

Anti-nanotech violence

Nanotechnology researchers have recently been targeted by armed eco-terrorists. *Chris Toumey* examines the motivation of these attackers.

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Swiss police intercepted three members of the Earth Liberation Front (ELF) in April 2010 as they attempted to bomb a nanotechnology lab associated with IBM Zurich. They were tried, convicted and sentenced to jail terms, but not before the Swiss embassies in Rome and Athens experienced retaliatory bomb attacks.¹²

In August 2011, a group in Mexico sent a pipe bomb to a scientist at the Monterrey Institute of Technology and Higher Education (Monterrey Tech). The bomb slightly wounded the primary target, computer scientist Armando Herrera Corral, and severely wounded his colleague Alejandro Aceves Lopez.³

These attackers are variously called anarchists, radical environmentalists and eco-terrorists. Their common feature is that they claim a mandate to use lethal violence against people whom they consider enemies of the environment. The attackers seem to be connected more by ideology and rhetoric than by central organization.

Why then do they target scientists working in nanotechnology? The thoughts of the eco-terrorists can be opaque because they communicate more by bombs than by words. The group in Mexico, however, disseminated a lengthy manifesto after the Monterrey Tech attack, and this document shows us what the group thinks about nanotech.⁴

In Spanish their acronym is ITS. The name can have more than one translation, but the best English-language version is probably ‘individuals tending toward the wild’ (as in ‘wild nature’). Their Monterrey manifesto posits an incompatible opposition between wild nature and civilization. Wild nature accounts for all that is good, they say, and civilization represents everything evil. Science and technology make civilization possible, so these things are likewise evil.

This leads to a certain depiction of scientists. One’s motivation for doing science is dreadful: “Most scientists base their research on their twisted psychological needs”. Monterrey Tech harbours “an incredible gamut of sick scientists”.

Then they come to nanotechnology. The ITS group points to Eric Drexler’s prediction that self-reproducing nanobots will escape human control and consume the environment (‘grey goo’, as this situation is called), thereby ending all life on Earth, including human life. And what is the intellectual authority that makes this prediction credible? According to ITS, Drexler is “one of the best scientists in the history of the United States.” Furthermore, they cite Bill Joy’s memorable article in *Wired*, ‘Why the future doesn’t need us’,⁵ to corroborate their fear of out-of-control self-replicating

¹ Phillips, L. *Nature* **485**, 561 (2012).

² Swiss hold 3 in plot against IBM. *New York Times* (26 April 2010); <http://www.nytimes.com/2010/04/27/world/europe/27swiss.html> 3. Phillips, L. *Nature* **488**, 576-579 (2012).

³ <http://Guerillanews.wordpress.com> (accessed 30 May 2013); note that this site has apparently been closed since then.

⁴ Joy, B. Why the future doesn’t need us. *Wired* (April, 2000); <http://www.wired.com/wired/archive/8.04/joy.html>

⁵ Drexler, K. E. *Radical Abundance* (Perseus, 2013).

technologies. And like Joy, they salute Ted Kaczynski, the Unabomber terrorist, for his critique of science and technology.

Here we pause for a question: do the readers of *Nature Nanotechnology* agree that Drexler is one of the best scientists in US history? It might interest the ITS group to know that Eric Drexler identifies himself as an engineer, while making it very clear that he does not want to be thought of as a scientist⁶.

The ITS manifesto goes on to say that the goal of nanotechnology is “the total domination of all that is potentially free.” It identifies several scientists at Monterrey Tech (including the two who were injured by their bomb) as criminals on the grounds that they work in nanotechnology. “ITS acts without mercy or compassion”, says the manifesto.



Police guard the Monterrey Institute of Technology and Higher Education in Mexico after a terrorist attack in August 2011.

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This document includes a rant against computers, the Internet and Facebook, which it calls “a social experiment in mind control”. “Nature is good, civilization is evil”, announces ITS at the end of this document.

