

Catholic Social Thought and Engineering Education
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The status quo in United States engineering education will be briefly reviewed - roughly 250 degree-granting institutions, only 13 of which are officially Catholic, all practicing undergraduate “professional” education targeted at the Bachelor of Science degree, and all accredited by the same body, within more conventional 4-year college programs.

The target audience in these degree programs reflects the composition of the profession: global in scope and multicultural, pluralistic vis-à-vis faith traditions. The typical curriculum must address this student body, with the added constraint of an overstocked set of in-discipline requirements and the related problem of graduates lacking breadth in university preparation. On top of this, all curricular components need to be fully competitive on both professional and intellectual dimensions if they are to be retained in this rigid framework.

A special feature of engineering is its newness: as a profession it has emerged only over the past 200 years, in parallel with the industrial revolution. Its foundations (both intellectual and practical) need to be viewed in terms of progress toward fundamental human problems arising in a technological world. These are new and evolving, but there are two generic ‘problems’ which demand ‘new’ professional attention from engineers:

- The problem of securing technological services, *to people*
- The problem of guaranteeing sustainable use of natural resources, *for people*

These problems justify the creation/maintenance of a special profession; they are uniquely ‘Industrial Age’ problems. And they are uniquely ‘people’ problems. Examples abound and testify to their newness, their permanence, and their urgency.

Against this backdrop, the question for educators is, how is the profession to be formed? And, what does Catholic Social Thought offer? In approaching this question, we observe that CST is new, only 100 years old, and is thus a work in progress. It is inspired by very modern problems of worldwide industrial organization, state-mandated religious practice, the cold war, the arms race and nuclear arms, and environmental degradation. These are all fundamentally features of “industrial man”, i.e. within the purview of professional engineers. So, CST is addressing the very problems which our engineering students are expected to take responsibility for – both as educated persons, and as professionals in addition.

Now CST is perhaps remarkable coming from a faith tradition which has historically emphasized transcendent virtue; and clearly de-emphasized material wealth. But Jesus’ description of the Last Judgement make clear the worldly imperative to care for each other’s material well-being; in fact it is only that material well-being which is invoked at the Judgement! It seems that Jesus had an engineering background (carpentry) which ought to be mirrored in today’s profession:

feed the hungry, clothe the naked, etc. To the extent that our professions focus on these elementary imperatives, we have a 'good' profession.

In addressing individual rights and responsibilities in an industrial world, CST is fundamentally grounded in the Catholic ontology: humans are created beings, with purpose, and the important natural law questions which devolve from that. And humans are responsible for creating material conditions which foster the natural human dignity of others, that they may find God, know Him, and glorify Him. The metric of material dignity for engineering is clearly relative to what is possible; a dignified material standard of living now clearly is different from that in the medieval period. The central principal comes from CST; its implementation is technology-dependent.

That ontological viewpoint is of fundamental importance. Many approaches to professional ethics skip this essential starting point and easily convey to students a world of rule-making which is strictly utilitarian, without principled direction or compass. CST injects the relationship between God and man as a point of order and direction. Developing this ontological point, in context of the history of ideas, is of fundamental importance in developing a coherent intellectual base for professional as well as personal norms.

A further point in this discussion is of vital importance. Given the pluralistic nature of the profession and its schools, we are not at liberty to develop a single faith-based approach to professional norms. But the natural law basis of CST is in fact a wonderful resource: we do not need to agree now on theology, when we can agree on certain natural law premises. Because of this, it is asserted that the same practical outcomes can be agreed upon across the several world religions, lacking a top-end agreement on theological issues. (Witness the UN's Universal Declaration of Human Rights). And the ontological view stated above is in fact shared among the leading monotheistic faiths today.

The way forward at Dartmouth – a nonsectarian institution -- is being tested in an "Ethics across the Curriculum" project with a new course scheduled for imminent introduction. This course will be jointly offered to seniors in the Bachelor of Arts program (pre-professionals), by tenure-line professors of engineering and of philosophy teaching jointly. Course materials will be a blend of case studies and theoretical exposition, the latter emphasizing the history of ideas. Among the main intellectual components of the course are:

- Historical view of professions and professional responsibilities
- Aristotle, Aquinas, Kant, Rawls: ethics and social organization
- Major religious systems and morality
- Natural Law and CST
- "Common Morality" as a rule-making system
- Human Rights, UDHR, Professional responsibilities in absence of good government
- Ends and Means in engineering – competence vs. problems as definitive
- Personal vs. Professional norms
- Current professional codes of conduct
- Rights and responsibilities in a globalizing industrial world

Among the normative challenges to be put to students are the “Engineering Challenge” pertaining to the next 50 years: the securing of natural human rights a) in technological services and b) in the sustainable use of natural resources. The former are ‘positive’ or ‘economic’ rights and challenge the price system as prioritizer. The latter stems from the mandate of stewardship, as well as practical exigencies, and challenges the ownership regime in which many professions are based. More details of this course will be provided in October when its design is complete.