

BOOK REVIEW

Engineering Ethics: Challenges and Opportunitiesby W. Richard Bowen, Springer, 2014

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Bowen's book on engineering ethics is a breath of fresh air for those of us who have argued for many years that the engineering profession needs to dramatically widen its sense of ethical responsibility to include issues of war and peace, as well as social justice. The book makes an important contribution to the changing notion of ethical principles in engineering and engineering education. This review highlights several areas that are incredibly important as engineering moves forward in the 21st century. Also references are made to several concerns I have concerning the completeness of the text.

Using the notion and importance of communities in developing ethical principles certainly makes a strong case for the broadening of the engineering profession to include violence or its prevention and the nurturing of justice. Yet the notion of peace is, I believe, much more than the absence of violence. Perhaps it might be useful for the author to more fully elaborate both negative and positive peace and how engineers may figure in both. This would seem to only strengthen the author's assertion that the pursuit of peace is an ethical responsibility for all engineers. *Approaches to Peace: A Reader in Peace Studies* by David P. Barash and *Peace: A History of Movements and Ideas* by David Cortright might serve as useful references in further discussing negative and positive peace.

Virtue ethics certainly offers one useful way to examine ethical responsibilities in the engineering profession. I would suggest again, for the sake of completeness, that other paradigms of more recent origin might be helpful in strengthening the argument for a broader ethical responsibility. Our understanding of the natural world and the Universe has changed a great deal since the times of Aristotle. Now we speak of complex systems and even chaotic systems. A question worth exploring might be how does the "new physics" affect our sense of ethical responsibility? If a system is chaotic, does it even make sense to speak of ethics? Two sources that deal with such issues is *The Natural Contract (Studies in Literature and Science)* by Michel Serres, Elizabeth MacArthur and William Paulson and *Chaos and Order: Complex Dynamics in Literature and Science (New Practices of Inquiry)* by N. Katherine Hayles.

The issue of engineering and its part in development for me seems particularly difficult. It is not clear to me as to what might be the end goal for development, that is, development from what to what exactly? Is it our ethical responsibility to help transform all cultures to a slight different version of our very own? Such questions point to the very definition of technology especially a technology that is based on Western values. It seems that there are other views or visions of technology that might be useful to consider if we are truly to broaden the ethical responsibility of the engineering profession. Particularly many indigenous cultures today are very wary of being transformed into societies which we in the West, under the dominant patriarchal view, deem as the

goal. Let me point to a technology of the Native American cultures which comes forth from what they term as “Native Science.”

Certain elements of the “Native Science” paradigm are common to Western science while others go beyond the conventional framework yet there are fundamental differences. For example, “Native Science” does not view living systems reductively, but rather grants them full integrity and ontological standing. Such integrity and standing is likewise granted to the rest of the universe, in which everything is viewed as animate and having spirit. Secondly, the human being logically is in existential relationship to all domains of nature with corresponding responsibilities and as self-conscious agents must recognize their role and responsibility to assist in maintaining dynamic balances of the natural world through participation and renewal. Thirdly, the “place” must always be included in ethical decisions. Lastly, human actions should emerge from a source beyond individual motive, and instead be sanctioned through ritual and ceremony reflecting a larger spiritual world order. I would suggest that this science may lead to a very different understanding of ethical responsibility that we might have in the engineering profession.

In summary, I feel that Bowen’s text makes significant and tremendously important strides in challenging the engineering profession to broaden its sense of ethical responsibilities. My suggestions are made only to further strengthen his argument as I believe the profession is badly in need of movement towards a more realistic and responsible view of its role(s) in the world of the 21st century.