Vol. 1, No. 1, 2014

Michał Klichowski
Adam Mickiewicz University in Poznań (Poland)

The gender of cyborgs: Discussion on the margin of changes in genetics[1]

ABSTRACT. The aim of this paper is to show that gender, both as a biological and social category, ceases to exist in the vision of man constructed by contemporary genetics. In the paper, I present the elementary concepts of genetic engineering and liberal genetics, and show how these two currents in genetics change gender into a feature deprived of any designata. I advance a thesis that the man of the future, a cyborg, is a man without gender.

KEYWORDS: cyborgs, gender, genetic engineering, liberalism

Introduction

The technological revolution experienced since 1950s has overshadowed the entire history of human influence on the shape of the world. What is more, this expansion is now achieving a speed significantly higher than what human biology can resist. Lagging behind, the man starts to realise that his inventions, which have speeded the world up so considerably, now have to allow for the speeding up of the man himself (Powell & Buchanan, 2011, p. 24). Thus, applying industrial methods, the man tries to control his own biological processes. He begins to use genetic engineering: modifies his genes and builds strategies that soon are to make it possible to design better humans (Narli & Sinan, 2011, p. 721). Modified and designer in this way, however, the man will stop being the man we know. He will become a hybrid of nature and science, a cyborg (Palese, 2012, p. 196; Klichowski & Przybyła, 2013, p. 144).

Still – as is underlined by Barbara M. Stafford (2007, p. 105) – perceiving a cyborg as a better man is a giggle of humanism. The cyborg will

[1] Fragments of this article on genetic engineering and liberal genetics – in a slightly different form but of the same logics – were published in Polish in the author's book: *Narodziny cyborgizacji. Nowa eugenika, transhumanizm i zmierzch edukacji* (2014).

be an individual designed in accordance with a standard, which will not be formed by the idea of humanistic evolution of man but by the laws of consumerism. Thus, the cyborg will not be an individual formed towards excellence, but an individual designed within the rationality of consumerist genetics, called liberal genetics.

In this paper, I will attempt to present the elementary concepts of genetic engineering and liberal genetics, as well as – in the summary – I will try to give some thought on what gender is in the era of these currents in genetics, in other words: in the world of cyborgs. It is possible that genetic engineering and liberal genetics has lead to its new interpretation. This article is not, however, a thorough analysis of the issue. It is only a sort of reflection on the vision of the man of the future that emerges in the literature on genetics. It is an attempt at showing how gender becomes a feature deprived of any designata in this vision. The aim is to realise that the cyborg is a man actually deprived of gender.

Genetic engineering

For genetic engineers, genetic modification and genetic design are a sort of promises of improved human condition (Holub, 2010, p. 724). This is why genetic engineering is not only a tool for improving the man, but also society – a gene pool of a population (Gyngell, 2012, p. 495). Genetic engineers believe that it is necessary to improve the human race to the highest level possible, using genetic manipulation: eliminate any flaws and stimulate the increase in maximized positive features, such as perfect character, absolute kindliness, immaculately beautiful image or gigantically high intelligence (intelligence that is on the permanent increase thanks to genetic engineering shall grow dramatically higher and higher generation by generation – Hayward, 2012, p. 6) (Maher, 2012, p. 88).

In genetic engineers' statements, the concepts of improving the man are shown as programmes of therapeutic character – a genetic modification on the level of a child project is presented to parents as an action aimed at improving the fate of their offspring (Holub, 2010, p. 730-2). By refraining from this therapeutic treatment, parents condemn their child to future suffering, just like refraining from medical treatment. In this context, Maciej Zaremba Bielawski (2011, p. 398-405) reports that in many countries the disabled and their parents sue hospitals (sometimes

even specific doctors) where the dysfunction was not diagnosed in the prenatal period, which would result in the termination of pregnancy (or, alternatively, a suitable genetic treatment). Within such rationality, the concept of *wrongful life* is created – life that is so hopeless that it does not deserves life. The *wrongful life* perspective is based on the statement: What a pity they were born, I am so sorry for them that they have to live. *Wrongful life* is a rationality: Live healthy, or do not live at all. It is an idea of – either I am perfect (genetically selected and/or modified in accordance with a standard), or it is better that I do not exist.

