Review of: "Planning Courses on Ethics in Engineering Curricula"

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Potential competing interests: No potential competing interests to declare.

I am very pleased to have the opportunity to review an article that argues for the need for ethics courses in engineering schools. I have often asked the question of how much experience engineers have had with ethics during my research and work, to discover that it has often been very little. My interest lies not only in engineering of large-scale civil projects which seems to be the focus of this article, because engineers move into many other forms of technological development that although less visible also have direct effects on society.

I broadly agree with the comments made in the other reviews about the methodological problems present in this article, and would however like to propose a broader vision of ethics based on the notion of Responsible Innovation (RI) that draws on engineering experience, and that could inform a methodology and approach for designing the courses that the author proposes.

RI and engineering have been closely linked from the very beginning of the development of RI terminology. One of the early definitions and resulting RI frameworks grew out of social scientist involvement in an engineering project. The Stratospheric Particle Injection for Climate Engineering (SPICE) project[i] was funded by three UK research councils, the Engineering and Physical Sciences Research Council, the Natural Environmental Research Council and the Science and Technology Facilities Council.

During the project the team developed a stage-gating process and definition of what RI might be:

Responsible innovation means taking collective care for the future, through stewardship of innovation in the present (Stilgoe, Owen and MacNaghten, 2013, p.1570).

This definition talks about innovation, but we could quite easily adapt it to engineering:

Responsible engineering means taking collective care for the future, through stewardship of engineering in the present.

The RI framework that developed from this experience could also be applied:

Engineering/innovating responsibly entails a collective and continuous commitment to being: anticipatory (describing and analyzing both intended and potentially unintended impacts); reflective (on underlying purposes, motivations and potential impacts); deliberative (inclusively opening up visions, purposes, questions and dilemmas); responsive (a collective reflexivity process sets innovation direction and influences its trajectory) (based on Stilgoe, Owen and MacNaghten, 2013).

This might be an appropriate framework to apply to developing courses in ethics for engineering in support of what Thanikachalam Vedhathiri describes as 'the need of following ethics in planning, design, construction, testing, and maintenance of buildings, equipment, machines, roads, bridges, transport systems, power systems, environmental protection, elimination of pollution, etc'.

[1] http://www.spice.ac.uk/

Reference:

Stilgoe, J. Owen, R. MacNaghten, P. 2013. Developing a framework for responsible innovation. Res. Policy, Volume 42, Issue 9, November 2013, Pages 1568–1580.

https://www.sciencedirect.com/science/article/pii/S0048733313000930