

Sociological Analysis of GMOs

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Faculty Introduction

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In “Sociological Analysis of GMOs,” Victoria Rhinehart combines a comparative sociological analytical framework with a qualitative case study methodology to investigate the case of genetically modified organisms (GMOs) in the agrifood system. GMOs are a controversial issue in society today. It is the most divisive aspect of agricultural production with powerful supporters and strident social movement opponents. Victoria does an excellent job of applying the contrasting sociological frameworks of structural functionalism and conflict theory to illuminate the complexities of this issue. In doing so, Victoria advances the key sociological discourse on the difficulties of balancing economic freedom and social stability.

Abstract

In this paper, I employ a sociological conceptual framework with a qualitative methodology to interpret the case of GMOs as a way to provide informed discussions regarding the balance of social stability with economic freedoms and personal freedoms. This paper also explains the importance of equal access to knowledge among societies. This topic is important because GMOs are a controversial social issue, and there still needs to be scientific study on the matter. The sociological conceptual framework I employ focuses on a comparison of structural functional and conflict theory interpretations of GMOs. Data covered in this analysis were gathered by database searches and Google searches. I conclude that the conflict perspective is the more efficient way of examining and explaining data on GMO usage when related to personal and economic freedoms.

In this analysis, I employ sociological conceptual frameworks with qualitative methodological practices of collected data and build a case study through online document analysis. The data covered in this analysis are gathered from online article databases and Google searches. To give readers a better understanding of this analysis, I first breakdown the theoretical properties of both structural functional and conflict perspectives. My method to collect data on GMO [genetically modified organism] opinions is through the use of a qualitative case study of online document analysis. Research results were coded into three sections of data, which include a definition of GMOs, the history, and the popular opinions of both GMO advocates and opponents. Through comparing sociological interpretations from theorists such as Marx (2012 [1867]), Mills (1959), Spencer (1895), Parsons (2013 [1937]), and Durkheim (1997 [1893]), I provide an analysis of GMOs where I connect sociological perspectives to the popular opinions surrounding their use. Through this approach I will illustrate how structural functional and conflict concepts apply to the data in the case. In conclusion, this analysis provides informed discussion on the study of balancing economic concerns and personal freedoms, all while maintaining social stability.

Theory and Methods

The theoretical backing of this sociological analysis of GMOs used two perspectives: structural functionalism and conflict theory. According to Lumen (2017:2), “Structural functionalism views society as a machine with multiple parts working simultaneously to maintain societal stability.” This sociological perspective views science as valuable for the resolutions of societal issues. Through the progression of science, societies have the opportunity to advance. The second sociological perspective is conflict theory. To breakdown conflict theory, one needs to understand inequality. Conflict theory suggests that power and control are unequally proportioned between groups of people due to factors such as, economic status, gender, race, culture, and religion that make society stratified” (Crossman). This stratification can lead to unequal access to institutional structures; thus, tension and conflict between each status group can arise leading to social change or revolution.

The methodological framework of this GMO analysis uses qualitative research and case study documentation analysis gathered through web searches. Qualitative research methods are used to “provide the foundations for quantitative research by studying popular opinions, trends, and reasoning through the use of data analysis, interviews, and participant observation” (Wyse 2011:1). I also use case study document analysis to collect data on GMOs. This involves “providing sufficient contextual information about the case, including relevant biographical and social information data collection site(s), or other relevant descriptive information pertaining to the case and situation” (Tesol International Association 2016:2). For data collection, “Reasons why GMOs are bad” and “Reasons why GMOs are good,” were Google searched, then selected articles from the first page of results with similar headings in the titles were chosen. After selecting articles and printing them, I reviewed and coded them into three categories: history, support, and oppositional data.

The Case

History of GMOs

To analyze this controversial topic, one must understand what Genetically Modified Organisms are: plants, animals or microorganisms that have had their genetic material altered in a way that does not occur naturally (Zeratsky 2016). Genes of other species of organisms are taken and added to modify another organism to obtain some desired characteristic. There is some GMO use in agricultural and medical fields; however, GMOs are largely used to produce food. According to Zeratsky, there are potatoes that are unable to bruise, apples that brown at a much slower rate, and tomatoes that have been given a gene from a cold water flounder to produce anti-freezing characteristics. Statistics indicate that 90% of the United States’ corn, soy, cotton, canola, and sugar beet crops sold contain GMOs (Lallanilla 2016). The ability to use GMOs is highly controversial—for some it is a scientific breakthrough; for others it is a horrific idea—and as with most things each side has its supporters and non-supporters.

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Non-supporters express concern for health factors along with environmental concerns. This group feels there is simply not an adequate amount of research to prove GMOs are harmless. Supporters, on the other hand, believe there is no threat to human health or the environment based on research performed by biotechnological companies. Kelly (2016) suggests that one way to answer the question is to have “better transparency between biotechnology companies and consumers. To accomplish this, companies’ need to provide clear, informative labeling to build trust with consumers while also educating them to make informed decisions” (2).

