

Religion 491  
Ethics in Engineering  
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Section 17

**How Can I be Totally Honest in Fulfilling my Professional Obligations to Society?**

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In the movie **Gilbane Gold**, David Jacks was an environmental engineer put in charge of water treatment at *Z-Corp*, an electronics firm. David realized that *Z-Corp* was releasing a large amount of toxic metals into the city wastewater treatment system.

However, there was a glitch in the environmental control law in the city of Gilbane. Instead of the law being based on the *amount* of pollutants released from the plant, the law was based on the *concentration* of pollutants being released. David realized that *Z-Corp* could release large amounts of toxic metals, as long as the company diluted their wastewater. David knew a new water treatment plant needed to be installed at *Z-Corp*; but *Z-Corp* was not willing to put forth the money for a new water treatment plant.

David Jacks faced an ethical dilemma. He could keep quiet about *Z-Corp's* wastewater problem. *Z-Corp* would be obeying the law as long as they diluted their waste. But *Z-Corp* would still continue releasing large amounts of toxic metals into the environment.

On the other hand, David could speak out and tell people that *Z-Corp* was releasing toxic metals. If David told people about these toxic metals released from *Z-Corp*, he could lose his job; but *Z-Corp* would be forced into building a new water treatment facility to remove the toxic metals from their wastewater.

David decided to "blow the whistle". He told a news reporter that *Z-Corp* was releasing toxic metals into the environment. David Jacks decided to fulfill his professional obligation to society. As the engineer in charge of water treatment at *Z-Corp*, it was his obligation to protect the society from the toxic metals being released from *Z-Corp*.

Engineers face ethical dilemmas such as the one David Jacks faced every day. If you faced an ethical dilemma such as David, would you remain quiet? Or would you "blow the whistle" as David did, with the threat of losing your job? Being totally honest in fulfilling our professional obligations to society is difficult, but it can be done. After I become a practicing engineer, I can be totally honest in fulfilling my professional obligations to society by:

- "Blowing the whistle" when I encounter an unethical situation.

- Verifying and checking the solution of computer programs. Also, making sure I understand how the program works.
- Making sure I do engineering jobs right, doing my best in all my projects.
- Living the highest level of professional ethics.
- As a member of the Church and a professional engineer, being the example to those around me.

### **Blowing the Whistle**

An important step in fulfilling my professional obligations to society is to blow the whistle if I need to. If the place I work is doing something unethical, it is my responsibility as an engineer to speak up. David Jacks in **Gilbane Gold** was placed in a situation where he could either remain quiet or tell the public that *Z-Corp* was releasing toxic metals into the environment. David decided to blow the whistle.

After I have a family with bills to pay, it will be hard for me to put my job on the line for ethical reasons. But for me to be totally honest in my professional obligations to society, I must be like David Jacks and be willing to "blow the whistle" when necessary. If the company I am working for is participating in unethical decisions, Stephen H. Unger suggested that I can take the following steps:

1. I can attempt to raise my objections to my immediate supervisor.
2. If the supervisor does not do anything, I can keep a record of the problem and notify the supervisor that I will use company appeal procedures if needed.
3. I can begin to appeal to higher authorities in the company if the supervisor will not reconsider.
4. If I cannot find help within the company, I can go outside the company to the ethics committee of an engineering society.

5. Finally, I can go public, involving the government or the media.<sup>1</sup>

## **Verifying Computer Solutions**

Eugene E. Ferguson suggests another way I can be more honest in fulfilling my professional obligations to society<sup>2</sup>. He suggests that by completely relying on computer programs for solutions to problems, engineers can lose touch with reality. Many engineers today believe that "computerized stress analyses" will completely protect them from structural failures.

When engineers designed the Hartford Civic Center, they had to rely completely on a computer solution. Without a computer, it would have taken months for a team of engineers to design the indeterminate space frame used for the Hartford Civic Center. But when a snow load was applied to the roof of the Hartford Civic Center, it collapsed.

Computers can be a powerful tool in engineering. But just like any other engineering tool, computer-aided design requires the same judgment that engineers have always depended on.

As a professional engineer, I can avoid bad computer solutions by:

1. Checking and verifying the computer solution (using my engineering judgment or approximate calculations).
2. Understanding the basics of the computer program I am using--I must know the assumptions used in the program and how the program works.

## **Doing the Job Right**

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<sup>1</sup>in Unger, Stephen H. *How to be Ethical and Survive*.

<sup>2</sup>see Ferguson, Eugene S. *How Engineers Lose Touch*.

The best example of a man who did the job right the first time was George Washington Goethals. In 1907, Goethals was put in charge of the construction of the Panama canal. At that time, the construction of the canal was not progressing as well as expected.

When Goethals took charge, he made it his policy to be totally honest in all his dealings. He also set out to visit all the workers building the canal. As he went to visit the workers on the canal, he built their morale and let them know of his policy of honesty.

Goethals worked hard and insured that every detail of the new canal in Panama was taken care of. The canal was completed a year ahead of schedule. Goethals was famed as one of the best engineers of his time. The Panama canal is still vital for the shipping industry today.<sup>3</sup>

As engineers, it is our responsibility to do every job as Goethals did. We must be honest in all we do. One of the hardest parts of being honest is insuring that all the minor details are taken care of. Trivial things such as the wrong amount of reinforcing steel in a beam may seem like something small; but the failure of one beam may result in the collapse of an entire structure. When I become a practicing engineer, I can be honest by paying attention to details and doing the job right the first time.

### **The Highest Level of Professional Ethics**

Another way to be totally honest in fulfilling my professional obligations to society is to commit to live the highest level of professional ethics. Endy and Vesilind<sup>4</sup> classify the professional ethics into six levels--ranging from engineers who only care about their own gain to engineers who live at the highest level of professional conduct, honesty, and integrity.

According to Endy and Vesilind, a person who is living the highest level of professional ethics is one who follows "universal rules of justice, fairness, and caring for fellow humans and the

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<sup>3</sup>in Fraser, Harvey R. *Esprit de Corps and Professional Behavior*.

<sup>4</sup>see Endy, Elizabeth M. and P. Aarne Vesilind. *Ethics in the Field*.

whole of nature." After I become a practicing engineer, it will be my duty to serve society and be a "principled professional."

But Endy and Vesilind claim that the highest level of professional ethics is even higher than being a principled professional. An engineer living the highest level of professional ethics will even go against the ethical code to stand up for general human rights. Someone living the highest level of professional ethics is someone like Martin Luther King, Jr.--someone who stands for what they believe in.

### **Being the Example**

The most important thing is for me to remember who I am. As a member of the Lord's Church and a child of God, it is my challenge to be completely honest in all my business dealings, regardless of the circumstances.

I can be more honest by always remembering that I am the example. By setting a good example for others, I will encourage other people to become more honest.

More importantly, I must be completely honest when I know nobody is watching me except the Lord. What I do when I know I won't get caught shows what kind of person I am. I must remember that the Lord is watching me and that I will be judged by my actions. If I remember these things, it will be easier for me to be honest.

### **Conclusion**

In conclusion, there are five ideas I must remember to be totally honest in fulfilling my professional obligations to society. First, I must blow the whistle when necessary. Second, I must verify and check computer solutions to engineering problems. Third, I must do every engineering job with care, paying attention to every detail. Fourth, I must strive to live the highest level of professional ethics. Finally, as a member of the Church, I must be an example to

all the other engineers I work with. The Savior said, "Ye are the light of the world." It is my professional responsibility to make my light shine brightly by being a totally honest engineer. May we all let our light shine before the world by being honest in everything we do.