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The twilight of education? Reflections on the concept of cyborgization[3]

The term *cyborg* was coined in 1960 by Clynes and Kline (Bárd, 2012) from the first three letters of the words *cybernetic organism*. At first, the expression was used to describe a construction of a human joined with a machine, which was to help in exploration of space (Clynes and Kline, 1995). Nowadays, it means life with blurred boundaries between what is human and what is technical (McPheeters, 2010; Pyżalski, 2012). According to McPheeters (2010), a cyborg is a hybrid of human and technology. Lapum et al. (2012) more precisely define a cyborg as a human with technological extensions.

Cyborgization, in turn, is the combination of technological development with human evolution (Palese, 2012) which aims at enhancement of human capabilities (Fleischmann, 2009), and purposeful integration of human life with technological progress (Mushiaki, 2011). As a concept in the field of human evolution, cyborgization is a philosophical hybrid of new eugenics and transhumanism (Klichowski, 2014).

Mazlish (as quoted in Bendle, 2002) maintains that the emergence of cyborgs and cyborgization revolutionizes human thinking similarly to when ideas of Kopernik, Darwin and Freud were born. Moreover, as Gajjala notes (2011), the idea of cyborgization permeates contemporary thinking of human progress in such an aggressive way that it becomes straight out obligatory. Being a cyborg becomes the only way to assure one's market usefulness.

The article presents the basic assumptions of the abovementioned philosophies, constitutive points of reference for the idea of cyborgization (new eugenics and transhumanism). It also highlights how education might be perceived in relation to these ideas. I believe such a presentation to be important. As it was already mentioned, the concept of cyborgization revolutionizes our thinking about the core of humanity. On the other hand, it is the foundation for another idea: the twilight of education, or irrelevance of traditionally understood education

[3]   This paper is a simplified reconstruction of the key thesis of my book published in 2014.

in the technoworld. Twilight of education is a certain regularity of reflection about the role of education in human technological progress. It is an orderly method of looking at the future of the relation between humans and education. This regularity and order are rarely expressed *explicitly*; instead, we encounter them *implicitly*. *Explicitly* means here that some texts in the field of new eugenics and transhumanism speak directly about how certain technological activities replace education as more effective measures. *Implicitly*, in turn, means that such texts present detailed strategies for stimulation of human progress but completely ignore educational influences. All types of stimulants are of technical nature. Analyses of the concept of cyborgization result in a prediction for the future: the traditionally educational activities shall somehow disappear from the 'cyborgized society', even though such a society still remains only a hypothesis. Thus the twilight of education mentioned in the title of this paper will become true (Klichowski, 2014).

New eugenics

New eugenics began to emerge at the end of 1939, when radical criticism towards eugenics was formulated. The underlying assumption was that new eugenics will be hidden and functioning as a philosophy without a name and eugenic connotations, as a branch of genetics (Meehan, 2009). The discovery of DNA was of particular importance for the development of new eugenics (Porter, 2012). For this philosophy, DNA appeared to be 'less a collection of molecules, more a collection of pieces of information' which allowed for classification of people (Stafford, 2007). Subsequent discoveries included method of isolating of DNA fragments, replicating them, DNA sequencing and determination of human genome sequence (Porter, 2012), as well as the first practical application of in vitro fertilization allowing for selection of embryos (Watkins, 2007) and the first attempts at direct DNA manipulations (Kirby, 2000). All of them resulted in development of a programme which assumed that genetics should first and foremost try to convert humanity and bring it to the highest possible genetic level (Porter, 2012). Hence, the idea of eugenics has been transformed and categories of genetics have been added to it, and genetic philosophy of eugenics was created. In other words, new eugenics was created.

The most important tool at the disposal of the new eugenic programme of human conversion and elevation to the highest genetic level is genetic engineering. It is used at a massive scale in farming, horticulture and livestock breeding, so as to create genetically enhanced plants and animals (Narli and Sinan, 2011). More and more often it is also used for improvement of humans (Powell and Buchanan, 2011).