Advocates of GMOs

This supportive side of the GMO controversy praises scientific advancement. Advocates are convinced GMOs are not only harmless to humans and the environment, but are also good for them. The most well-known stance for supporters is that GMO can be used to stop world hunger. The Food and Agriculture Organization of the United Nations gives the example of Golden Rice as a solution to world hunger and Vitamin A deficiency, which can cause blindness. This type of rice, and some wheat plants, are genetically modified to produce higher levels of Vitamin A, which would lower the vitamin’s deficiency in third world countries (Food and Agriculture Organization 2003). With the added nutritional value, the use of GMO grain could help to lessen the likelihood of disease and other health issues in developing nations. There has also been medical advancements through the use of GMOs, such as vaccines, and organ and tissue replacement. According to Phillips (2008), a breed of goat was genetically modified with spider silk proteins to produce milk to aid in tissue replacement during surgery. Other animals are genetically modified to carry vaccine properties for a host of other medical advancements.

Advocates for the use of GMOs also address the opposing viewpoint that there is no GMO testing to prove safety. We are given evidence that the both the World Health Organization and the American Medical Association agree after reviewing peer-reviewed data that “the production and consumption of GM foods are just as safe

as foods modified by conventional techniques” (Inside Battelle 2015:1). This information also indicates that GMOs are put through vigorous testing to ensure this safety for the environment and human consumption. This includes allergen safety testing, environmental testing, and livestock testing to ensure safety. This caliber of “testing analysis can take upwards to seven to ten years before GMO products are released into the market” (Inside Battelle 2015:2).

The next major argument made by GMO advocates is the economic and environmental benefits of GMO technology, as represented in a “large study from the National Academy of Sciences [that] found that GMOs have significantly increased farm yields while decreasing pesticide use and soil erosion” (Fitness Reloaded 2016:3). The idea of getting more for less is always an appealing prospect, and GMO advocates say the process produces more products with fewer resources. This provides farmers with greater output on less land without damage. Advocates also say that GMO use provides farmers with higher incomes, while at the same time allowing lower fuel consumption. These factors are argued to be an investment in socioeconomic stability and the modernization growth in the United States.

Opponents of GMOs

GMO non-supporters argue that the use of GMOs is not only unsafe for a number of reasons, but that it is immoral. It is popular for opponents to refer to genetically-modified produce as “ Frankenfoods.” For example, opponents state that “the development of GMOs is found to be against nature or religion, and [they] demand [a] clear labeling rule for consumers to make informed decisions” (Phillips 2008b:4). However, the most prominent argument found in my data collection is that opponents say that GMOs are unsafe for human consumption and are also harmful to the environment. There is much concern for risk of contamination and allergen health risks by modifying genes within organisms.

Proper labeling is also at the top of the controversy list for opponents of GMOs. Data derived from the Center for Food Safety states, “Unsuspecting consumers by the tens of millions are purchasing and consuming unlabeled genetically engineered foods, despite a finding

by U.S. Food & Drug Administration scientists that these foods could pose serious risks” (Center for Food Safety 2016:1). If consumers are denied access to information concerning the food they are consuming, how can there be full support of GMOs? Another argument is that as GMO advocates claim, they are completely harmless to humans, livestock, and the environment; then, why not provide all information regarding their use? Many opponents ask if there is nothing to hide, then why are large biotech corporations concealing their information.

Jeffrey Smith summarizes the GMO opposition and says evidence exists that its use harms the environment and poses contamination risks. He points to the case of Monsanto’s “Roundup Ready” seed cross pollination that occurred and is unstoppable. This is an example of how a genetically-modified seed can contaminate other crops that do not use genetically-modified seeds. Another issue with these seeds is that they require many more herbicides than conventional seeds. Smith argues the Roundup resistant-seeds are protected against the strong herbicide, but create “super weeds” in the process. This creates a cycle of farmers being forced to use more herbicides than before, and these types of crops also contain more toxins than conventional crops (Smith 2016). GMO opposition also says the risk to the environment is alarming. Many insects, plants, and animals are being negatively affected by the use of these seeds. These “new super weeds and super bugs are becoming Roundup-resistant, and stronger pesticides are being used. The built-in pesticides found in genetically engineered crops may be largely responsible for the dying off of many insects, including honey bees and Monarch Butterflies” (Kids Right to Know 2016:2). The majority of opponents call for further research into GMO safety and its proper labeling. They argue that the lack of research provided to consumers and the many health issues that seem to arrive from their use must be studied further. To establish trust among all groups, they suggest all biotech industries need to provide complete data, so consumers can make an educated decision whether or not to buy GMO-based products.