According to Jeffrey S. Coker (2012, p. 26-7), due to genetic engineering the generations to come will be slimmer (research in the genetics of obesity is already conducted and the so-called fat genes are manipulated with – Das, Pal & Ghosh, 2013), more muscular, stronger and tougher (up to the point that each Olympic Games will bring new records in each discipline), more resistant to illnesses (it is related to the manipulation with genes that condition certain illnesses or correlate with their acute course – Kasahara *et al*., 2011), radically cleverer, and more efficient in energy production, as well as have a keener eyesight (maybe they will even be able to see the lengths of light waves). As a result, anyone who will not be subjected to genetic modification treatment will become socially unadjusted, a genetic outsider (i.e. they will experience *wrongful life*).

This permanent beating of records of human resilience and strength, and also the continuous growth of intelligence and other positive traits, is possible due to eliminating individual's limits that were previously imposed by humanity (Holub, 2010, p. 728). These limits are to be get rid of with technology – according to genetic engineering, technology makes it possible to go beyond nature, and gives the man an opportunity (or even obliges him) to be transnatural (Holub, 2010, p. 727). However, genetic engineering does not assume that genetic modifications and transgressing the natural boundaries is something unnatural. Quite the contrary! Humankind that will finally be able to change its physical, psychological and emotional abilities consciously, by modifying its genes, will at last take control over its development and evolution. And, according to genetic engineers, the core of evolution is evolution management. Thus, the genetic engineering activity is not against nature, but in line with nature – the nature of human progress (Powell & Buchanan, 2011, p. 7). Within such reasoning, genetic engineering is as natural as any other process on Earth (Coker, 2012, p. 23).

Timothy Maher (2012, p. 88) notices that genetic engineering is one of the contemporary forms of power; power over humankind, over the directions of its development. Genetic engineers choose a certain standard of man, define which people can live, and which have to be eliminated and – most importantly – they design the people that appear in societies (their features, abilities, characters, etc.). Thus, as Bill Leonard (2010, p. 407) notices, genetic engineering is like playing God.

Obviously, it has to be underlined that genetic engineering seems to have an excellent potential when it comes to the struggle to improve human health. Thanks to genetic engineering, many important, life-saving drugs have been produced (the first ever drug produced thanks to genetic engineering was insulin, introduced to use in 1982) and many genetic mutations are counteracted (Coker, 2012, p. 25-6). However, genetic engineering corresponds with the eugenic concept of creating a better race of humans (Cziszek, 2005, p. 109). The strategy for the completion of this idea is to be a „child made to order," i.e. using genetic knowledge to design a human (his intelligence, height, hair colour, level of self-assessment, aggression etc.) (Fukuyama, 2005, p. 109), to – which is worth underlining – eugenic, by means of genetic modifications, designing of a human (Cziszek, 2005, p. 225). The concept of a genetic design is an idea of freeing the man from the enslavement to genes and offering him the power over genes (Fukuyama, 2005, p. 202).

Genetic engineers distinguish two strategies of genetic modification: the modification of another (one) generation and modification of the next (each and every one) generations, i.e. a modification carried out within somatic cells (only a person that is subject to modification undergoes a change) or within gametes (germline) (the descendants of the modified person also undergo the change) (Cziszek, 2005, p. 220, 222; Fukuyama, 2005, p. 110). Thus, the result of errors in case of the first strategy is a disorder or death of the individual that was undergoing the genetic proceedings, and in case of the other – a permanent change of the genome and a generational transfer of the defect.

Genetic engineering into the germline sparks most debates, controversies and social objections (Dresser, 2004, p. 1). Also, it is a source of most hope and positive emotions in the minds of genetic engineers. It is the modification of gametes that enables a better simulation for the growth of certain features, and a permanent change of humanity and the world (Holub, 2010, p. 730). Genetic engineers claim that in order for each new generation to be better, so that only enhanced people are born

(enhanced with technology, i.e. so that only cyborgs are born), it is necessary to modify the germline; such modifications are indispensable for our good and for the good of the generations to come (for the world of cyborgs) (Lawton, 2012, p. 37-9).

