Teaching Societal and Ethical Implications of Nanotechnology to Engineering Students

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Abstract

Nanotechnology research is rapidly moving towards the development of new information technologies, made possible by drastic reductions in the size of devices from the micro scale down to the nano scale. As with any such radical new technological development, there are likely to be enormous material and economic benefits to be enjoyed; as well as new ethical issues to be resolved and crucial societal consequences to be addressed. It is important that engineering students are given opportunities to reflect on such social and ethical implications of the coming nanotechnology age, and that they are equipped with the intellectual tools with which to process the meaning and significance of these implications. This paper points out that, while very useful, typical analytical models of engineering ethics analysis were not designed for extrapolating into the technological future. The paper offers a new model of instruction for helping students to understand various possible societal and ethical implications of nanotechnology development. It suggests that student engagement with such imaginative tools as science fiction film and literature can be to deeply engaging for the engineering student.

ROSALYN BERNE and JOACHIM SCHUMMER are collaboratively working on a course program that introduces engineering students, both in the US and in Europe, to societal and ethical implications of nanotechnology.

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