Special Issue on "Nanotech Challenges", Part II

Editorial: Nanotech Challenges, Part II

Since the publication of Part I of our joint special issue on Nanotech Challenges (see HYLE 10.2, TECHNE 8.2), several international conferences have taken place that brought together scholars from the humanities and the social, natural, and engineering sciences to reflect on the challenges posed by nanotechnology. These included Nanotechnology in Science, Economy and Society, University of Marburg, 13-15 January 2005; Nano-Ethics, University of South Carolina, 2-6 March 2005; Nano Before There Was Nano, Chemical Heritage Foundation, Philadelphia, PA, 18-19 March 2005. In addition, numerous research groups worldwide, who used to investigate the science-technology-society interfaces, have put nanotechnology at the top of their agenda; international expert groups are being formed; and national centers will soon be established in the US and UK.

Of course we hope that our joint special issue is not only timely but also influential on the debate and the shaping of a growing international community. Since the nano-hype seems to have infected the humanities and social sciences, it is important to keep scholarly standards high and to provide space for critical and independent views that might not always be welcome in commissioned reports. Apart from such issues as to whether nanotechnology is really new or not, whether it is revolutionary or a continuous development, and whether it is a single technology or a loose aggregation of different technologies, critical perspectives are required also on ethical, social, legal, and political issues. What are the underlying values that drive the development of nanotechnology, and how do they differ from broadly accepted values? What are the possible social consequences not only of nanotechnology but also of the visionary debate on nanotechnology? How can we assess, control, and shape nanotechnology at the early state for the benefit of society in a democratic system?

The four papers in present HYLE issue focus on such ethical and social aspects of nanotechnology. The first two papers approach nanotechnology from the complementary perspectives of social ethics and environmental ethics, and as much as they differ in their conclusions as much should they be read together. The second paper reviews the social dimensions of fears and risks and suggests a procedure for responsible risk management. The forth paper provides a clarification of the nature/technology distinction from which frequently normative claims are derived.

Bruce Lewenstein starts with the observation that U.S. governmental reports on nanotechnology try to separate political and economical issues from 'social and ethical issue', such as privacy, environmental health, and safety. After surveying the latter issues, he argues that they cannot be separated from the former issues because their common grounds are questions of fairness, justice, and power, i.e. principles of social and political ethics, and concludes that the separation as such is already an act of political power.

Complementary to Lewenstein's social ethics perspective, Christopher Preston analyzes ethical issues of nanotechnology from an environmental ethics perspective, based on the intrinsic value of evolution and ecologies. In particular, he discusses if environmental ethics can provide guidelines, and foresee

environmentalist resistance, to such projects as the creation of new materials, uncontrollable replicators, human enhancement, and the vision of satisfying all human material needs.

In their paper subtitled "New Golden Age or Apocalypse?" Louis Laurent and Jean-Claude Petit review the recent controversies about nanotechnology related issues, such as grey goo, toxicity of nanoparticles, and privacy. They argue that much of the fears are culturally rooted fears of the loss of control, the abuse of discoveries, or the transgression of limits. Taking these concerns seriously, they suggest a model of public forums to effectively manage these controversies.

Gregor Schiemann, starting from the observation that the nature-artifact distinction is relevant to ethical issues, suggests two levels to describe the relationship between nanotechnology and nature. First, natural objects are not human-made and thus distinct from nanotechnological artifacts. Second, insofar as nanotechnological artifacts, like natural objects, obey the laws of nature, they are part of nature. In addition, he discusses the relation between living beings and nanotechnological machines, and suggests that the latter will likely be modeled after the former (see also the paper by Bernadette Bensaude-Vincent in Part I).

Finally, we hope that our experiment of jointly editing a special issue will become a model in the future whenever a topic concerns readers of more than one journal. Again, readers of HYLE are encouraged to read the corresponding Part II of Nanotech Challenges in TECHNE, 8.3, and vice versa.

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