For genetic engineers, genetic modification and design of humans is a method for improvement of human condition (Holub, 2010). Therefore new eugenics is acting towards improvement of the gene pool of the whole population (Gyngell, 2012). Genetic engineers believe that human race needs to be improved to the largest extent possible through genetic manipulations. All shortcomings need to be removed, and possible best positive features need to be boosted: perfect personality, absolute kindness, ideal looks and permanently increasing intellectual capacity (Maher, 2012; Hayward, 2012).

In new eugenics, strategies of genetic improvement of humans are therapeutic. In the case of an example child, modification is perceived as action aiming at improvement of their life (Holub, 2010). With genetic engineering, upcoming generations are to be slimmer, more muscular, stronger and more resilient (so that new records will be beaten at every Olympic Games). They will also be more resistant to diseases, radically smarter and more energy-efficient (Coker, 2012; Das, Pal and Ghosh, 2013; Kasahara et al., 2011).

Engineers want to do away with all the limits imposed on humans, so that permanent record breaking as regards resistance and strength becomes possible - together with consistent increase in intelligence and other positive features (Holub, 2010). Technology will allow for elimination of such natural boundaries as it gives a chance to become transnatural (Holub, 2010). However, genetic engineering does not assume that genetic modification and crossing natural boundaries is something unnatural. Quite the opposite! Humanity which will finally be able to consciously change its physical, psychological and emotional abilities through genetic modification will ultimately assume the reins of its own development and evolution. After all, the core of evolution is the management of evolution. Genetic engineering is therefore not acting against nature, but in line with nature - the nature of human progress (Powell and Buchanan, 2011). All this suggests that genetic engineering is just as natural as all other evolutionary processes (Coker, 2012).

It is based on two fundamental procedures of genetic modification: changes made to one generation (somatic cells) and subsequent generations (gametes). If the first strategy fails, it leads to disorders or death of one genetically modified specimen. In case of failure of the second strategy, the genome is changed permanently and the defect is transferred onto the next generation. Hence genetic engineering of human germline generates the most controversy (Dresser, 2004). It also brings the most hope. It is namely the modification of gametes which allows for better stimulation of certain developments and permanent change of the human race (Holub, 2010). The philosophy of new eugenics proposes thus that modifications of germlines are necessary for each new generation to be better, and only for enhanced humans to be born (as cyborgs, Lawton, 2012).

Genetic engineers transform people into cyborgs through an elaborate selection of embryos and genetic modification consisting in introducing exogenous genetic material by using a suitable vector (Asuri et al., 2012; Hockemeyer et al., 2011; Jin et al., 2011) or by a mechanical action that consists in e.g. removing a DNA fragment and/or inserting another (Dulal, Silver and Hua, 2012). This exogenous genetic material may come from parents or strangers, but may also be cloned or synthetic material - sometimes even transgenic, i.e. coming from a different species. Thus, genetic engineering allows for creation of human and animal hybrids (Mahdi and Abolfazl, 2011; Coker, 2012).

Blackford (2010) notes that re-constructors of genetic engineering do not differentiate between genetic modification aiming at constructing a person with certain positive characteristics and educational activities aiming at the same. Song (2006) emphasises also that new eugenics radically disposes of any contrasts between genetic engineering and influence of a parent or teacher. The goal and intention of both are the same; the objective is to create a good human being. Morally speaking, these actions do not differ at all (Agar, 2006; Song, 2006). However, their efficiency is not the same. Widely-understood education is namely a communicative activity and soft influence with effects difficult to predict (Moss, 2007). The matter is different with genetic engineering, where reversing the action is impossible (Moss, 2007). Genetic engineering is stripped of any soft context - it is hard and direct influence. In Song's terminology, it involves breaking into a body and identity of an individual. Such a break-in brings about irreversible changes.

