

Boeing 737MAX Safety Concerns

A Moral Assessment of Curtis Ewbank's Internal Complaint

In 2017, a new variant of Boeing's 737 aircraft was entered into service – the 737MAX. The Boeing 737 aircraft has been in operation since 1968 and has been innovated upon since. Throughout the aircraft's 22 variants, Boeing has opted to add more efficient engines, aerodynamic improvements, and increases in range and the number of passengers the aircraft can carry.¹ Although, on October 29, 2018 and March 10, 2019, fatal crashes involving the Boeing 737Max occurred. After investigation of the disasters, the FAA concluded that a new system, deployed on the 737MAX aircraft, was responsible for the crashes. The new system, the Maneuvering Characteristics Augmentation System (MCAS), was implemented to control the pitch stability at which the aircraft flew.² Following the disasters, a Boeing engineer, Curtis Ewbank, filed an "internal ethics complaint alleging that management – determined to keep down costs for airline customers – had blocked significant safety improvements during the jet's development".³ Ewbank referenced in his report that Boeing's management culture dissuaded employees to communicate safety concerns – one of which was Ewbank's proposal for a system that could have prevented the disasters. In the case of Curtis Ewbank's internal ethics complaint regarding safety concerns for the development of the 737MAX, Ewbank's action proved morally just when applied to Kantian duty ethics, and showed that a high acceptance rate in reference to rule-utilitarianism is optimal for the code Ewbank followed and the resulting consequences.¹

Kantian ethics relies on the idea that acts should be performed with good intentions. This is not to say that all acts are moral if the acting party has good intentions. Kantian ethics takes one's will and duty into account when deeming an act moral or not. A person's will is one's personal desire in life, and the driving motivation behind the things a person does, whereas duty dictates the things a person should do to contribute to the greater good of humanity. Kant thought "when we suppose that we have a duty we are thereby supposing that we have sufficient (overriding) reason to act accordingly and not just because doing so furthers our (desire-based) personal ends".⁴ This is showing that when duty and one's personal desire, or will, align an act is morally good. To break up one's duty and will, one could also be acting moral when the act is aligned with their duty and not their will. By breaking an act's moral assessment into will and duty, Kant is able to divide acts that are selfish from acts that contribute to the greater good. Although, when defining a duty or rule there are a few requirements when it comes to Kantianism. Kant called these rules maxims. A maxim is a rule you place on yourself to dictate how you act, although this maxim should be applicable to all rational beings – to be universal. The categorical imperative was a test devised by Kant to determine if a maxim is truly universal. The categorical

¹ Justin Hayward, "The Boeing 737: The Original vs MAX – What's The Difference?", (Simple Flying, 2020).

² Boeing, "737 Max Updates The latest information, updates and statements on the 737 Max", (Boeing, 2020).

³ Gates, Dominic, Miletich, and Kamb. "Boeing Rejected 737 MAX Safety Upgrades before Fatal Crashes, Whistleblower Says." (The Seattle Times, October 9, 2019).

⁴ Hill, "Kantianism", (Blackwell Publishing Ltd., 2013), 312.

imperative proposes a scenario where everyone acts the way you do. If this is how you would want all other people to act, then the maxim passes the categorical imperative. A final requirement dictates that a maxim must not be based on experience. If this is true, the maxim is universal. When applying Kantian ethics to cases, one must consider the four main ideas of Kantianism – one's duty and will, the maxim relative to the act, and the application of the categorical imperative.

Looking at Curtis Ewbank's decision to commit an act of whistleblowing in reference to safety concerns of the Boeing 737MAX, Kantian ethics would deem his act morally good. To break down the case into Kant's four main ideas, Ewbank's duty as an engineer was to never intentionally harm the general public. Consider Ewbank's maxim to be "report any safety concerns regarding the aircraft's development, if they could lead to serious harm of the general public". Clearly, this maxim would pass the categorical imperative. An engineer's duty is to avoid intentional harm. Every engineer would want other engineers to report all safety concerns. This would make Ewbank's maxim universal, thus making his action moral. Interestingly, Ewbank's will is difficult to determine when Kantian ethics are applied to the case. Recall that duty can override one's personal desire to act. Keeping this in mind, Boeing's management culture, one where employees are dissuaded from reporting safety concerns, could have influenced Ewbank's will. Ewbank's personal desire may have been to not report his safety concerns as they could hurt his reputation at Boeing. Seeing as many other employees chose to not come forward about their safety concerns, this view of Ewbank's will is plausible. On the other hand, one could view Ewbank's will to be aligned with his duty. Meaning that he wanted to come forward and did not fear losing his job or reputation at Boeing. Seeing as he rejoined the company after a brief hiatus, this is most likely the correct view of Ewbank's will. As Ewbank's duty and will aligned, the maxim he followed passed the categorical imperative and could be applied without prior experience, making his maxim universal, and ultimately making his act moral. There are many alternative ethical theories that can be applied to this case. Since Ewbank's actions contributed towards the greater good, and ultimately did not harm his personal reputation, many ethical models will agree that his actions were morally good.

