Can Ethics Be Taught?

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ABSTRACT: *It is arguable that the instinct for survival in animal species has evolved due to the evolutionary elimination of those individuals who did not have enough inclination nor desire to cluster in a team. Thus, the roots of ethical conduct in its many facets in today's world, may be sought in this very primeval concern for the society that enabled communities, rather than individuals, to survive in an antagonistic world. It is also arguable that modern society, which has evolved from such humble considerations, has long ago lost the sight of such pragmatic beginnings.*

Today, the more sophisticated reflection of this basic evolutionary trait is found in voluntary observation of a particular code of ethics in a professional environment. However, this time it is not so much the question of physical survival which is at stake, as are the moral status of the profession and the credibility of its principals in a complex social setting. It is claimed that there is a correlation between being an ethical professional and an ethical citizen, and that therefore there is nothing new that can be taught in a classroom of undergraduate engineers.

It is the aim of this paper critically to explore this assertion in the context of classroom delivery and comment on students' perceptions of the subject taught in the University of Western Sydney first year of Engineering.

1 INTRODUCTION

It is not difficult to imagine in prehistoric times that an adversary could have physically tackled much more successfully just one edible individual, rather than a whole team of them. It is more than likely that man owes his existence to this early realisation that team work pays, most of all in enabling survival in an antagonistic world. It is speculated that this has evolved into the highly organised society of today. A significant part of this organisation is related to the division of labour, in which engineer and technologist play a paramount role. Products of their professional endeavours permeate the whole society, often bringing in their wake questions of a new or professional morality – adding a new dimension to his or her conduct and status in the society. Such, and more recent professional endeavours may be illustrated with the top 20 engineering achievements in the twentieth century (Martin & Schinzinger, 2005): electrification, automobiles, airplanes, water supply and distribution, electronics, radio and television, agricultural mechanisation, computers, telephones, air-conditioning and refrigeration, highways, spacecrafts, Internet, imaging technologies in medicine and elsewhere, household appliances, health technologies, petrochemical technologies, laser and fibre optics, nuclear technologies and high-performance materials.

This professional morality is spelt out in Codes of Ethics governing professional behaviour and putative standards that a practitioner ought to follow.

Since morality relates to questions of choice, values and behaviour, a professional code of ethics seeks to delineate an universally acceptable path along which a profession may be practiced. This invokes philosophical concepts that are in stark contrast to technical certitudes with which an engineer is thoroughly familiar. It is no surprise therefore, that Engineering has always been correctly perceived as a pragmatic profession, devoid of interesting speculations, and always focused toward a practical end. The essential element of the profession is an engineered precision in an imperfect and imprecise world that has created technological wonders of today. It is also no surprise that philosophy and engineering have not always co-existed, at least not in an engineering curriculum. Those visionaries who saw benefits that humanities bestow upon its disciples have tried to broaden the horizons of practitioners of both by formally bringing them together. Traditionalist in either camp doubted widely prophesised merits of such a symbiosis which perhaps explains why many of these attempts in the past have not always endured.

Today, the more sophisticated reflection of this basic evolutionary trait is found in the voluntary observation of a particular code of ethics in a professional environment. However, this time it is not so much the question of physical survival which is at stake as are, among others, the moral status of the profession and the credibility of its proponents. It is claimed that there is a correlation between being an ethical professional and an ethical citizen, and that therefore there is nothing new that can be taught in a classroom of undergraduate engineers.

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2 EVOLUTION OF ETHICS

The prehistoric humanoid evolved a reflex for survival without premeditated considerations as to the merits of his action. It was either effective, or he or she ceased to exist. Resources were scarce, survival precarious and time for reflection, if any, very limited. The herd instinct that evolved helped in ensuring, at least, not only survival, but acquired receptivity to learn how to be more adept in a hostile environment. However, past the hunter-gatherer stage and with developing agriculture, resources became abundant and population grew as a consequence, evolving customs and cultural norms of interaction that were not immediately life threatening. It gave time to reflect that gave rise to philosophical considerations with, ultimately, the one common thread in ethics that could be summed up as "do not do unto others as you would have others do unto you".

The notions of "right" and "wrong" present contentious issues as it is often argued that proponents of either project their particular bias. Learning which is the "right" way to behave is often an inherent part of a non-secular belief, dating back to the dawn of time and manifest in primitive rites to please the omnipotent deities. In the secular domain, Socrates believed ethics is simply "knowing what to do", and that this knowledge can be taught or learnt which, with contributions of other early Greek philosophers provided the intellectual framework which underlies Western ethical thought.

3 PROFESSIONALISM

Professions are characterised sociologically by means of their members' scientifically grounded expertise and their service ideal (Airaksinen, 2004). The manner of practicing a profession is subject to value judgements and the accredited professionals are bound by an appropriate Code of Ethics. This conveniently delineates, among other things, the acceptable standards of decorum, quality, safety and environmental implications, as well as giving assurance of the professional competence of the practitioners. Engineers, unlike other professionals, being 'servants of the public" owe their allegiance to their employers as well. This manner of divided loyalties is a unique feature of engineering ethics (Airaksinen, 2004), and is often the major cause of professional disputes.