Therefore, reconstructions of new eugenics portray education as 'clumsy' as it is not fully predictable. In turn, genetic engineering is perfect, as free from the bonds of reversibility (Malmqvist, 2007). Since both these actions are morally equal, new eugenics philosophy proposes to depreciate education and favour the genetic project, and the vision of twilight of education becomes true.

Transhumanism

Transhumanism is a philosophy which postulates using technology to overcome the biological limitations of humans and to improve human condition. It wants to free humanity from diseases, illnesses and ageing by replacing human organs with artificial elements, so that full happiness is achieved (Bergsma, 2000). The transhuman philosophy predicts that this perfect state will become achievable through intensive stimulation of the technological progress (Bishop, 2010). We might therefore say that transhumanism is a philosophy of technology (Campa, 2008; Daly, 2004).

It is based on a quasi-Aristotelian understanding of nature according to which everything naturally strives for perfection (Hauskeller, 2012). It seems however that transhumanist perfection is quasi-perfect. Specifically, the core of transhumanist perfection is the assumption that technology may be used to radically transform or even overcome human biology. Through that humans will rise to levels unattainable with biology alone. Transhumanism is in search for a strategy for building a machine that will stimulate the growth of human intelligence and make it possible to transfer it from a body to a machine or to a certain system created by machines (Jaokar, 2012).

Transhumanism is a philosophy rooted in the postulates of the Enlightenment (Jotterand, 2010a), and transhumanists perceive themselves as heirs of the philosophy of humanism (Bishop, 2010). Precisely like the philosophy of the Enlightenment, transhumanism is based on the claim that human nature can be corrected (Hughes, 2010). Also, transhumanism promotes the Enlightenment supremacy of the mind and the idea of using science to overcome human limitations (Jotterand, 2010a). What is more, the word transhumanism was deliberately coined to refer to the tradition of humanism, i.e. a secular image of the world where the man is the highest moral value. Yet, by not accepting the fundamental role of humanity in the human development, transhumanism goes beyond humanism. Transhumanism is a project of human transgression. It is thus not humanistically anthropocentric but progress-centric. Humans are understood as the highest moral value in the sense that it is the progress that matters most; it is the road to the posthuman that is the centre of everything (Rikowski, 2003). Transhumanism is thus often called evolutionary humanism, where evolution is perceived as a process from human, to transhuman, to posthuman (Agar, 2007).

This philosophy approaches evolution as a two-stage process. In the first stage evolution was "blind", which means that humans had no control over it. The other, transhumanist, stage, is characterized by setting humans free from the oppression of biology, freeing them from random changes and moving humanity to another stage for the species (Fukuyama, 2004). If only people want to, the human species can go beyond the limitations of the species, can go towards the new type of being that is very different from ours but equally exciting. Thanks to transhumanism, we will finally be able to fulfil the real human destiny consciously (Wolbring, 2008). This threshold of the new species (posthuman) is a moment when the transhuman becomes a postbiological being, i.e. an individual whose mind will be able to exist without biological processes (Rikowski, 2003).

The second stage of evolution is therefore a dehumanising stage. Throughout the stage, its object becomes less and less human. The process eliminates natural human flaws and forges non-human characteristics (Mills, 2012). What is more, dehumanization is a procedure that creates artificiality by replacing biology with technical products (Bishop, 2010). According to

transhumanists, however, people should not be afraid of being dehumanized even if the result of this process means disconnecting them from the Homo sapiens species. The loss of species affiliation is not a threat according to them; it is not linked to losing the status of existence (Persson, 2010).

Transhumanism adds to the process of evolution the category of a cyborg, a human in the second stage of evolution. The archaic stage of blind evolution is therefore a human stage; the next one is a cyborg stage (Rikowski, 2003). The transhuman and posthuman are certain phases of the second stage of evolution – dehumanization/cyborgization, or some cyborg categories:

1) transhuman – a transitional cyborg (the object of the dehumanization/ cyborgization process);

2) posthuman – a final cyborg (the result of the dehumanization/cyborgization process, McNamee and Edwards, 2006).