Genetic engineers transform people into cyborgs through an elaborate selection of embryos and – including selected embryos – a genetic modification consisting in introducing exogenous genetic material by using a suitable vector (which can be e.g. a virus) (Hockemeyer *et al*., 2011; Jin *et al*., 2011; Asuri *et al*., 2012) or by a mechanical (surgical) action that consists in e.g. removing a DNA fragment and/or inserting another (Dulal, Silver & Hua, 2012, p. 2, 7). Interestingly, the abovementioned exogenous genetic material to be introduced to the material of a given individual does not have to come from their parents, strangers, or be a cloned or synthetic material (identical with the natural one but produced at a laboratory), but it can be transgenic, i.e. come from a different (than human) species (Mahdi & Abolfazl, 2011, p. 2018) – from animals (so that the man can e.g. become as quick as a cheetah or recognize smells like a dog). Thus, genetic engineering allows the creation of human and animal hybrids with the use of technology (Coker, 2012, p. 27). The modified man, a hybrid of nature and technology (a cyborg), will become a hybrid of a man, animal and technology – a type of a postcyborg or transcyborg, as it would seem.

Genetic engineering is widely criticised due to its narration full of concepts of laboratory application, syntheticity or even artificiality. It is culturally accepted that artificially produced elements are evil, or at least inferior to those created „naturally" (even if this synthetic product does better in all tests that the natural one) (Powell & Buchanan, 2011, p. 8). Also, it is commonly acknowledged that the natural dynamics of events is the Master of Engineering; therefore each organism, including the man, should be considered a naturally excellent product that does not require any improvement. In reply to this criticism, genetic engineers demonstrate that each organism, including a human one, is eternally unfinished, undergoes constant modifications. Besides, the organism is not a Great and Finished Creation of the Great Creationist, but a changing matter capable of assuming completely new features under the influence of completely new conditions (Powell & Buchanan, 2011, p. 9). Like it or not, this debate either finishes with presenting ideological arguments, or resembles a constant passing the buck (maybe it is simply „eternally unfinished").

Liberal genetic

In 1974 thinkers such as Joseph Fletcher, John Harris, Philip Kitcher, Glenn McGee, Ramez Naam, Gregory Pence, John Robertson, Gregory Stock, Peter Sloterdijk and Lee M. Silver came up with an idea that it is morally acceptable for parents to manipulate the genetic factors that influence the development of certain features in their offspring. This orientation was called liberal genetics (or eugenics) (Fox, 2007, p. 2-3). It assumes that as genetic engineering gave geneticists the opportunity to play God, those geneticists have to offer humanity a divine gift – free will of a genetic project (Agar, 2004, p. 88). The beneficiaries are to be parents who will become capable of directing the genetic makeup of their children, or even designing them completely (Prusak, 2005, p. 32). According to *Regulating Eugenics* (2008, p. 1585), parents are to win the main prize at a genetic lottery – a child with the genetics of their dreams.

It is in the texts such as *Regulating Eugenics* (2008, p. 1584) by liberal geneticists that the concept of hyper-parents is born. Having received the divine grace of genetics, parents are to fully control the genetics of their child. They are to be able to design, plan, define, build and format it whichever way they like. Consequently, they will achieve mastery in intentional, deliberate, planned and programmed procreation.

In the vision of liberal genetics, the opportunity of designing people that results from the development of genetic engineering, has to be transferred to parents, with a complete dissociation from the influence of the government and state. Thus, this vision is to introduce a fully free-market genetic programme (Fox, 2007, p. 2). Decisions on the directions of genetic modifications are to be given to the consumer – a parent, and it will be them who will have to take care of the competitiveness of their offspring in the free genetic market by choosing a rational design (Raz, 2009, p. 606).

Parents planning their child will thus go to a genetic supermarket where they will choose a set of features that suits their preferences: from one shelf, they will select the hair colour, from another – the eye colour, in the cognitive department they will put suitable capabilities into their basket, in the emotional department they will go for the most delicious passions and interests, and finally they will decide on the gender (Raz, 2009, p. 607-8). As Dov Fox (2007, p. 4-5) points out, the genetic supermarket will have one, very important advantage: thank to it, we will not design only one, culturally defined type of man, cultural

clones, but diversified people that will be the result of constant mixing of millions of features in the gene catalogue, constant experiments with genetic mixtures.

