Ethics of Biomedical and Information Technologies

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INTRODUCTION

The article aims to investigate the ethical implications of biomedical technologies. It is advanced that an anthropologically grounded ethical reflection can best address the problems related to a possibly dehumanizing use of such technologies. These require a deep reflection on the responsibility of the technical activity and on the respect due to the human body and personal identity.

Analogous reflections are also adopted in sketching the profile of a good healthcare professional. This should be not understood as a curing technique but rather as a person-to-person relationship. A reflection on the specific essence of medicine from a philosophical perspective is therefore essential in order to define its authentic nature.

BACKGROUND

The purpose of the article is to highlight the changes brought about by Biomedical and Information Technologies in medical care, doctor-to-patient relationship, therapeutic decision-making and procreation and thereby illustrate the need for a deep anthropological and ethical reflection on the related risks for human dignity and a de-humanizing turn in society.

Nowadays, biotechnology seems ready to fulfill the human desires for perfect children, superior performance, bodies forever young and happy souls. The risk, however, is the redesign of human nature with unpredictable outcomes and to focus the activities of the human life in purely technical terms (Le Fanu, 2000). The answer is not to return to a pretechnological world, condemning all progress, but to promote a "human-centered" technology, that respects the personal meaning of the fundamental human experiences: health, sickness, suffering, life and death (Russo, 2012).

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The more relevant question for an ethical use of medical technology is not whether a specific technical procedure is or is not achievable. Neither does this question regard procedural aspects concerning manufacturing quality or good practices; rather the ethical dimension focuses on the following: "Does this procedure produce a humanizing or dehumanizing effect?" and "What makes the use of [this power] good or at least acceptable?" (Mc Kibben, 2003).

Speaking about the human person, we necessarily enter into the world of meanings. "World of meanings" is not equivalent to "world of concepts": "meaning" –as I here use the term– is not understood as a product of subjectivity or as purely theoretical, but as the perception of the objective value contained in a particular aspect of human life precisely insofar as it is human, a perception which also becomes criteria for action. The criterion according to which the morality of actions or procedures should be judged is the respect for the dignity of the human being and, therefore, of his body, which should be always considered as an end and never as a means, in that s/he has an intrinsic value per se. Thus it is necessary to understand the deep meanings of certain human experiences – those that regard life, illness, care – which require an explanation that is not merely procedural, regarding the immediate, experimentally verifiable cause, but rather an explanation that addresses the most profound and ultimate causes, causes that philosophy calls metaphysical (Ricoeur-Changeux, 2000; Le Fanu, 2009).

MAIN FOCUS OF THE ARTICLE

The main ethical issues raised by the development of biomedical technology can be summarized in the following points, relating to the main areas of application of biomedical technologies.

A. Medical Devices

Any instrument, apparatus, appliance, or material, used for human beings in the diagnosis, prevention, monitoring, treatment or alleviation of disease or injury; investigation, replacement or modification of the anatomy or of a physiological process; control of conception (Council of The European Communities, 1990). These can be implanted in the human body or external to it; furthermore they can rely on ICT technologies (on and offline) in order to gather and elaborate physiological data, or to directly substitute impaired functions (such as a Deep Brain Stimulation in biomecathronics systems) (Commission of the European Group on Ethics in Science and New Technologies [EGE, 2005]).

Thanks to biomecathronics systems, there now exist possibilities for cybernetic prosthesis and for the development of artificial organs. An important consequence of this technological progress is the resulting change in the quality of human-machine interactions: while in the past, technological devices were external to the personal and clearly visible, such as prosthetic limbs, now such devices tend to be internal and invisible. Furthermore, the machine itself becomes "bionic," that is, it becomes part of the human body, through a sensory system connected to the brain. This change opens unsuspected frontiers for the treatment of pathologies and other disabilities, but also introduces new anthropological and ethical concerns. However, as Sandel puts it, it is important top remark that "The problem is not the drift to mechanism, but the drive to mastery" (Sandel, 2007 p. 27). Indeed, when biomechatronics examines the natural dynamics of the human body in order to imitate it, it provides an exceptional opportunity to disclose nature's perfection and to learn from it. The term "perfection of nature" means, in this case, not only the complexity but also the organic unity of the human body, that is, the articulation and the perfect interaction of all its internal systems – circulatory, respiratory, nervous, etc. The construction of a cyberhand or of an artificial retina requires such extensive research of the process of movement and perception that it obliges an honest scientist to admit that he has only discovered a minimal part of the complexity of nature. In this way, technology does not become a means to modify human nature, but rather, by learning from nature, it contributes to appreciating the complexity of the person.

It is clear that there exists a profound difference between research modeled on the "paradigm of nature *imitation*" and research modeled on the "paradigm of nature *mutation*". When biology furnishes technology with the necessary knowledge to build robotic systems, this does not present an anthropological problem, because it remains within the scope of "nature *imitation*." Instead, basic ethical principles regard the use of medical devices in the respect of the dignity and integrity of the human person (EGE, 2005): non-instrumentalisation, privacy, non-discrimination, informed consent, equity, and, finally, the risk predictability and precautionary principle, which prescribes the adoption of effective and proportionate measures aimed at preventing the risk of serious and irreversible damage to health (Schöne-Seifert, 1995). The most important international declarations which also take a position in this respect are the *Convention on Human Rights and Biomedicine of the Council of Europe* (1997) and UNESCO's *Universal Declaration on the Human Genome and Human Rights* (1997), in particular as regards respect for the dignity and integrity of the human person and the informed consent principle.

B. Diagnostic Imaging Technique and Assisted Reproductive Technology (ART)

Diagnostic Imaging techniques pose a series of strong ethical dilemmas when used in combination with ART. Ultrasonography techniques used during pregnancy for gaining the necessary diagnostic information have made the process of embryo development in the womb of the woman completely visible and accessible. This has also made possible the early detection of pathologies and planning of timely therapeutic interventions. However, prenatal screening and diagnostics are accompanied by the option of therapeutic abortion: this has modified in a radical way pregnancy and generation. A double effect occurs: first, a disassociation between what the woman decides about herself and what instead takes place in her body; additionally, a possible discrimination between the fetus who has received a favorable diagnosis – the *project foetus*, who is welcomed and adopted by her/his parents, (Boltanski, 2013) – and the defective fetus, the *tumoral foetus*, an accidental embryo that will not be the object of a life-forming project. However, some statistics have shown that the ultrasound use gives women the opportunity to view