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Ethics in Engineering

As engineers it is our jobs to use our knowledge and problem-solving abilities to make people's lives easier and more convenient. The problems we solve for people come in all varieties, ranging from relatively tame problems to ones that come with a fair amount of danger with them. It is our responsibility to provide good solution that can be used safely, can be used without compromising the values of the user and while being totally transparent with the user to make sure these criteria are met. A good way to make this happen and to keep our fellow engineers is by remembering a Code of Ethics such as IEEE's. Having a code of ethics is important because our ethics are derived from our own personal beliefs and while different people could have some overlapping ethics, a large group of engineers isn't going to come up with the same things. Having a standard code of ethics that encompasses the most important ethics of a company or field helps to standardize the ethics of the group and gives them a good reference whenever they are unsure of something. It supplies a cut and dry code and helps to hold members accountable. If a person does something unethical, they can't hide behind ignorance and say that they hadn't thought of that because there is a written reference.

Personally, when I am coming up with a solution, I am not all that concerned with the ethics of the solution, that is to begin with. As programmers, we often have to write secure code to make sure that unethical people can't exploit our work for nefarious things. Our version of working with ethics comes towards the end of the work. We make a solution and then we go

to lengths to make sure our work is airtight. We often have to think unethically in order to do this. We have to ask ourselves how our work could be used improperly and then change things until we can't think of ways to exploit our own work while still delivering the best product we can. That brings it's own dilemma. If we have to cut back on the functionality of our product to make it ethically fortified, do we damage the product to do so, deliver a perfect product with security flaws and hope no-one notices or scrap the project all together? People may bring up the fact that there is a lot of ethical issues when it comes to programming and viruses are a prime example of this. To answer that I would say that anyone that sits down to make a virus that does something harmful isn't going to pay attention to a code of ethics because they have already decided to do something bad.

We talked about a fair number of ethical dilemmas in engineering history in class but the one that has always stuck out to me is the Ford Pinto problem. In the 1970's, the Ford Motor Company set out to create a lightweight and affordable car and the Pinto was born. In order to achieve these goals, the Pinto was built using cheap materials that did not hold up well in crashes, even ones that would have been minor to the average vehicle. The major problem was that the fuel tank wasn't held in place well so when the car was rearended, it sent the fuel tank flying forward while also causing a spark that ignited the gasoline in the tank. This resulted in the loss of a large number of lives. While this is already a tragic and awful occurrence, it becomes exponentially worse when the full truth is known. Ford knew that this was possible from their safety tests before the car was released to market but chose to ignore the problem. This goes completely against Rule #1 of IEEE's Code of Ethics "to accept responsibility in making decisions consistent with safety, health, and welfare of the public and to disclose promptly

factors that might endanger the public or the environment" (IEEE). It could be said that this part of the code was broken even if they didn't know about the defect, but with that part, Ford hits every point of this rule to a tee. They also broke the final rule that is to help their employees follow this code of ethics. The higher-ups are the guilty ones because they were the ones that forced the Pinto into the world when the people lower in the company didn't want to. All in all this situation is pretty cut and dry. Ford was in the wrong and their actions were even criminal and it is very uncommon to find anyone who would disagree with this.

When applying the Virtues of Ethics to the Pinto Problem, I would say that the three that apply most are Integrity, Honesty, and Responsibility. I believe that all of these were failed by Ford during the Pinto Incident, I also believe that these virtues all somewhat blend together. If the company had taken Responsibility before the deaths, there never would have been any, if they had acted with integrity, the car never would have been released, and if the company had shown any Honesty they would have fessed up to the issue right after the first incident was reported. Self-Discipline sounds like it would apply, but the meaning of it is closer to not going over the top, when Ford very much missed the bar in the other direction. Charity doesn't apply and Fidelity somewhat applies, as the company was keeping to their own interests more than to the betterment of their consumers.

At the end of the day, ethics was not something I had directly considered when thinking about life as an engineer, but it wasn't something I was doing wrong. Ethical situations can be very small and not always obvious, often times they just resolve themselves naturally because the engineer wants to do the right thing. What I have really learned was that you need to stand up for your beliefs when you feel that something in your professional life just isn't alright.