Transhumanist philosophy is based on the imperative to make the world a better place. Where the human ends, problems end as well, and the perfect world begins (Hauskeller, 2012)! The posthuman will achieve an intellectual state that incredibly exceeds the intellectual state of the geniuses that we know; they will be absolutely resistant to all illnesses, full of energy and forever young; they will be capable of controlling all their psychological processes to the full extent; they will never get tired, weary or irritated; and they will also achieve the permanent state of happiness, full love, peace, and states of conscience that are completely inaccessible for us now (Bishop, 2010). Furthermore, the posthuman will fulfil the cybernetic dream of the machine-man interface, as it will be possible to upload to the final cyborg everything that is available in the memory of machines (Tennison, 2012). The posthuman world itself is maximized to the maximum. In transhumanist imagination the life of posthumans means experiencing everything to the maximum and at previously unknown level of intensity. Hauskeller (2012) claims that monuments of the posthuman world will be maximally beautiful and majestic, music will penetrate the mind maximally with a maximally desired rhythm, sex will mean maximum and continuous ecstasy, each moment will be filled with divine happiness, each view will bring the experience of maximum charm, every element of the world will be understandable, and each system will be immediately learnable. Thus, transhumanism transfers the religious promise of heaven from the afterlife to the posthuman life (Bostrom, 2007; Jotterand, 2010a).

The system undermines most of assumptions and rules concerning human culture (Jotterand, 2010b). An exquisite exemplification here is the case of transhumanist philosopher Esfandijary, who replaced his name and surname with a symbol, FM-2030. Esfandijary believed that names and surnames contribute to reconstruction of our ancestors' cultural systems, and

thus perpetuate cultural stereotypes. He proposed to eliminate them so that everyone decides for themselves which symbols should identify them (Bárd, 2012). Transhumanists would like to make humans aware that the dynamics of life should be redefined in isolation from any common and previously applied approaches (Rikowski, 2003). Strategies for humans to improve future generations should be redefined as well (Bess, 2010). Humans have always been trying to do that; among milestones on the road to the better future were tools invented one by one, starting with stone pebbles, through writing, print to (for now) the Internet. Education used to be (and still is) a formalised process of human improvement. Also education must be thoroughly reanalysed according to the transhumanist vision, taking into consideration the fact that education and changing humans with technology belong to the same category from the ethical point of view. Another point here is that technology is (and will always be!) more effective than education (Greely et al., 2008). The sense of education as we know it must thus be seriously scrutinised and radically challenged. Efficiency of technology in transhumanist philosophy is one of foundations for the vision of a world without education, and it serves as a basis for the upcoming twilight of education.

Conclusions

Two constitutive elements of the concept of cyborgization, philosophies of new eugenics and transhumanism, criticise the idea of education very radically, highlighting its superfluity in the cyborg world. It might be thus concluded that the concept of cyborgization involves the twilight of education, or the vision of disappearance of traditionally understood educational activities. Furthermore, the concept of cyborgization may be to a certain extent perceived as an attempt to weaken the importance of educational influence in favour of technological stimulation. The vision of the cyborg world becomes the vision of a world where education wanes.

The concept makes us aware that education is necessary only when humans are defined as an indifferent resultant of interactions between a random genetic combination with its environment, a resultant which requires adequate shaping and stimulation. Once humans are born as genetic ideals with freely extendable characteristics, education ceases to be necessary. The role of education is then fulfilled by genetic engineering, cognitivism, programming, construction, etc. Such are circumstances in which the twilight of education unfolds. As a travesty of Foucault's words (2010), we might conclude that a thought was born: technology may become useful for education. Once this happens, another thought emerges: technically speaking, education is not indispensable and may be replaced by cyborgization.

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