

**A Moral Judgement Analysis of the Engineers of the Volkswagen Emissions Scandal
through Virtue Ethics**

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Environmental conservation and sustainable practices have been paramount topics in governmental policy over the past few decades. A major contribution to the furthering of conservation and sustainability has been made through governmental policy controlling and minimizing carbon and nitrogen oxide emissions in the automotive industry (Sawyer, 2010). In 2015, researches at the University of West Virginia discovered that Volkswagen, a German automotive manufacturing company, had installed software in some of their vehicles to deceive emissions tests in order to comply with pollution levels set by United States government policy (“Learn about Volkswagen Violations,” 2019). A multitude of researchers and scholars have investigated the actions of Volkswagen and provided vital insight on how and who was responsible for the incident, as well as the effects of the incident on the company as well as its given stakeholders. What these researchers and scholars have neglected to do is to truly understand and question the morality of the decisions and actions Volkswagen took to allow their vehicles to comply with regulation. By considering the decisions and actions made by Volkswagen’s engineers, we will gain a new understanding on the moral judgement these engineers embodied while working on this project.

I aim to investigate and explain the morality of the decisions and actions of Volkswagen’s engineers during the Volkswagen emissions scandal through the use of the ethical framework of virtue ethics. I will study this case through the lens of virtue ethics, and investigate how or how not Volkswagen acted in a moral aspect through the specific virtues of professionalism, ability to communicate clearly and informatively, and perseverance.

Background:

In 2015, it was discovered that Volkswagen had been manipulating the emissions data coming out of their diesel engine vehicles through software called a defeat device (“Learn about Volkswagen Violations,” 2019). A defeat device is software that interferes with a vehicles emissions controls under real world driving conditions. Volkswagen applied this methodology of software to a multitude of their vehicles before investigation. The defeat device could sense when the car was being under formal emissions testing, and therefore modified and adjusted different components such as catalytic converters or recycling valves (Gates et al., 2015). This ultimately reduced the emissions of nitrogen oxide while testing. When the vehicle was in under regular driving conditions, the defeat device turned these equipment and processes down to save fuel efficiency and improved the car’s torque and acceleration. By doing this, the vehicle’s emissions increased to 40 times more than the legal limit established by the Clean Air Act (Amelang & Wehrmann, 2020). After the discovery of Volkswagen’s actions, the company faced wide ranged scrutiny which led to the dramatic drop of their share value by around 33%.

Literature Review

A vast number of case studies and scholarly sources exist addressing the incidents and consequences of the Volkswagen emissions scandal. The following analysis examines some of these many studies and summarizes the analysis done on the technical aspect of the case. These sources focus solely on the technology at question, as well as the impacts that has occurred for a multitude of stakeholders. Although this is vital information to have, these sources, however, neglect to question the moral compass of the engineers that designed and incorporated the defeat device installed in Volkswagen’s diesel engine vehicles.

In the case study, “The Volkswagen emissions scandal and its aftermath,” authors, Jae C. Jung and Elizabeth Sharon first introduce the overall topic and timeline of the incident. Jung and

Sharon then go on a detailed description on the aftermath of the investigation and how different stakeholders of the company were affected. The authors describe how the consumer felt harmed after being tricked into buying a car that was advertised to be environmentally friendly. The consumer also had to face mass inconveniences as many of their vehicles were recalled for noncompliance of the law. Jung and Sharon also described how different environmentalist parties were angered at the scandal, but unfortunately could not spur much in the company on a fundamental level as most parties had a huge lack of resources. The authors then go on to describe how attention was deflected from Volkswagen, as after the scandal it came to light that a multitude of German vehicle manufacturing companies had also been implementing the same technologies in their vehicles. In response to the investigation, Volkswagen fired many of their senior managers and other administration. They also started advertising a shift to electric vehicles to help emphasize environmental importance in the company. Jung and Sharon also mention how little attention the company received in the coming months and years after the scandal. Sales soon skyrocketed and exceeded expectations in the coming years for Volkswagen. After the investigation, little harm was thought to have been done in the eyes of most American consumers (Jung & Sharon, 2019). Jung and Sharon did not provide any analysis on the moral judgement Volkswagen's engineer.

In the journal entry, "A case study of Volkswagen unethical practice in diesel emission test," Nazanin Mansouri takes a more informative approach of the actual happenings of the scandal and investigation. Mansouri touches on the reasoning for why Volkswagen's administration and engineers added a defeat device to their vehicles. All of which was prompted by the technological shortcomings of the performance of the vehicle. The author also touched upon the financial burden the scandal had brought the company. Mansouri mentions that the

scandal resulted in a massive slump of sales as well as a drop in share value of around one third. The author briefly touched on the negative consequences the scandal had on outside stakeholders such as consumers and all United States citizens exposed to heavily polluted air. Mansouri finally went as far as to say that the actions performed by Volkswagen were absolutely unethical (Mansouri, 2016). She did not question, however, the morality of the parties involved.

