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review of Nanoethics: Big Ethical Issues with Small Technology by Dónal P. O'Mathúna

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Part 3 then concludes with an examination of contemporary forms of rationality in contrast to premodern ones, exploring the role of reason as recast within the lifeworld of experience. Premodernity is not possible, but his hope is that a critical theory of technology is.

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Nanoethics: Big Ethical Issues with Small Technology.

By Dónal P. O'Mathúna. London: Continuum, 2009.
Pp. xii+235. $19.95.

According to the Library of Congress, there is currently only one book (the one here reviewed), one edited volume, and one journal with the title "Nanoethics." I assume those numbers will grow in the next few years. "Nano-" is one of those prefixes that can be glued to just about any suffix, and "-ethics" is one of those suffixes that will happily accept any prefix. If ever there was a word just waiting to be coined and deployed, but without any particular referent, "nanoethics" is it.

Of all the publications that do, or will, have that title, Dónal P. O'Mathúna's turns out to be reasonably good. The blurb on the dust jacket says that O'Mathúna "has published widely on bioethics," and the book is part of a series on the ethical dimensions of various (broadly technological) domains: climate change, war, terrorism, digital justice, animal rights, metropolitan growth, international development. Thus, O'Mathúna's approach is that of an ethicist venturing to survey yet another region for his discipline. Except in a few areas (discussed below), historians and other scholars interested in social studies of nanotechnology aren't going to find much new here. On the other hand, for people who are primarily interested in some other area of ethics—especially engineering or environmental ethics, bioethics, or the ethics of international development—but want to see how those principles might be applied to nanotechnology, O'Mathúna's book is a good introduction.

Much of O'Mathúna's analysis hinges on a distinction between "normal" and "futuristic" nanotechnology. "Normal nanotechnology" refers to the rather ordinary research, development, and production of transistors, pharmaceuticals, nano-structured materials, etc., that has been going on for decades. "Futuristic nanotechnology" refers to the speculative world of "molecular assemblers," nanobots, and somatic transmogrification and immortality. As O'Mathúna somewhat perfunctorily notes, the two categories blur into each other, and practitioners of each make extensive use of the practitioners and rhetoric of the other.

Still, it is reasonable to draw some provisional line between nanotechnology-as-currently-practiced and nanotechnology-as-imagined-for-the-future. The "ethics of what if" can be approached differently than the "ethics of what is," even if each domain is predicated on the existence of the other. The problem with most of nanoethics, though, is that almost all of the attention, and certainly all of the passion, is directed toward "what if" rather than "what is." O'Mathúna makes a valiant attempt to work through the ethical dimensions of "normal nanotechnology" but his prose and analysis are much sharper on prospective and speculative issues rather than nanotechnology as it is now (and has been for decades) practiced in labs, factories, malls, government agencies, and so forth.

Thus, *Nanoethics* contains a thoughtful discussion of the precautionary principle as it applies to nanotechnology—but given that nanomaterials such as carbon black and fumed silica have been mass-produced for more than a half-century, it seems a little late to limit discussion to a precautionary frame. O'Mathúna discusses in detail how nanotechnology *might* affect society, but offers few insights on the very present experiments in interdisciplinary pedagogy, university-industry collaboration, and public engagement that various nations' nanotechnology programs have championed. He deserves genuine praise for devoting a whole chapter to "global nanotech," but then he has barely anything to say about the microelectronics industry—even though global annual production of transistors is closely tied to issues in international development, requires nanoscale precision manufacturing, and annually outstrips global annual production of grains of rice!

When it comes to futuristic nanotechnology, however, O'Mathúna is much more original and insightful. Particularly on the topics of science fiction and posthumanism, this book has the potential to move debates about nanotechnology forward. O'Mathúna's take on science fiction—that it is a form of ethical engagement that should be taken seriously—complements (though he does not cite) the voluminous literature in the history of science and technology on this topic. Likewise, his evisceration of many of the foundations of posthumanism is compelling, even if he does not engage with relevant, and important, scholarship (e.g., the literatures inspired by Bruno Latour or Donna Haraway).

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