Analysis and Discussion

In this analysis, I apply the comparative sociological theoretical frameworks of structural functionalism and conflict theory to the case of GMOs. As cited previously, a structural functional interpretation

of GMOs would stress the beneficial and progressive aspects of the data in the case. This perspective would highlight the ability of GMOs to fight world hunger, produce more product with fewer resources, while also remaining environmentally friendly and safe to consume. With all these benefits, why would anyone want to question its use? This perspective also suggests that the scientific progression of GMOs is to the benefit of society. Sociologist Herbert Spencer would suggest that with the evolution of science, society must either adapt or perish in the survival of the fittest. Sociologist Talcott Parsons would also suggest that everyone has roles to play within a society, and everyone must perform their roles accordingly to ensure social stability. He would also borrow from Durkheim's idea of the division of labor, in that societal structures are put in place to provide members of society their roles. If everyone performs their role, society will remain in equilibrium. The scientific breakthrough of GMOs is a blessing for structural functionalism, and if anyone stands in the way of the role of progress it would surely be a detriment to society. This perspective on modernization and GMOs would be seen as positive science in the process to discover sociological truths. Therefore, society should let science play its assigned role and promote the advancement of GMOs to allow society to continue to function to its highest potential.

In contrast to the structural functionalism, the conflict perspective would highlight the case that GMOs are a detriment to society. Sociological theorists such as C. Wright Mills and Karl Marx would be highly skeptical of the use of GMOs to benefit society. For Mills, GMOs would be associated with his theory, *The Power Elite*, and its unfair position of power over society. This perspective views control over society occurring from the backstage and that power is reserved for the elites to delegate how information should be shared. Elites include any higher form of authority, such as the government, large corporations, or anyone who is of higher status than the majority. The roles of the elite influence decisions, or the lack thereof, on economic and political dealings. Opponents would argue that these backstage actions give the elite an unfair power over the rest of society. The elite are able to control society without the majority even noticing. This creates inequality and a stratification of knowledge and power. Karl Marx would also agree that the use of GMOs is a detriment to society through the division of labor, and its ability to create social

control. Marx's *Communist Manifesto* points to unequal relationships between the bourgeois and the proletariat, and the resulting power of the bourgeois over the means of production. Marx explains that those who own the means of production will exploit others as a means to an end to gain power and control within a society. This stratification of labor creates alienation through the process of separating skilled workers from unskilled workers. The larger the gap between who is considered skilled and unskilled, the larger the social instability, because the unskilled worker is separated from the means of production. The conflict perspective on GMO use would argue that corporations are only interested in promoting their interests by any means necessary, and that the progression of GMOs benefits some, but not all.

Conclusions

From analyzing the data of the case of GMOs, I find that structural functionalism aligns itself with the perspective of GMO proponents, and the conflict perspective nicely aligns with that of the opponent's view. The case has taught me that there is not enough data covering the effect of GMO use on the health of the environment and food consumption safety. The lack of access to adequate information is shocking. The idea that GMOs are safe, so labels are unnecessary, is appalling. This makes biotech industries look guilty of hiding something of importance from consumers, and makes many people rightly skeptical. If I were not a sociology student I could be a supporter or a pacifist in the use of GMOs, but, alas, I am of the skeptical following.

I have been made aware of the bars on society's cage, and I see the lack of information in two ways. The first is that consumers are not allowed equal access to knowledge of long-term effects by those who own the means of production. The second is that people do not care enough to even attempt to see the bars! If people are told GMOs are good, and that science will solve all the world's problems, many do not question. The belief is that science will fix all our issues without us having to be active in the solution; therefore, most go along with the idea. The power of the elites takes away consumer's personal freedoms by not allowing full access to information. Large corporations who use GMOs are catching on to the skeptic's call for proper labeling, and

still choose to not label products at all. These corporations are given the freedom to produce products containing GMOs; however, at the same time, they are restricting the freedom of consumers and their right to make an educated choice to consume GMO products. This creates a disturbance of societal equilibrium, by causing inequality and stratification between consumer and producer. If one group is using the other as a means to an end, then at some point there will be nothing left to extract, thus perpetuating societal unrest. ■

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Student Biography

Victoria Rhinehart is a Fall 2016 Sam Houston State University graduate earning a Bachelor of Arts in Sociology and a minor in Criminal Justice. Victoria was also honored by the College of Humanities and Social Sciences on the 2016 Dean's List. In her last semester, Victoria was assigned to research agricultural usage of GMOs to further discussions regarding the balance of social stability between economic freedoms and personal freedoms. This topic was of importance to Victoria, due to her strong belief in equal access to knowledge throughout society. Victoria is now a Correspondence Associate at Nationstar Mortgage in Irving, Texas. Her goal is to apply her unique talents acquired from her outstanding education to provide excellent communication for all instances and interactions she encounters.