Although much research has been done about the informational aspect of the technology as well as an analysis of its effects, little has been done to question and analyze the morals of the engineers at work. With the usage of virtue ethics philosophy, I aim to fill this gap of lack of knowledge. In my analysis, I will determine whether or whether not the work done by Volkswagen's engineers can be morally justified by the methodology defined by virtue ethics.

Conceptual Framework

The moral aspect of the decisions encompassing the emissions scandal performed by Volkswagen's engineers can be analyzed through the scope of the virtue ethics framework methodologies. This analysis will allow me to provide a concrete set of rules in determining how whether or whether not Volkswagen acted in a moral matter.

Virtue ethics is an ethical theory that focuses more on the nature of the acting person or group of people. The theory aims to distinguish what desirable traits and characteristics (known as virtues) that people should develop in order to be a morally sound person. Virtue ethics was mainly developed by the Greek philosopher Aristotle in the mid 300s BC. According to Greek philosophy, to become an ideal human being and strive for the "highest good", people must develop a balance between two extremes of evil – a moral virtue (van de Poel & Royackers, 2011). For example, courage, a moral virtue, is the perfect balance between cowardice and

recklessness. Aristotle believed that in becoming a moral being, one must follow this balance perfectly. Any stray to either side can lead to an immoral decision.

Virtue ethics believes that in order for a person to lead a good life, they must embody essential virtues. These virtues are not completely concrete, and can be very circumstantial depending on the person's role in a situation, and the situation in question. I question the morality of the decisions and actions made by the engineers at Volkswagen. To further analyze this, I will use the list of "Virtues for Morally Responsible Engineers" (Pritchard 2001), created by Michael Pritchard as seen below.

- a. Professionalism/Competence
- b. Ability to communicate clearly and informatively
- c. Cooperativeness (being a good "team player")
- d. Willingness to compromise
- e. Perseverance
- f. Habit of documenting work thoroughly and clearly
- g. Commitment to objectivity
- h. Openness to correction (admitting mistakes, acknowledging oversight)
- i. Commitment to quality
- j. Being imaginative
- k. Seeing the "big picture" as well as the details of smaller domains

Pritchard notes that although there are many more virtues needed to be a completely morally and ethically responsible engineer, straying away from any singular virtue in the list above is enough to justify immoral behavior.

In the following analysis, I will determine the morality of the decisions and actions made by the Volkswagen's engineers based on a virtue ethics belief that a person is moral if they pose and do not stray from a specific set of virtues. Using Pritchard's list of "Virtues for Morally Responsible Engineers" I will analyze the decision making of these specific engineers by determining whether or whether not they embody the set virtues of professionalism, the ability to communicate clearly and informatively, and perseverance.

Analysis

In the following analysis, I will claim that the engineers involved in the Volkswagen emissions scandal acted morally irresponsible based on the absence of upholding three of Pritchard's necessary virtues of engineering: professionalism, and ability to communicate clearly and informatively, and cooperation. Pritchard emphasizes the importance of withholding these virtues and more. He claims that if an engineer has an absence of any one of these virtues, it is enough to justify their decisions as immoral. I believe that solely basing the engineers on their actions and decisions, it is enough to prove that they did not uphold any one of these virtues. In the following analysis, I will examine the engineers in respect to these three specific virtues in order to highlight their moral irresponsibility.

Professionalism

The engineers involved in the Volkswagen emissions scandal can be held morally responsible for their wrongdoings, as they failed to adhere to the necessary virtue of professionalism. In the case of the Volkswagen Emissions Scandal, a person who displays professionalism is defined as someone who "exhibits qualities such as honesty and integrity...and will do the right thing, even when it means taking a harder road" (Porcupile,

2015). Prior to the investigation and overall scandal, Volkswagen started to design and market a new line of vehicles that was advertised as a new innovation of engine called “clean diesel” (“Ethics Unwrapped: Volkswagens' Emissions Evasion,” n.d.).

