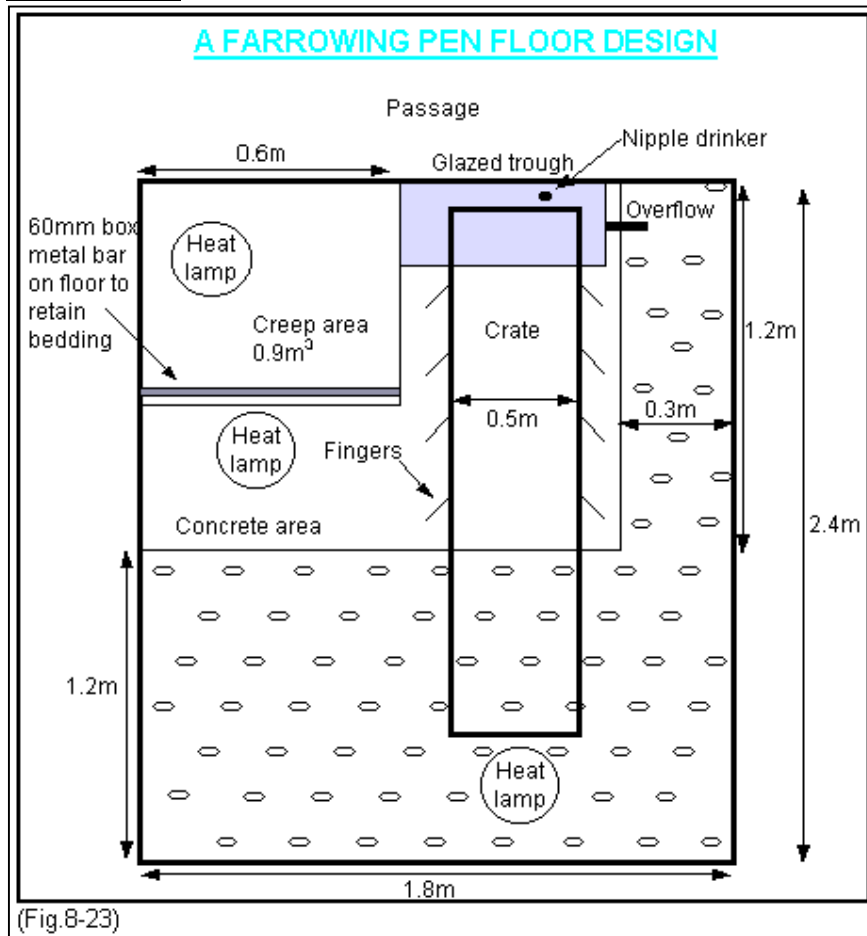
It is clear that the impacts on the environment, even though addressed in this research paper in three different sub-topics, are all intertwined. Therefore, when manure is leaked or spilled, it pollutes the environment in three different ways (through air, water, and soil) and, once initiated, it cannot be stopped. Therefore, it is very important to prevent these events from happening because of their adverse effects on the environment. The main issue involved is that it is not possible to clean up after a spill or leak has happened and the contamination might stay for an uncertain amount of time, continuing to impact the environment in a negative way.

Conclusion:

Throughout the research paper, the effects of pig factory farming have been expressed. The main positive claim that CAFOs provide cheap food weighted against the negative and unforeseen effects for the animals, humans, and the environment seems very weak. One of the main reasons that the price for meat has been declining over the past couple of decades is not only because of the economies of scale, working for the factory farms, but that the negative impacts are externalized to the environment and the public tax payer. The pollution that takes place in modern times is not cleaned up by the company who caused it but most of the time by the government, meaning that tax money is spent on cleaning up the ‘dirt’ of a private company. This externalization is a main drive for the company to not improve their handling of the manure. Regulations and laws are weak, sometimes not present at all, and this needs to change in order to improve the environmental impact and to protect the population from potentially harmful diseases and infections. Animal welfare too should play a more important role in government legislation because the way animals are treated reflects on the morals and ethics within one’s society. Also, animals have feelings and

emotions that are not respected through this system. Animals are abused and they should not go through a miserable life prior to their death. Therefore, we need to apply a more humane way of raising and killing them. All the points discussed highlight that the current system is flawed and that we need to change it before the negative effects will become irreversible.

Appendix 1:



This is considered a 'normal' outline for a farrowing pen, with the sow confined to the Crate (total area approx. $0.5\text{m} \times 2.0\text{m} = 1\text{ m}^2$).

Picture taken from the website <<http://www.thepigsite.com/pighealth/article/227/farrowing-house-design>>.

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