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Ottinger Discussant Remarks - APPE 2010

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Abstract

Remarks given at a 2010 conference made by Dr. Gwen Ottinger looking at sustainability and environmental justice.

Body

In their presentations, John Ehrenfeld and Robert Figueroa connected sustainability and environmental justice. Ehrenfeld's recommendations for *creating* sustainability would foster environmental justice through attention to cultural structure, local learning, and participatory design; Figueroa made the case that sustainability requires social and environmental justice.

But in engineering practice and technological design, the goals of sustainability and environmental justice do not always appear so compatible. Technologies that may seem to promote sustainability by, for example, reducing pollution at the global or regional scale may intensify environmental injustice by concentrating environmental harms at the local level. Environmentally efficient technologies may also remove decision-making from local communities to central governments, undermining environmental injustice by reducing communities' ability to speak for themselves.

Reconciling sustainability and environmental justice, I propose, requires expanding existing notions of engineering ethics to include an ethic of participation and an ethic of experimentation.

An Ethic of Participation

Not only Ehrenfeld and Figueroa but also Indira Nair, Sheila Jasanoff, and Donna Riley have argued that engineering for a just and sustainable world requires the participation of various publics who will be affected by engineering developments. In the context of environmental justice, it is especially important that members of communities most affected by pollution and climate change be involved in defining and solving problems of sustainability. The local-level impacts of so-called sustainable technologies are likely not to be immediately obvious to engineers, especially if analyses of the technologies' effectiveness are geared to environmental sustainability defined in terms of global climate or global resource use; incorporating community perspectives can help to ensure that innovations will be both just and sustainable.

An ethic of participation would also attend to the ways that engineers themselves participate in social movements for environmental sustainability and justice. During this mini-conference, a number of participants have pointed out that engineers work in specific institutional settings that constrain their ability to work for social justice in particular ways. An ethic of participation would push engineers beyond asking how they can promote social and environmental justice from within the institutions that employ and challenge them to ask how else they can contribute to social change. The Union of Concerned Scientists (UCS) stands out as an example of individuals using their professional credentials and skills to influence important policy issues without needing to get buy-in from their employers; while they lack UCS's high-level policy orientation, organizations like Engineers without Borders offer another avenue for engineers to participate in addressing social needs.

An Ethic of Experimentation

Engineering projects can be considered "social experiments" (an idea I adopt from Schinzinger and Martin's engineering ethics textbook) in that the full measure of

their impacts cannot be understood until the technology is in use. This is an especially important concept for environmental justice since the least-well understood aspects of a technology's impacts often include its contributions to pollution in already-polluted areas and its effects on communities' ability to participate in local decision-making. As Robert Figueroa so beautifully put it, 'unintended consequences' are the form of discrimination minority and low-income communities live with most often.

As a result, ensuring that sustainable technologies are also environmentally just demands approaching them *as* experiments—controlling and monitoring them with the intention of learning from the results and using those lessons both to inform subsequent designs and to adjust existing ones. An ethic of experimentation—closely akin to what Sheila Jasanoff in her presentation called "engineering experimentality"—would include, at minimum:

- proactive monitoring of the effects and effectiveness of new technologies
- designs amenable to adjustment and reconfiguration if they turn out to have negative consequences for environmental justice.

An ethic of participation would be integral to a meaningful ethic of experimentation: members of affected communities would need to be involved in identifying potential consequences, deciding how they ought to be monitored, and imagining how technologies could be made flexible or deployed in a provisional way until information has been collected.

For Further Reading

Downey, Gary. (2005) Are Engineers Losing Control of Technology? From 'Problem Solving' to 'Problem Definition and Solution' in Engineering Education. *Chemical Engineering Research and Design* 83(A6): 583 – 595.

Nieusma, Dean. (2004) Alternative Design Scholarship: Working Toward Appropriate Design. *Design Issues* 20(3): 13 – 24.

Ottinger, Gwen. (forthcoming) From Providing Solutions to Participating in Problem-Solving: Transforming Engineering Identities through Undergraduate EJ Projects. In *Technoscience and Environmental Justice: Expert Cultures in a Grassroots Movement* , ed. Gwen Ottinger and Benjamin Cohen. Under contract with MIT Press.

Schinzinger, Roland and Mike W. Martin. (2000) *Introduction to Engineering Ethics*. Boston: McGraw Hill. See especially Chapter 3, “Engineering as Social Experimentation,” p. 71 – 79.

Discipline(s)

Engineering