To understand the significance of this, it is necessary to provide more information about diesel engines compared to standard petrol gasoline engines. Diesel engines have proved to be more fuel efficient than gasoline engines, especially when driving on highway conditions (Vinogradov, Shadrina & Mackhlauf, 2019). Although diesel engines provide a much greater fuel efficiency, it’s trade off lies in environmental effect. Diesel engines produce much more greenhouse gas emissions like carbon dioxide and nitrogen oxides. Nitrogen oxide, the emissions the exceeded government regulation, has the potential to cause long term chronic lung disease and can even cause respiratory infections and asthma (Faustini, Rapp & Forastiere, 2013). The diesel engines produced by Volkswagen contributed to emissions of nitrogen oxide up to 40 times the legal limit under rural driving conditions.

Volkswagen advertised this new clean engine as a plea to increase customer base and sales. A new engine with better fuel efficiency and a smaller environmental impact is a hard feat to accomplish in the span of a few years.

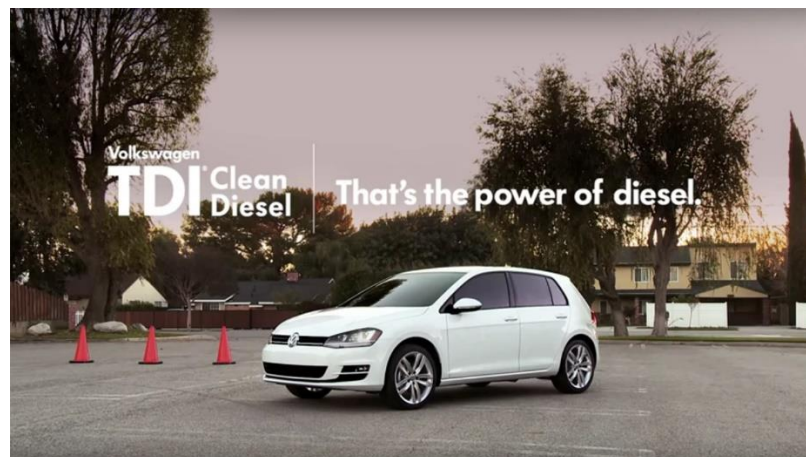


Figure 1 – Volkswagen’s deceptive “Clean Diesel” Advertisement

Volkswagen’s engineers were not successful. This project to create a hopeful new engine came with great cost to the company (“Ethics Unwrapped: Volkswagens' Emissions Evasion,” n.d.). Volkswagen’s new engines, although providing better fuel efficiency than its petrol competitors, could not pass pollution standards set by the United States. Volkswagen decided to market and sell the engines despite of this to avoid a large sunk cost, and their engineers coded their defeat device to cover up this noncompliance.

Volkswagen’s engineers embarked on creating a more environmentally friendly diesel engine without the technical knowledge and resources to do so. The engineers did not have the skills and competence to complete the one goal they advertised they had completed. Instead of hiring the right professionals, the engineering team continued with progress on the project and tried to cover up their failures with their defeat device. Starting and promising a project without the right knowledge is a clear display of a lack of professionalism. Professionalism, in this scenario, can also be defined as “the competence or skill expected of a professional” (“Definition of Professionalism,” n.d.). The engineers at Volkswagen did not have the technical knowledge to complete the given project. They continued this project without seeking the right resources for completion, and ended up with a result that although performed its function of transportation, did not conform to its advertised parameters. According to Pritchard’s rules, this lack of the virtue of professionalism is enough to legitimize the unmoral behavior performed by Volkswagen’s engineers.

Some might argue that the engineers at Volkswagen had the knowledge and competence to complete the project, but had been restricted due to a budget and a tight time line.

“Volkswagen was heavily invested, both financially and culturally, in producing a clean-diesel

engine. That the company was failing to meet the standard required by American emissions tests would have been embarrassing and frustrating to its German engineers” (Kedrosky, 2015). Based on this, it would be untrue to fault the engineers for a lack of professionalism and immoral behavior if they clearly had the competence to create a more efficient and environmentally friendly diesel engine. I do agree that the Volkswagen’s engineers did have the competence and prowess to create a better diesel engine and may have displayed the virtue of professionalism in this definition. I would point out, however, that although the engineers may not have lacked professionalism, they have lacked another one of Pritchard’s fundamental virtues for moral engineers; a commitment to quality. If the engineers did in fact have the knowledge to create the diesel engine they advertised, the engineers therefore would have sold an engine that lacked the quality it had to the potential to have. This lack of commitment to quality alone would also be enough to justify my claim that the engineers did act with moral irresponsibility.

Ability to Communicate Clearly and Informatively

Due to their deception of the government, the consumer, and the overall outside society, the engineers that contributed to Volkswagen’s emissions scandal failed to adhere to the virtue of clear and informative communication. Volkswagen deceived multiple groups of stake holders through multiple multi-media ad campaigns and false specifications.

