Teaching Engineering Ethics, Values or Virtue?

Otto J. Helweg
College of Engineering and Architecture, North Dakota State University

Abstract

One of the major concerns of almost every profession is the ethical practice of its members. One of the ways academia has addressed this concern is by teaching values. Especially in K-12 curriculum, "values clarification" has been widely practiced. However, values may be content-less ideas that do not promote virtue, character, or ethical behavior. Perhaps the most common practice in engineering curricula is to either have a course in engineering ethics or weave ethics into several courses. These courses, and all the texts are "code centered" with little or no emphasis on motivational strategies to promote ethical behavior. Preliminary data show that knowledge is not the primary cause of code violations because many, if not most violations are willful. This paper suggests the radical idea of bringing religion into classes on ethics in order to increase cognitive dissonance which, in turn, will encourage ethical behavior.

Introduction

ABET curriculum requirements include ethics.[1] There have been a number of texts specifically written for a course on engineering ethics in recent years.[2,3,4,5,6] Papers on ethical issues regularly appear in professional journals and the National Society of Professional Engineers has a column on ethics in its monthly publication. Almost without exception, these books, articles and columns deal with knowing the codes and applying various case studies to practice making the correct decision.

Two samples of engineering violations indicated that most violations are willful and not due to ignorance of the codes. Figure 1 shows the percentage of violations that were willful for the country that were brought before the ASCE ethics board[7] and Figure 2 shows the violations for the state of Tennessee for all engineering professions that were brought before the Board of Registration.[8] This does not, of course, mean that engineering classes should ignore the codes and the standard practices of teaching engineering ethics, but it does indicate that if the objective of a course is to encourage engineers to be ethical, there should be some inclusion of why ethical practices are important. In other words, there should be some motivational aspect in the curriculum.
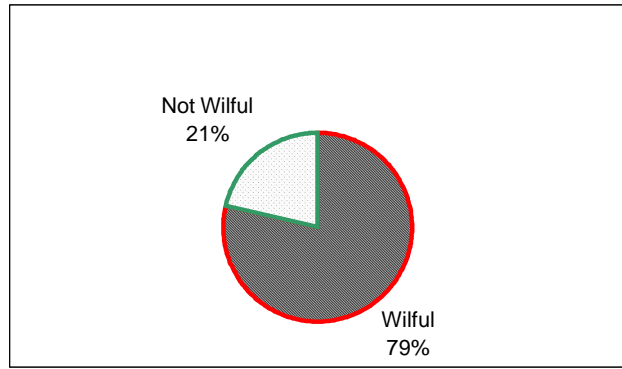
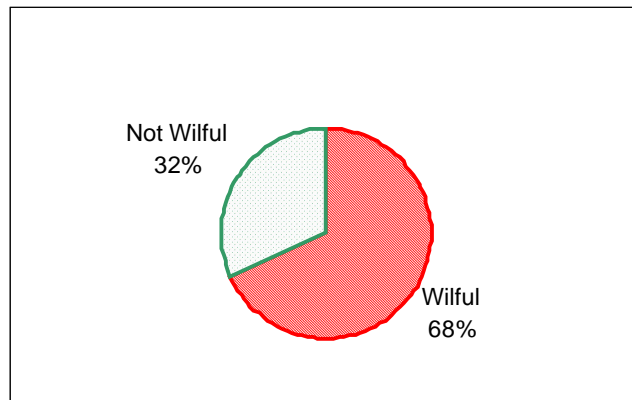Figure 1, Engineering Misconduct in ASCE, USA, 1992

Figure 2, Engineering Misconduct in Tennessee, 1992

Introducing Motivation into Courses on Ethics

In his book, *The Death of Character*, James Davidson Hunter decries the "values" approach to promoting character development. In a hard-hitting paragraph, Hunter says:

> This destruction [of character] occurs simultaneously with the rise of "values." Values are truths that have been deprived of their commanding character. They are substitutes for revelation, imperatives that have dissolved into a range of possibilities. The very work "value" signifies the reduction of truth to utility, taboo to fashion, conviction to mere preference; all provisional, all exchangeable. Both values and "lifestyle – a way of living that reflects the accumulation of one's values – bespeak a world in which nothing is sacred. Neither word carries the weight of ; the conviction; the commitment to truths made sacred. Indeed, sacredness is conspicuous in its absence.[9]

Hunter defines character similarly to a definition I use to define the behavior of a moral being as, "What you do when no one is looking."

