

Atom and Eve

Debates about nanotechnology and religion have become dominated by the concepts of transhumanism and cyberimmortality, but, argues **Chris Toumey**, there are more interesting topics to discuss.

In a scene from a science fiction story called “Halo” by Charles Stross, Muslim scholars at an Islamic seminary in Cairo consider the religious implications of nanotechnology. All meat from a pig is forbidden, but if a molecular assembler can organize atoms and molecules from scratch to replicate a strip of bacon, without it ever being part of a living pig, is it still forbidden by Halal laws? If a computer can download and store the holy Quran and other essential Muslim teachings, and then use algorithms to think like a Muslim, “is the computer now a Muslim? ... If so, what are its rights and duties?”¹. Meanwhile, two researchers have written the entire New Testament on a 5 mm² silicon chip².

Those stories may amuse, but one can imagine that religious reactions to nanotechnology will be serious indeed. Considering that nanotechnology has the potential to change our material world in terms of medicine, consumer products, privacy, environmental health and many other areas, these developments will challenge any faith — Muslim, Christian or otherwise — to discern their religious or spiritual implications. One can imagine debates about morality, metaphysics, ‘playing God’ and other classic concerns. What, then, will religious people say about the religious implications of nanotechnology?

There is no shortage of statements saying what is right or wrong about nanotechnology. The proceedings of a 2001 workshop on the implications of nanotechnology for society is a great compendium of warnings and cautions framed in terms of justice, morality and other virtues³. Some of the entries were written by professional ethicists, but most came from knowledgeable people without formal credentials in ethics who nevertheless felt it necessary to alert us to the rights and wrongs of nanotechnology. All these statements were written in secular voices.

Since that time, there has been a flood of statements about what

nanotechnology will do in the near future and what should be avoided on ethical or moral grounds. Again, some authors are professional ethicists, but more are not. The quality of these statements is highly variable.

In terms of religious literature on nanotechnology, of which there is little, I see three genres. First is a modest body of articles by religious writers in denominational magazines and other

will save us from illness, aging, death and other problems. The transhumanist writer most relevant to religious issues is William Sims Bainbridge. He speaks in a secular voice but his writing is a kind of religious literature: a crusade against traditional religion that is tantamount to calling for a new religion that will deliver eternal life and ultimate meaning.

“True human freedom,” he writes, is found in transhumanism, which “seeks to empower each individual to become whatever he or she wishes”. According to Bainbridge, “transhumanists believe that we have reached the point in history at which fundamental changes in our very natures have become both possible and desirable”⁴.

He calls one such change cyberimmortality: “very soon, it will be possible to build a computer model of all your preferences, opinions, and mental associations, based on the convergence of advanced information technology with cognitive science and the more traditional methods of psychology and sociology”. This information — your spirit stored in silicon, so to speak — would then live forever “within information systems, robots, or genetically engineered biological organisms” so that humanity would evolve “from material to computational planes of existence”⁵.

So who, asks Bainbridge, would oppose this glorious transcendence? “The power of traditional religions is directly threatened by transhumanism so the sacred monopolies can be predicted to suppress it... Humans could become like gods, and in so doing may put conventional religion out of business.”⁴ Elsewhere Bainbridge has written that “religion may feel a need to destroy science in order to save itself,” and argued that religious belief amounts to rumour, fantasy and “wishful thinking”^{4,5}. In describing this conflict, Bainbridge generalizes broadly: fundamentalist faiths are typical of all religion^{5,6}, and religion is more or less universally hostile to technology⁴.



Artistic differences. A collaboration between a group of Tibetan monks and Victoria Vesna, an artist at UCLA, and James Gimzewski, a nanoscientist at UCLA, produced this Chakrasamvara Mandala made of coloured sand (<http://nano.arts.ucla.edu/mandala/mandala.php>; see also ref. 14).

religious venues that introduce the reader to nanotechnology, and then speculate in very general terms about the issues that will arise. Even though these articles appear in sectarian publications, their tone is educational, not religious. As such, these articles are equivalent to the secular ethical statements.

A second genre is transhumanism, a body of beliefs about how technology

In addition to nanotechnology uploading your consciousness into information systems, a second theme of transhumanism — most frequently articulated by Ray Kurzweil⁷ — is that nanomedicine will prolong the human lifespan indefinitely. Which form of eternal life do you prefer: cyberimmortality or a flesh-and-blood body unchanged by time? Like Bainbridge and other transhumanists, Kurzweil acknowledges that nanotechnology is not capable of delivering transcendence all by itself — the convergence of NBIC (nanotechnology, biotechnology, IT and cognitive science) will be required.

Rosalyn Berne of the University of Virginia has described this phenomenon perfectly as the religious features of an anti-religious movement. Drawing on Carl Jung's theory of archetypes and David Noble's views of "the religion of technology", she shows how transhumanism makes use of the religious idioms of rebirth, transcending biological form and the transmigration of souls, as well as other common features of religious thought⁸.

The third genre is a small body of reactions to nanotechnology that are explicitly grounded in Christian values and beliefs. It has been speculated that conservative Christians might react negatively to nanotechnology in much the same way that they oppose stem-cell research, which they equated with abortion. As far as I can tell, with a few exceptions, nanotechnology has not caused such alarm among conservative Christians. However, some nanomedical technologies are viewed as 'enhancement', similar to the use of steroids by athletes, which is not compatible with the Christian ideal of 'embodiment' (that is, the belief that Christians should be comfortable with their imperfect bodies, and that bodily death is not something to escape).

Christianity has faced issues like these before, such as the Gnostic view that our bodies were not merely imperfect, but in fact vile and corrupt^{9,10}.

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However, a number of Christian writers have been appalled by transhumanist values, calling it "a misguided manipulation of evolution"¹¹, claiming that it "challenged every faith community to believe a human being is more than just one more biological product"¹², or saying that it "assumes a blind faith in inevitable progress through science and technology"¹³.

I should add that these religious writers are not categorically hostile to technology in general. Indeed, they often remind the reader not to be reflexively hostile to technology. It is not the gadgets of the transhumanists that they oppose, but the seemingly amoral approach to the use of these gadgets.

This brings us to an important intellectual consequence: both transhumanists and religious writers reacting to transhumanism are, in effect, defining nanotechnology in terms of enhancement and the delivery of eternal life. It seems to me that this is an unnecessarily troublesome way to view nanotechnology. It focuses on long-term visions like cyberimmortality while overlooking short-term developments such as nano-enabled drug-delivery systems. Should we really see nanotechnology only in terms of speculations for or against things that might or might not happen many decades from now? Could religious writing not address the rights and wrongs

of near-future changes at least as much as far-future topics?

Furthermore, if religious writers think about nanotechnology only in terms of enhancement and immortality, they fall into a trap and become become systematically hostile to a very broad technology. This is both a strategic blunder and a regrettable approach to knowledge. Nanotechnology in the present, the near-future, and indeed the far-future is much more interesting than the question of enhancement and immortality alone.

The Christian writer Bernard Daly was truly shocked by the transhumanist convention he visited in 2004, yet somehow he summoned the ecumenical good-heartedness to call for an interfaith dialogue between Christians and transhumanists¹². I want to have a front-row seat for that event. Before it happens, however, I would like to see religious thought on nanotechnology develop well beyond a reaction to the more sensationalist parts of the transhumanist vision.

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