An interesting alternative to Kant's ethical theory is the rule-utilitarianism model. This form of ethics defines rules that dictate rational being's actions, although a defined rule must produce the greatest good out of all other related rules. When measuring the amount of good a rule would produce, the ethical model requires an acceptance rate – the percentage of people that will adopt this rule. Many philosophers diverge in their ideology when it comes to defining this acceptance rate. Brad Hooker "advocates fixed-rate rule-utilitarianism (which measures the expected value of the rule's consequences at a 90 percent acceptance rate)", Michael Ridge "advocates variable-rate rule-utilitarianism (which measures the average expected value of the rule's consequences for all different levels of social acceptance)", and Holly Smith advocates "optimum-rate rule-utilitarianism" where "an ideal code is the code whose optimum acceptance level is no lower than that of any alternative code".⁵ When applied to this case, optimum-rate acceptance is the best option. As shown in figure 1 in "Measuring the Consequences of Rules", the optimum-rate model balances the percentage of acceptance with the expected social welfare.⁶ With the optimum-rate model, each rule is judged by the acceptance percentage that produces the greatest social welfare, meaning that each rule is judged at its best

⁵ Smith, "Measuring the Consequences of Rules", (Cambridge University Press, 2010), 413.

⁶ *Ibid.*, 417.

possible outcome. Using the optimum-rate model, Ewbank's proposed rule, which can be defined as "report any safety concerns regarding the aircraft's development, if they could lead to serious harm of the general public", could have produced the greatest expected social welfare. Although, a key word here is expected. The actual outcome sometimes proves to be different than the expected outcome. It is possible that if Ewbank chose to act in an alternate way, the outcome could have proved to have a greater overall social welfare.

Ewbank's ethical complaint proves to be an interesting case to analyze with various ethical models. By viewing the case through the lenses of different philosophers, it is possible to come to differing outcomes regarding morality. When breaking the case down into the key aspects of Kantianism, it is clear that Curtis Ewbank's report to Boeing was a moral act. Looking at the case from a rule-utilitarian perspective, the optimum-rate model proved to be the best option. Through application of this rule-utilitarian model on this case, optimum-rate is proven to be the best version of rule-utilitarianism for any purpose, as it compares all rules at their peak contribution to social welfare.

Notes

¹Justin Hayward, “The Boeing 737: The Original vs MAX – What’s The Difference?”, (Simple Flying, 2020).

² Boeing, “737 Max Updates The latest information, updates and statements on the 737 Max”, (Boeing, 2020).

³ Gates, Dominic, Miletich, and Kamb. “Boeing Rejected 737 MAX Safety Upgrades before Fatal Crashes, Whistleblower Says.” (The Seattle Times, October 9, 2019).

⁴ Hill, “Kantianism”, (Blackwell Publishing Ltd., 2013), 312.

⁵ Smith, “Measuring the Consequences of Rules”, (Cambridge University Press, 2010), 413.

⁶ Smith, “Measuring the Consequences of Rules”, (Cambridge University Press, 2010), 417.

Bibliography

Gates, Dominic, Steve Miletich, and Lewis Kamb. "Boeing Rejected 737 MAX Safety Upgrades before Fatal Crashes, Whistleblower Says." The Seattle Times. The Seattle Times Company, October 3, 2019. <https://www.seattletimes.com/business/boeing-aerospace/boeing-whistleblowers-complaint-says-737-max-safety-upgrades-were-rejected-over-cost>.

Hayward, Justin. "The Boeing 737: The Original vs MAX - What's The Difference?" Simple Flying, June 7, 2020. <https://simpleflying.com/boeing-737-original-vs-max>.

Hill, Thomas E. "Kantianism." In The Blackwell Guide to Ethical Theory, 2nd ed., 312. Blackwell Publishing, 2013.

Smith, Holly M. Rep. The Consequences of Rules. 4th ed. Vol. 22. Cambridge University Press, 2010.

"737 MAX Updates." Boeing. Accessed September 11, 2020.
<https://www.boeing.com/commercial/737max/737-max-software-updates.page>.