Volkswagen created a series of comedic ads of three senior citizen women, the golden sisters, quarreling about the preconceived perceptions of diesel engines. One asks, “Aren’t diesels dirty?” to which the other responds “No, that used to be dirty, this is 2015...look how clean it is” (*Volkswagen Golf TDI Old Wives Clean Diesel*, 2014). In their campaign, Volkswagen continued to emphasize how clean, environmentally friendly, and efficient their new diesel engines were (“FTC Charges Volkswagen Deceived Consumers with its "Clean

Diesel" Campaign," 2019). Implying that they had innovated the standard diesel engine into something novel, Volkswagen deceived their consumer into purchasing a vehicle that was falsely advertised.

Volkswagen also used deception when reporting specifications to governmentally sponsored environmental regulation agencies. The Environmental Protection Agency (EPA) created regulation to control the amount on nitrogen oxide emitted into the atmosphere through a vehicles exhaust ("Learn about Volkswagen Violations," 2019). Volkswagen's engineers could not create an engine that could comply with these set regulations. The defeat device installed in the vehicle allowed Volkswagen to create false specifications when under regulatory testing for emissions. Volkswagen's engineers installed software to deceive governmental testing and produce untrue and uninformative data that satisfied law.

Volkswagen's engineers failed to demonstrate any form of clear and informative communication to any party of stakeholder. As clear and informative communication is a fundamental virtue for a moral engineer, according to Pritchard, any lack thereof would justify and engineer's actions and decisions as unmoral. Therefore, Volkswagen's engineers involved in the scandal should be held morally responsible for their actions.

Perseverance

Another fundamental virtue for moral engineers that the Volkswagen engineers failed to embody is perseverance. Perseverance is defined as the "persistence in doing something despite difficulty or delay in achieving success" ("Definition of Perseverance," n.d.).

To question how the engineers in question lacked any perseverance, it is important to understand how diesel engines have been innovated since the scandal in 2015. In recent years,

many automotive manufacturing companies have been innovating diesel engines with the hope of making the engines more fuel efficient, better torque and power, and most importantly more environmentally conscious. In recent years, engineers have been quite successful in making a more applicable diesel engine that has successfully lowered emissions better than standard petrol engines. Diesel engines “emit less carbon dioxide than similar gasoline cars” (Baker et al., 2004). Although engineers have not yet been able to create a diesel engine that outperforms petrol engines in nitrogen oxide pollutants, many companies have successfully built diesel engines that can at least comply with EPA regulation. It has been proved in recent years that creating a more environmentally friendly and “clean diesel” engine is both physically and chemically possible.

Instead of continuing to redesign and experiment on creating a better diesel engine, the engineer’s settled on a subpar artifact that did not exhibit the quality to perform as promised and even as regulated. It is clear that creating an engine that could comply with regulatory specifications was quite possible at the time and even now in the slight future. Although faced with difficulty and delay, the Volkswagen’s engineers did not display the perseverance to create a suitable product of the modern consumer. Instead, a product of low quality and high deception was produced. Volkswagen and the broader society had to face the adverse effects of the unethical decisions and actions performed by the engineers. The engineers lacked the virtue of perseverance to create an environmentally friendly diesel engine, and thus acted immorally during the entire design and production process.

Conclusion

After analyzing the Volkswagen emissions scandal through the lens of virtue ethics, I determined that the decisions and actions made by the engineering staff during this time proved to be immoral and unethical. According to Pritchard, the lack of any given virtue can justify

immoral behavior. Volkswagen's engineers' decisions failed to conform with three of Pritchard's "Virtues for Morally Responsible Engineers": professionalism, the ability to communicate clearly and informatively, and perseverance. The failure of a multitude of virtues necessary in becoming an ethical engineer furthers the conclusion that Volkswagen's engineers' behaviors are completely unjustifiable.

For young and developing engineers, it is quite important to fully understand the ethics and morals behind different engineering decisions and scenarios. Although it is vital that engineers learn through the actions and consequences of failed and unethical cases and technologies, I would argue that is just as equally as important to study why the decisions made might be unmoral. Giving young engineers this insightful knowledge, they will be able to justify moral decisions and question potentially unmoral ones in any field or project they might encounter. By fully understanding the ethical aspect of the Volkswagen emissions scandal through the scope of virtue ethics, similar future incidents may be identified and halted before long lasting negative social and technical consequences occur. More attention and more systemic change may have very well occurred, not only in Volkswagen but other automobile companies, if the morality of the decisions made was studied and understood earlier.

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