



Nanotechnology has recently been identified with principles of sustainable development and generally with a "green" agenda. Some maintain that this green dream of nanotechnology is a superficial societal phenomenon that owes its existence to the campaign ploys of politics and business. On the other hand it is argued that deeper lying societal and cognitive structures are at work here. However, to enable such an association to be made at all there must be some grounds of commonalities between the sustainability discourse and the discourse of nanotechnology innovation.



What makes nanotechnology "green"?

Briefly one might say that it is the transformation of the general promise of nanotechnology to achieve total control over the materials in their environment, to the more particular project of "shaping the world atom by atom" according to a green agenda (Amato 1999). The expression "green nanotechnology" does not appear in this influential and far-reaching report, although there are very clear references to sustainability principles. Green nanotechnology presents us with the prospect of fulfilling a "twofold dream": products can be constructed from the start in accordance with sustainability principles, and older products that are at least potentially harmful to the environment can be replaced by "greener" ones (Karn 2007: 4).



At the same time, however, nanotechnology gives rise to a cornucopia of new materials and material properties, so that the world of commodities is not only expanded in terms of sheer volume but also becomes less subject to control. When seen in this perspective, the link between the environment and nanotechnology is addressed in a more negative sense. Toxicologists in particular warn of the dangers of releasing into

the environment nanoparticles whose potential harmful impacts cannot yet be assessed. And when attention is focused on what is still – or is in principle – uncontrollable, it is accompanied by a multitude of visionary models that offer more or less radical dystopian scenarios and are acknowledged as being more or less fictional (see [Speculative Ethics](#)).

Green nanotechnology with its twofold dream distances itself from such dystopias – and also from at least those utopias that locate their speculative moment far off in the future. However, this is not to say that green nanotechnology would not benefit at the same time from the utopian potential developed in various visionary scenarios of sustainability, such as roadmaps or position papers produced by government or industry. Just some of the notions in circulation in this regard include 'smokeless industries', 'wasteless products,' and the almost excessive potential ascribed to nanotechnology to mend any and every harmful impact on the environment.



Conceptual tensions of green nanotechnology

Green nanotechnology seems to positively embrace concepts of innovation and sustainability. It asserts the compatibility of nanotechnology and ecotechnology where the latter includes industrial and restoration ecology or sustainable development of transport and energy. This conceptual merging of "nano" and "eco" appears at first sight paradoxical, perhaps politically opportunistic, or even insidious. This is mainly because, in nanotechnology and ecotechnology, we are dealing with two apparently mutually exclusive technological cultures: while "nano" is usually associated with technical innovation and with technological optimism in general, "eco" is considered techno-phobic and is often identified with a

☞ pessimistic or at least alarmed outlook at the world. One (historical) constant of the eco-discourse is considered to be a sceptical attitude that adheres to a heuristic of caution and is dedicated to the principles of renunciation and self-control. By contrast, nano-discourses are characterised by enthusiastic extrapolations and interconnections among all things and by an overwhelming consent from all sides. Politicians, experts and scientists – indeed even a large number of critics – fall prey to the temptation of yes-saying (Nordmann & Schwarz 2009).



The answer to the crucial question of what constitutes green nanotechnology, lies in the analysis of the common ground that enables the association between the sustainability discourse and the discourse of nanotechnology. And to be sure, there is no single concept of "green nanotechnology", every society has its own local culture to deal with the relation of technology and sustainable development. There are a lot of

questions to be asked to bring forward the philosophical and historical analysis of green nanotechnology and sustainability, particularly in terms of the tension between control and excess in the nano-discourse, and between fact and fiction: Which concepts and discourses allow for the integration of "gentle technologies" that are identified as "green" and "sustainable" with nanotechnology as an emerging technology? And what objects, production processes and societal constellations come together under the semantically seductive umbrella of "eco" and "nano"?



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📖 Links to other Portfolio sheets:

📖 Green nano in the US 📖 Speculative Ethics

🕒 Literature: Print & WWW

- Nordmann, A. & Schwarz, A.E. (2009). The lure of the „yes“: The seductive power of technoscience. (In M. Kaiser, M. Kurath, S. Maasen & C. Rehmanna-Sutter (eds.), *Assessment Regimes of Technology. Regulation, Deliberation & Identity Politics of Nanotechnology*. Dordrecht: Springer) (forthcoming)
- Amato, I. (1999). *Nanotechnology: Shaping the World Atom by Atom*, National Science Foundation, Arlington (Virginia) (www.nsf.gov/nano/).
- Schwarz, A.E. (2009). Green dreams of reason. Green Nanotechnology between visions of excess and control. In: *Nanoethics* (forthcoming)