

Chapter 13

NBIC–Convergence and Technoethics: Common Ethical Perspective

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ABSTRACT

Technoethics is a new, but rapidly developing field of ethical reflection of technoscience. It can claim to unite the various ethical projections of the science and technology development in a common approach. One of the starting points of understanding this role of technoethics may be NBIC-convergence. The ethical dimensions of the NBIC-projects is represented in these sub-areas of applied ethics as a nanoethics, bioethics, neuroethics and ICT ethics. In this article particular attention is paid to the biomedical field, which is a prime example of innovative high technology, as well as the interaction of different types of ethics.

NBIC-CONVERGENCE AND TECHNOETHICS: COMMON ETHICAL PERSPECTIVE

The term “technoethics” was first proposed by Mario Bunge in 1977. He pays attention to unique moral responsibility of technologists and engineers for the outcomes of technological progress. As Bunge (1977) wrote: “the technologist must be held not only technically but also morally responsible for whatever he designs or executes: not only should his artifacts be optimally efficient but, far from being harmful, they should be beneficial, and not only in the short run but also in the long term.” In formalizing technoethics as a contemporary field of research, R. Luppigini acknowledges “Bunge brought to the forefront the core idea that technology should be moderated by moral and social controls and that the pursuit of such technology related issues requires special consideration and expertise, what eventually would become the field of technoethics” (Luppigini, 2008).

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The relevance of Bunge's approach to the context of modern technoscience is dictated by the rapid development of new technologies and the need for a comprehensive approach to the emerging ethical, social, legal consequences. Convergence of technology and science takes a prominent role in these processes. The starting point of the convergence process is associated with NBIC-initiative. M. Roco and W. Bainbridge organized in 2002 seminar "Converging Technologies: Improving Human Performance," where a new stage in the science and technology development was designated as the New Renaissance (Roco & Bainbridge, 2002). This was the starting point for NBIC-projects in the European Union and other countries (Bensaude-Vincent, 2008; Nordmann, 2004). In addition, new approaches to the convergence process led to creation of the following acronyms: GNR (Genetics, Nanotechnology, and Robotics), GRAIN (Genetics, Robotics, Artificial Intelligence, and Nanotechnology), and BANG (Bits, Atoms, Neurons, and Genes).

In fact, the NBIC initiative is represented by two target areas: economic-technological and anthropological. The first focuses on synergic combinations of the above areas that in the foreseeable future should be realized in technological innovation, and ultimately change the development of human civilization as a whole. The second is aimed at the human per se. It involves the use of innovative technologies for improving human performance and human enhancement. Prospects for a radical transformation of humans became the object of intense debate in bioethics.

Bioethics

Formation of bioethics in the middle of the 20th century can be seen as a kind of response to the development of new biomedical technologies (Jonsen, 1998; Hester, 2001; Callahan, 2012). The ethical issues that have arisen as a result of the development of reproduction, intensive care, transplant et al. technologies demonstrated that the matrix of traditional medical ethics are not able to answer the pressing questions. New theoretical approaches, ethical procedures and decision-making mechanisms emerged. Promises and prospects of medical innovations actualized predictor vectors in bioethics and expanded responsibility for the future, in terms of Jonas (Jonas, 1984). Formation of NBIC projects were an important step in the development of bioethical issues, in particular the human enhancement matters. In terms of G. Khushf, NBIC projects became a starting point, which marked the emergence of a new stage in the enhancement debate in bioethics (Khushf, 2005). The first phase of technological reshaping, associated with cosmetic surgery, "smart drugs," mood enhancers, sports doping, and growth hormones. Khushf focuses on five shared attributes of the first stage of the enhancement debate: 1) The enhancements are medical and require a physician to legally prescribe the treatment; 2) The enhancements are discrete; 3) The enhancements usually serve a narrow, specific purpose; 4) The enhancements have harms that can be studied and quantified in the same way, and by the same tools we use to study benefits and harms in other areas of medicine; 5) While the enhancements do have clear, documented effects (although many are not well-studied), they are, in the end, relatively modest effects.

Almost revolutionary prospects of NBIC convergence promise radical changes that include advanced human / machine interfaces, significant extension of the human life span, genetic engineering, and the complete transformation of formal educational systems. So, the researcher highlights the following features of "second stage enhancements": 1) The enhancements provide radically new capacities; 2) The enhancements are multi-functional, and alter how we approach disability. 3) The lines between diverse enhancements blur, and they involve the convergence of multiple kinds of technology. 4) The enhancements develop at an accelerating rate. 5) The enhancements will provide significant advantages to those

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