Understanding Nanotechnology Anthropologically

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Nanotechnology is currently enjoying a period of immense attention, and with this, very large amounts of funding. Most of this research money has been directed to basic scientific and engineering studies of phenomena at the nanoscale (1-100 nanometers, or the size range of atoms, molecules and viruses).

Some describe nanotechnology as a materials revolution, some discuss the possibility of “molecular manufacture,” and still others are focused on new forms of cancer treatment, drug delivery or biosensing. All of these areas are continuous with older research across scientific and technical fields, but “nanotechnology” provides a new and convenient, if not quite yet coherent, frame through which to understand it all. Along with this flourishing of a new science have come a variety of calls for social, ethical, cultural and legal research on nanotechnology—and even more unusually—increased funding. NSF has funded a number of small grants in nanotechnology. Recently it announced a competition for a center devoted entirely to cultural, social and ethical research on nanotechnology. The budget for this single center will dwarf most other coordinated projects in anthropology and science studies.

Nanotechnology and Social Sciences

With this influx of funding, finding innovative ways to make anthropology relevant to nanotechnology has suddenly become very appealing—though certainly not easy. During the past semester, I experimented in just this kind of relevance-seeking. Together with colleagues at Rice, anthropologist Hannah Landecker and Kristen Kulinowski, the director of the university’s Center for Biological and Environmental Nanotechnology (CBEN), I developed a course to integrate some basic scientific, technical and medical teaching with history, anthropology and sociology of science (http://kelty.rice.edu/235/). The course was coordinated projects in anthropology and science studies.

My students, for instance, help reassure the public about new products. So in addition to scientific research, CBEN also recently announced the formation of the International Council on Nanotechnology (ICON), a coalition of university, industry and NGOs. The three invited environmental NGOs declined to participate; however, as they perceive ICON and CBEN to be too closely tied to industry—companies concerned about public perception of nanotechnology, like DuPont, Loreal and SwissRe, are participating in the project.

Teaching Critical Thinking

Our participation in CBEN as anthropologists has been hesitant, and mostly as observers, not active participants. The call to conduct research in this area is often coded as an implicit endorsement of the project of nanoscience and nanotechnology. Yet it is becoming clear through our work that critical thinking and concerns about nanotechnology are based in poor reasoning, and more importantly, an almost complete lack of clear understanding of the scientific and technical issues at stake.

Effective criticism, like effective proof of the benefits of nanotechnology, needs to be based in sounder thinking. My students, for instance, explored popular perspectives on nanotechnology. They discussed the “grey goo” scenarios of self-replicating entities promulgated by scientists like Eric Drexler and Bill Joy; and considered Michael Crichton’s novel, Prey, about self-sustaining, self-reproducing micro-robots; and questions of posthumanism, or the movement to move beyond the human form, raised by Francis Fukuyama.

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