

Societal and Ethical Implications of Nanotechnology at the University of Virginia

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This presentation will discuss examine related educational and research activities at the University of Virginia that explore the societal implications of nanoscale science and engineering. There are two dimensions (both supported by NSF awards) -- undergraduate instruction and graduate research -- that draw upon the involvement of faculty from the liberal arts and social sciences. Roslyn Berne introduces students to the ethical and societal implications by integrating her efforts with the existing engineering curriculum. She does this in two ways. The first is a summer course directed at science and engineering undergraduate students who come to Virginia under an NSF grant, specifically for summer research involving nano-scaled projects. The second mechanism is to incorporate nanoscaled science and technology units of instruction into the existing, required 'Societal Dimensions of Engineering' course. This paper discusses both activities and offers critical assessment of what worked and what didn't, in the attempt to get students to think about values and ethics related to those fields of inquiry.

The research activities grow from the efforts of Michael Gorman. The primary goal is to establish that social scientists and ethicists can work with scientists and engineers on the cutting-edge of nanotechnology research. Collaborations among diverse stakeholders have been described as 'trading zones', a metaphor which has been applied to the development of various engineered systems like radar (Galison, 1997), magnetic resonant imaging (Baird & Cohen, 1999) and the convergence among nano, info, bio and cognitive technologies (Gorman, 2003). For developments in nanotechnology to represent social and scientific progress, engineers, natural scientists, social scientists, and ethicists will have to develop a kind of 'nanocajun' that allows them to communicate. The paper will discuss lessons learned from a specific research project that follows this process.

References

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