Now a second question: do the readers of *Nature Nanotechnology* believe that Eric Drexler's tale of grey goo is credible? The scientists I know feel that grey goo is not a serious possibility, nor do scientists invest precious resources to prevent it. And neither do environmental activists who want to make a positive difference at a time when our world is truly endangered by reckless, harmful and selfish practices. Grey goo is an amusing plot for the benefit of science fiction stories, but it is not a part of the realities of nanotechnology.

If I am right about this, then the thinking of ITS is impossible to appreciate. How is it that a group is serious enough to send pipe bombs to murder scientists for their work in nanotechnology, but not serious enough to learn about nanotech beyond what they find in Eric Drexler's stories? There is more than enough information available to enable someone to understand that the tale of grey goo is not what nanotechnology is about.

I also hear that some non-violent opponents of nanotech tend to anchor their critiques in the grey goo scenario. As in the case of ITS, one might ask whether their judgment is so bad that they too are unable to distinguish between science and fantasy. One might also wonder whether their visions of grey goo contribute to the motivations of ITS by echoing this part of its ideology. Does ITS appreciate those visions as ideological corroboration?

Fortunately, people sometimes grow up. I like the example of Joschka Fischer, who began his young political life as a frequent participant in violent street demonstrations in the 1960s. Later he rejected political violence and then channelled his concerns into non-violent democratic processes, and so became one of the leading lights of the Green Party in Germany. Then he became the Foreign Minister and Vice Chancellor of Germany: a very different political life from that of his youth. Perhaps ELF and ITS members will follow a similar trajectory from violence to democratic politics for grown-ups. Or perhaps not.

So then, how might the nanotechnology community react to the danger of real violence from groups like ITS and the ELF? One part of the solution is to have more security. At Monterrey Tech and other institutions in Mexico, a heavy police presence stands between the scientists and the eco-terrorists: fences, checkpoints and methods to screen incoming packages. It is regrettable that a scientific facility requires these measures. We prefer to think that the free exchange of ideas is necessary for a healthy intellectual culture, whether scientific or humanistic, and that a heavy security presence contradicts the kind of culture in which we hope to thrive. But with the benefit of security procedures, the science goes on at Monterrey Tech and other Mexican institutions. The ITS group has been no more successful in suppressing nanotechnology than Ned Ludd was when he tried to prevent the mechanization of the English textile trade during the Industrial Revolution.

Another point is that nanotechnology, along with every other science and technology that might change our lives, deserves a robust exploration of the societal and cultural issues that arise alongside it. What is right and what is wrong? Who will benefit and

who will not? What will a technology do to protect our environment, and what will it do to harm it?

Nanotechnology has been more fortunate than other sciences and technologies in this regard. When the US and the European Union governments started to invest large resources in the science of the nanoscale, they also supported scholars in the humanities and social sciences who explored societal and cultural issues related to nanotechnology. Processes for caring about the consequences of nanotech represent a good companion to processes for controlling matter at the nanoscale. This is a credit to those governments. I like to think that if it is commonly known that those societal issues receive serious attention, then non-experts will grant more legitimacy to nanotechnology.

In my naive dreams, I imagine that European and Mexican eco-terrorists would benefit from knowing that there are non-violent processes for considering their concerns. But then I wake up and remember that they love violence more than they detest nanotech.

What has come from those good intentions? Unfortunately, few people outside of academia know much about research on societal and cultural issues in nanotech. I worry that all this effort amounts to a limited number of professors speaking only to each other.

Furthermore, I am not convinced that research on societal issues has affected policy decisions very much. Has this work changed funding priorities, or environmental regulations, or any other ways of shaping the future of government- supported scientific efforts to control matter at the nanoscale? If they have not, then the words of Macbeth describe well our scholarship: “full of sound and fury, signifying nothing.”

If I had the power to set these things right, my first and greatest priority would be to exclude pipe bombs and other weapons from deliberations about science and technology policy. My second would be to structure the study of societal and cultural issues in nanotech so that a broad spectrum of the population could engage in these activities. If that happened, then perhaps the contributions of non-experts, along with the work of people in the humanities and social sciences, would amount to a tangible positive influence on nanotech policy. And a situation like that would be a clear repudiation of those who try to murder others because of fantasies that equate nanotechnology with grey goo.

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