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News and Views

Material witness: Ethics at the nanoscale

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Nanotechnology has a new facet: nanoethics. No one knows quite what it means, hardly anyone is working on it, but everyone is talking about it. At a recent symposium on nanotech at the Royal Institution in London (25 March; see www.nano.org.uk), it dominated the proceedings. Some echoed the concern of the recent report by the Canadian Joint Center for Bioethics (*Nanotechnology* **14**, R9; 2003) that without an ethical dimension, nanotech risks being stymied by public fears and prejudices, just like genetically modified crops in Europe and fetal-tissue research in the USA. Others insisted that there still doesn't seem to be anything to discuss: no valid ethical problems have yet been identified that are new or specific to nanotechnology.

Both groups are probably right. There may be nothing new in principle, but nanoethics is here to stay and nano-ists had better start embracing it.

Those who think seriously about the nanotechnological future know better than to raise false alarms over replicating nanobots running amok (the infamous grey goo). Even the forthcoming movie of Michael Crichton's *Prey* is unlikely to incite public hysteria. After all, science fiction does not create public anxieties; it is confused with fact only when it touches on pre-existing fears. The genuine safety issue, at least in the near term, is the question of whether nano-particles may have asbestos-like toxicity. Too little is known about this, although studies are now beginning. It is important that nanoparticles should not fall through a gap in safety legislation simply because their fabric is, at larger scales, deemed harmless.

Yet there is nothing unusual about the need to investigate the toxicology of new chemicals. The other ethical questions posed at the Royal Institution meeting — responsibilities and accountability of big companies, questions about who determines the agenda of nanotech, who benefits, and to what end — are generic to any emerging technology. They are important, they should be asked loudly, they should be debated with the involvement of disparate groups inside and outside of the research community. But isn't there something perverse about singling out nanotechnology for such treatment, as though it is uniquely susceptible to abuses?

If nanotech nucleates ethical debate about emerging technologies generally, that would be no bad thing (see this month's editorial). My only concern is whether any nanoethics committee can hope to get to grips with these broader issues — for example, is this just a plaything for the rich? What would we do with orders of magnitude more computing power? Should science worry about securing a public mandate?

Some researchers argue that nanotech does not even exist as a coherent field with clear goals. But the fact that it is often treated as such by funding agencies will make it appear so to the public. The pragmatic truth is that biotechnology and genetics have created a social climate in which ethical debates will be de rigueur for new applications of science. Far from feeling victimized, nanotechnologists have an opportunity to set an example.