Promoting moral behavior which emanates from a person of character is really the bottom line of what we would like engineers to demonstrate. One sociologist has characterized strength of character as people whose actions minimize their cognitive dissonance. In other

words, people with a strong conscience who are able to eschew unethical behavior and demonstrate ethical behavior.

There are a number of reasons a person should act ethically. External reasons consist of fear of being caught and all of the ramifications that entails, such as being punished by the law, resulting social stigma, etc. Internal reasons might just consist of not wanting to feel guilty, without questioning the reason behind the guilt. There might be philosophical reasons such as put forth by Kant and the "categorical imperative," which simply says that if everyone did what you did and it would be bad for society, you should not do it. However, one of the most persuasive reason, if not THE greatest to increase cognitive dissidence is one's religious commitments.

The thesis of this paper is that we, in academia, have, in a lemming-like race, been caught up in a fear of promoting any kind of religious basis for ethical behavior. Not only is this a practical mistake, but it is philosophically flawed. One reason for this is that a major, if not the main problem in unethical behavior is not one of knowledge, but one of character. This is, the problem is not knowing what to do, but doing what we know. This is supported by the data in Figures 1 and 2.

It should be clear that there can be no rational consistent motivation to observe an ethical system without acknowledging the existence of absolutes. And, it is questionable whether or not one can claim the existence of absolutes without a theistic presupposition. Anscombe supports this by saying, "...it is not possible to have such a concept unless you believe in God as lawgiver..." This claim seems to send terror into the hearts of professors as it brings religion into the ethics class room.[10]

I claim that this can be done without violating the principle of "separation of church and state" or promoting any religion. What is important is to allow students who do have a religious aspect to their lives, to utilize this in increasing their cognitive dissonance. This can be done by presenting the various ethical systems in as an objective way possible and then evaluating them.

One taxonomy I find useful is explained by Holmes in his book, *Ethics: Approaching Moral Decisions*.[11] What this does is give students who practice a religion a basis for integrating their faith into their professional practice. Our education system has so ostracized religion from our curriculum that merely allowing it to be brought in as a source of promoting ethical conduct can greatly sensitize the cognitive dissonance of religious students and cause other students to consider the reasons why they should act ethically.

Conclusion

What I have tried to show is that introducing religious beliefs into a course on engineering ethics is not only allowable, but beneficial. The instructor must, however, be non-sectarian in dealing with this area. What the instructor can do is to point out the motivations inherent in the main religions and challenge the students to internalize these, or at least to articulate them in a way that encourages them to take their faith seriously. In this way, the instructor enables students to lay a foundation for ethical behavior which should, in turn, increase cognitive dissidence when temptation toward unethical actions arise.

Bibliography

1. ABET, "Engineering Criteria 2000 for Accrediting Programs in Engineering in the United States," 2nd ed., Engineering Accreditation Commission, Accreditation Board for Engineering and Technology, Inc., Baltimore, MD January 1998.

2. FLEDDERMANN, C. B.,. *Engineering Ethics*, Prentice Hall, Englewood Cliffs, NJ, 1999

3. GORMAN, M. E., M. M. MEHALIK, and P. H. WEHANE, *Ethical and Environmental Challenges to Engineering*, Prentice Hall, Englewood Cliffs, NJ, 2000

4. HARRIS, C. E., Jr., M. S. PRITCHARD, and M. J. RABINS, *Engineering Ethics, 2nd ed.*, Wadsworth/Thomas Learning, Belmont, CA, 2000

5. JOHBSON, D. G., *Ethical Issues in Engineering*, Prentice Hall, Englewood Cliffs, NJ, 1991

6. SEEBAUER, E. G. and R. L. BARRY, *Fundamentals of Ethics for Scientists and Engineers*, Oxford University Press, New York, NY, 2001

7. TENNESSEE STATE BOARD OF REGISTRATION Report, 1992

8. Written communication with ASCE headquarters, 1992

9. HUNTER, J. D., *The Death of Character; Moral Education in an Age Without Good or Evil*, Basic Books, New Your, NY, 2000

10. ANSCOMBE, G. E. M., "Modern Moral Philosophy," *Philosophy*, Vol. 33, 1958,

11. HOLMES, A. F., *Ethics: Approaching Moral Decisions*, InterVarsity Press, Downers Grove; 1984

Author Biography

Otto J. Helweg received his Ph.D. from Colorado State University and has an M.Div. from Fuller Theological Seminary. He is presently dean of the College of Engineering and Architecture at North Dakota State University and teaches a course on engineering ethics.