



What is the role and scope of Nano-Ethics? The usual answer to this question is that Nano-Ethics should consider ethical aspects of applications of nanotechnology.

Since most of these applications have not been realized as of yet, NanoEthics should therefore be concerned with ethical issues that will arise in the future. And since the most long-term envisioned applications are the most ambitious, interesting and challenging, NanoEthics should not shy away from considering brain-implants that enhance human cognition or drug-delivery systems that simultaneously provide an early diagnosis and the treatment of diseases.



The term "speculative ethics" has been used to question this conception and to offer an entirely different orientation for Nano-Ethics. It questions this conception all the way: Arguing that ethics should not engage purely hypothetical technological developments as if these were real, it finally recommends that Nano-Ethics need not be concerned with the future at all – that it can be proactive, anticipatory, or precautionary even by restricting itself to a consideration of present developments (see Future and Present).



## Mind the Gap

One of the main arguments for speculative ethics refers to the supposed speed of nanotechnological development. According to a 2003 paper by Anisa Mnyusiwalla, Abdallah Daar and Peter Singer, a gap is opening up between the scientific creation of novel materials, processes, and devices and their ethical reflection: "as the science leaps ahead, the ethics lags behind." In an April 2009 commentary piece in Nature Nanotechnology, Alfred Nordmann and Arie Rip inverse that formula. They argue that there is quite a bit of ethical reflection and that

we should worry less about ethics falling behind as about ethics leaping way ahead of current developments in science and technology.

Who is right and what is the gap that needs to be minded? The question has various dimensions.

► It is very difficult to know for anyone what is a likely outcome of nanotechnological development and what will prove to be outrageously exaggerated vision or hype. What is the best way to deal with this uncertainty?

► Ethical reflection is not an idle activity but should be relevant for the decisions that individuals and societies need to make about new and emerging technologies. Since we cannot give equal attention to any and all issues that are raised in ethical discussions, how do we avoid squandering the limited resource of ethical concern?

► No one will dispute that ethical considerations serve to prepare us for what is to come, but it is very much a matter of dispute whether one should conceive of future technologies as "what is to come." Future technologies are yet to be developed, after all, and human beings have some say-so in what will come and what not. How can we avoid a technological determinism according to which envisioned technologies are looming at the horizon already, just sitting and waiting to be realized sooner or later?



"Getting this balance right is not easy. It is particularly difficult when considering how to prepare for future technologies like nanotechnology and human enhancement, which many claim could have an unprecedented effect on our lives, and on what it means to be human." This remark prepares the most explicit and sustained defense of speculative nanoethics (Roache 2008). Tellingly, it refers to claim that may be false. We do not know whether nanotechnology

☞ will have an unprecedented effect on our lives. And yet, the author goes on to assume that this effect is so real that ethical reasoning has to adapt to it by becoming speculative: "That their effects could be unprecedented means both that it is important to consider antecedently what ethical constraints we might want to place on the development and use of these technologies, and that past experience is likely to be an inadequate guide to what we can expect from them in the future." According to this defense, therefore, ethics needs to be speculative because what we know from past

and present experience does not apply to the future. Again, one might find this judgment premature and counterproductive. If neither likelihood of occurrence nor past experience can motivate and orient ethical reflection, our only guide lies in what we value. For example, if we are concerned about what it means to be human, we will be moved to ethically consider any imagined or real threat to our conception of humanity.



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## 📖 Links to other Portfolio sheets:

📖 Nano-Ethics    📖 Ethics and Morality    📖 Future and Present

## 🕒 Literature: Print & WWW

Mnyusiwalla, A., Daar, A. & Singer, P. "Mind the Gap," *Nanotechnology* 14, R9-13 (2003).  
Nordmann, A. "If and Then: A Critique of Speculative Ethics," *NanoEthics* 1, 31-46 (2007).  
Nordmann, A. & Rip A. "Mind the Gap, Revisited," *Nature Nanotechnology* (April 2009).  
Roache, R. "Ethics, Speculation, and Values," *NanoEthics* 2, 317-327 (2008).