ENGINEERING ETHICS IN THE INTERNATIONAL ARENA

Engineering ethics is coming of age. This claim is true in at least two respects. First, engineering ethics has undergone an internal evolution in the direction of increasing depth and breadth in its treatment of the issues appropriate to the discipline. In the early years, three or four decades ago, engineering ethics was dominated by discussions of relatively few cases, usually involving engineers blowing the whistle in an attempt to prevent threats to public health and safety. Now it includes topics such as risk, the environment, the relationship of engineers to managers, the relationship of technology to the larger society and to value issues, individual and group responsibility for technology, the proper place of professional codes and professional societies—and the list is growing!

The second way in which engineering ethics is coming of age is that it is becoming a truly international discipline, following a trend in the engineering profession itself. One manifestation of the trend toward globalization is the emergence of worldwide standards for the technical education of engineers, as represented by the Washington Accord (1989). The signatories to the Accord agree to “substantial equivalence” in the standards for undergraduate education. Similar agreements have been signed regarding engineering technology (Sydney Accord 2001) and engineering technicians (Dublin Accord 2002). As of now, roughly a dozen countries have signed the agreements, but the list of signatories is bound to grow.

The licensing of engineers has also taken on an international dimension, with the establishment of the Eur Ing title by the Federation Europeenne d’Associations Nationales d’Ingénieurs (FEANI) or the European Federation of National Engineering Associations, which celebrated its sixtieth anniversary in 2012. The Eur Ing, which is much like the P.E. license in the U.S., is accepted in more than 30 countries. Whether the trend toward licensure follows the Eur Ing transnational model or the P.E. national model, emphasis on licensing and registering engineers is almost certain to grow throughout the world.

The movement toward the globalization of engineering raises new issues for teaching and research in engineering ethics that have not heretofore been addressed. Many of these issues have been addressed in this volume. I mention four such issues that seem to me to have particular urgency. First, engineers around the world must come to understand themselves as professionals. Some scholars are convinced that the notions of “professional” and “professionalism,” being Western in origin, cannot be exported to the global scene, at least with respect to engineers. Japanese scholar Tetsuji Iseda (2008) is one who believes this. Iseda has argued that intrinsic to the Western concept of professionalism is an implicit social contract, according to which professionals (in this case, engineers) agree to self-regulation and high standards of competence, in exchange for high socioeconomic status. In Japan, however, engineers earn less than social scientists and have comparatively low social status. As a result, Iseda believes, engineers
in Japan do not think of themselves as “professionals” in the Western sense and cannot be motivated to ethical conduct by thinking of themselves as professionals. Other scholars have made similar arguments to me, often maintaining that the notion of professionalism is too individualistic to be appropriate for the more group-oriented Asian cultures.

Despite these claims, engineering organizations in Asia continue to promote the concept of professionalism as applicable to engineers in their part of the world. The Federation of Engineering Institutions of Asia and the Pacific (FEIAP, n.d.) has as its goal the encouragement of social and economic progress through the application of technology and the advancement of “engineering as a profession in the interest of all people . . . .” The Commonwealth Engineers Council (CEC, n.d.), with members in 44 countries, was established to “advance the science, art and practice of engineering for the benefit of mankind.” Its website continues: “As engineers we recognize our responsibility of working closely with other professions and with the engineering community at large.” Whatever the outcome of this debate, engineering ethicists have the opportunity to contribute to the discussion of the meaning and relevance of professionalism, admittedly a Western concept, in the international arena.

In this writer’s opinion, engineers should be encouraged to think about professionalism in universal or global terms. One way this might be done is to point out that a profession is a social role, and all, or virtually all, cultures recognize the existence of social roles, each role carrying its own set of obligations and prerogatives. One thinks of the role of child, parent, government minister, religious leader, etc. (Harris, Pritchard, Rabins, James, & Englehardt, 2012). In more group-oriented cultures, it may be more appropriate to think of professional obligations as obligations of a professional group to the larger society, rather than as individual obligations.

A second issue is the increasing necessity for engineers to appreciate the interaction between technology and culture. As scholars in Science and Technology Studies (STS) have shown, social values often influence the direction of technological development. It is not enough to say that technology has its own internal logic, such that one step in technological progress builds on another, as the steamboat might be said to follow the sailboat. Social concerns often determine the direction in which technology moves. To cite one of the standard examples, Pinch and Bijker (1987) have shown that the early evolution of the bicycle was influenced by social considerations: the more utilitarian version came to be more widely acceptable than the bicycle with the large front wheel, which finally disappeared. Even more difficult for engineers to appreciate, in my opinion, is how technology can modify our values. The ability to see the human form of a developing fetus by various types of imaging has probably affected conceptions of the moral status of the fetus. Cell phones and social networking platforms may well be changing our views about privacy. Although these examples originated in Western societies, similar causal interactions between technologies and norms and social practices probably exist in most societies.

Engineers and engineering students tend to resist the view that there is a causal interrelationship between technology on the one hand and values and social practices on the other, preferring to see technology as value neutral, thereby shifting the responsibility for ethical deliberation on how these technologies are used to those outside the engineering profession, such as political and religious leaders. This tendency may even be stronger with engineers in non-Western societies, where technology is sometimes held in suspicion precisely because it is seen as a vehicle for importing values seen as subverting traditional cultural and religious norms. Classroom discussions by engineering students of such issues as they relate in their own culture can assist in the transition from the view of technology as value neutral to a more adequate understanding of the complex and subtle ways in which technology can to some extent be malleable to different value orientations, but at the same time can influence those same values.
A third way in which the internationalization of engineering makes new demands on the discipline of engineering ethics and engineering ethics pedagogy is the necessity of making decisions produced by conflicts of values and practices among societies. We can call these “boundary-crossing issues.” A major challenge here is to know when to follow the values and practices of another culture—“When in Rome, do as the Romans do”—and when to refuse to comply, because compliance would result in serious compromise of one’s own moral values. Can one accept a degree of nepotism when it is practiced and perhaps even morally obligatory in a society in which one is doing business? What about paying extortion to a customs agent in order to be able to import goods that are perfectly legal? Is it morally permissible to paternalistically force workers to wear safety helmets or to live in more sanitary conditions for their own well-being, even when such practices seem to violate their own norms? When and to what extent is it legitimate for an engineer to acquiesce to norms involving the treatment of women in cultures whose values are different from one’s own?

A fourth requirement of engineers in a globalized environment is that they be able to communicate across language and cultural differences. It is not easy to accord moral respect to those whose values in some areas are profoundly different from one’s own, and yet a certain degree of mutual respect seems essential to effective communication. It is useful, however, to appreciate that value different from one’s own can be sincerely held, and that others may be willing to accept a considerable degree of personal sacrifice in order to hold to those values.

Exploring the challenges of communicating across cultural divides can be aided by the use of cases. Most of the early cases in engineering ethics, such as the Challenger, were based on incidents in the United States, and these can be useful to non-U.S. engineers in understanding conditions in the U.S.; they may not be as useful in helping U.S. engineers understand cultural and value differences abroad. Thus, cases appropriate to Latin America, China, India, and other cultures are needed. These cases must highlight problems and issues that are important to engineers in various situations. In many countries, for example, most large projects are financed by governments, and these governments are often non-democratic. Engineers who protest unethical practices may face not only dismissal, but also jail sentences or worse. Corruption also appears to be a more severe problem in some countries than in the United States.

The essays in this volume should contribute to the discussion of ethical and professional issues in engineering, as they increasingly assume an international character. The engineering profession, given its power and influence in the contemporary world, deserves this attention.

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REFERENCES