4 DEMANDS OF PROFESSIONAL PRACTICE

Practicing a profession not only involves discharging its technical component, but how this may be done is also a part of the total solution to the posed technical problem. Generic recipes for the latter are given by the professional societies, which "licence" practitioners and these often form legal grounds for settling any disputes. Thus, in practicing their craft, professionals assume moral responsibility for their actions. As engineering solutions are based on a compromise of competing alternatives, the value judgements involving ethics need to be brought into focus simultaneously with the classical technical ones.

5 EDUCATING NEW ENGINEERS

Owing to demands of the market place, boundaries between engineering disciplines are becoming less pronounced, resulting in devolving engineering curricula. Concerns for the environment and sustainability issues call upon greater emphasis on engineering ethics, because, in the long term, engineering practice, apart from alleviating the immediate problem, also brings about in its wake, questions relating to survival of the species in the long term. This time, however, it is the matter of survival, not of individuals, but the planet as a whole. Beder, 1996, coined the concept of the New Engineer as the holistic practitioner of the profession taking into account such factors when executing a

technical task. This calls for not only reorganising engineering curricula, but bridging the gap with humanities. It is essential that humanities reciprocate, as their practitioners are often instrumental in decision making processes engineers are charged with realising.

6 CAN ETHICS BE TAUGHT ?

Ethics is a philosophical discipline of long standing. It provides a forum for questioning value judgements and fosters debate that examines practices of social conduct involving these value judgements. However, it does not formulate them, because it is not prescriptive. Being an open discourse, it provides insights to those who participate in them, which helps with reaching appropriate decisions. It may be argued that it is this insight, together with the mechanics of obtaining it, which provides the "knowledge" of ethics.

This is in contrast with technical disciplines which involve analytical applications which are based on prescriptive information that provides a structured path to the solution. Knowing this path through a learning process is a key to its correct application.

In both instances, learnt knowledge, irrespective of the manner of its acquisition, is essential for reaching the appropriate solution, though the converging paths are disparate.

7 ETHICS IN A CLASSROOM

It is not uncommon to find an engineering curriculum overcrowded with technical subjects, such that "no room exists for anything else". After all, it is argued, it is the core subjects which delineate a profession, and these should be given the prime consideration. Although compromises are often found to allow Engineering Ethics to be introduced into the curriculum as a separate subject, this is not always possible. It is suggested that in the core units it ought to be possible to introduce, in parallel with the technical content (and inseparable from it), concepts of engineering ethics through case examples, often from the academic's own prior professional practice as an engineer.

8 EXPERIENCE AT THE UNIVERSITY OF WESTERN SYDENY

In the University of Western Sydney, Engineering Ethics is only a small part of a comprehensive *Introduction to Professional Practice* which aims at providing all first year students in the School of Engineering and Industrial Design with elements of interdisciplinary interaction and understanding as well as an introduction to professionally ethical conduct.

Engineering Ethics was introduced as Professional Ethics to accommodate the presence in a class of a group of Industrial Design students. Following a recent experience, described in Ilic (2003), the subject was introduced by providing the definition of ethics (Martin & Schinzinger, (1996):

- *the study of moral issues and decisions confronting individuals and organizations, and*
- *the study of related questions about the moral ideals, character, policies and relationships of people and corporations involved in technological activity.*

The definition was immediately followed by several examples, which were discussed at length, including the merits of a suggested resolution of a dilemma. The examples used were non analytical in nature and essentially involved, either sloppy organisational practices, disguised bribes or manager – employee confrontation involving undermining of professional judgement with adverse safety implications. While considerable time was spent in discussing merits of each case, it led seamlessly to segments dealing with professional responsibility for safety and responsibility to employers. Subsequent tutorials (Grodzicki, 2003) focused on a different set of practical cases (including "whistle-blowing") as well as an exposed and publicised case of company price fixing reported in the local press.

The only definitive outcome of such a short exposure to a formal discussion of Ethics is the awakening of students' awareness of non-technical issues confronting them in the practice of their future professions. In particular, it drew their attention to the often evolutionary nature preceding unethical outcomes. While such an approach did not provide analytical answers, it alerted them to the principles involved in their solution and further references for more information.

The students' response was cautious and in some cases seemed to indicate that loyalty to employer should be paramount. This was a moot point resolved by reference to the professional code of ethics. Another interesting point made by a student was the ethics of manufacturing weapons of war. This was

"resolved" by reference to their application – is it for defence or attack; preservation of a society or its demise ? In either case, the objective of students' first exposure to ethics was achieved – as it triggered off thinking processes (without being prescriptive) about matters other than technical, hitherto deemed quite unimportant, if relevant at all to their education.

9 CONCLUSIONS AND WHENCE FROM HERE?

Engineering Ethics is studied at many universities, not as a dogma because it is not, but as a means of providing a framework for accepting a technical solution to a given technical problem, from (usually) several alternatives. It furnishes insightful background as well as a framework with which to rationalise which one of several alternative technical solutions is most acceptable. It is not individually prescriptive, but is the basis for formulating Codes of Ethics that provide a generic guide for practitioners of a profession. Therefore the answer of the posed question is in the affirmative.

Just as the origins of ethics can be traced to the battle for survival in primordial times, it is also important to our efforts in extending life on the planet hurtling into its ultimate cosmic oblivion. This predicates emphasising not only importance, but utility of Engineering Ethics for everyone, as a "licence" to professional practice. It is a convenient bridge between Humanities and Engineering, disciplines which should be encouraged to interact more effectively, for the ultimate benefit of all.

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