Gender in the era of genetic engineering and liberal genetics

The concepts of genetic engineering and liberal genetics are a stark representation of, or even a symbol, of the common contemporary faith in genetic determinism, in the genetic, and only genetic, foundation of the human make-up (Daniels & Heidt-Forsyth, 2012, p. 719). In the ways of thinking about human it is even possible to notice a peculiar genetic panic and obligatory status of geno-centrism, because genes start to be the fundamental category for analysing everyone and everything, from dietetics to social movements (Agar, 2004, p. 68).

The geno-centrism of genetic engineering and liberal genetics also changes the way we perceive gender nowadays. In the vision of the world of cyborgs, genetically modified and/or designed individuals will not have any biological or social gender. No biological features so far related to sex, such as the level of fatty and muscular tissue, pubescence, procreation functions (children will be produced at laboratories) etc., will be correlated with gender. No social roles, tasks, functions in the public and political life etc. will be correlated with it, either (about gender stereotypes read: Gromkowska-Melosik, 2011, p. 39-75; Jaskulska, 2010, p. 394-6).

The gender of cyborgs will be defined on the level of their design, but gender will not affect anything. Gender will be a feature in the genetic supermarket catalogue, a feature that correlates with no other feature and is not affected by any influences but for the designer's. The gender of a cyborg will be a feature such as the colour of their eyes – selected by their parents, influencing no other feature and not affected by any other feature. In the genetic supermarket, parents will be able to choose any features, and then decide if the individual of these features should be a man or a woman (unless they decide to make a design based on the gender stereotypes that we know today, although in the context of the vision of cyborgs' lives it seems rather unlikely). What is more, they will be able to design two twin cyborgs of all identical features, but for one – gender!

In the geno-centric awareness, there is one substantial paradox – on the one hand, genes determine everything, and on the other, they deter-

mine nothing. The genetic definability of gender is not related to the definability of anything else. Thus, in the genetic vision of future, the man-cyborg in fact does not have any gender. They only have a gender feature which does not mean anything, it seems to be a biological and social anachronism, and is only defined because of the tradition of the human species.

REFERENCES

AGAR, N. (2004) *Liberal Eugenics: In Defence of Human Enhancement*. Oxford: Blackwell.

ASURI, P. *et al*. (2012) Directed evolution of adeno-associated virus for enhanced gene delivery and gene targeting in human pluripotent stem cells. *Molecular Therapy: The Journal Of The American Society Of Gene Therapy*. 20 (2).

CZISZEK, M. (2011) *Bezpieczeństwo i prawa człowieka w dziedzinie etycznych problemów ludzkiej prokreacji. Studium bioetyczno-prawne. Stan prawny na 28 lutego 2011 roku*. Toruń: Dom Wydawniczy DUET.

COKER, J. S. (2012) Crossing the Species Boundary: Genetic Engineering as Conscious Evolution. *Futurist*. 46 (1).

DANIELS, C. R. & HEIDT-FORSYTH, E. S. (2012) Gendered Eugenics and the Problematic of Free Market Reproductive Technologies: Sperm and Egg Donation in the United States. *Journal of Women in Culture & Society*. 37 (3).

DAS, M., PAL, S. & GHOSH, A. (2013) Synergistic effects of ACE (I/D) and Apo E (Hha I) gene polymorphisms on obesity, fat mass, and blood glucose level among the adult Asian Indians: A population-based study from Calcutta, India. *Indian Journal of Endocrinology & Metabolism*. 17 (1).

DRESSER, R. (2004) Designing Babies: Human Research Issues. *IRB: Ethics & Human Research*. 26 (5).

DULAL, K., SILVER, B. & HUA, Z. (2012) Use of Recombination-Mediated Genetic Engineering for Construction of Rescue Human Cytomegalovirus Bacterial Artificial Chromosome Clones. *Journal of Biomedicine & Biotechnology*. 2012.

FOX, D. (2007) The Illiberality of „Liberal Eugenics." *Ratio*. 20 (1).

FUKUYAMA, F. (2005) *Koniec człowieka. Konsekwencje rewolucji biotechnologicznej*. Kraków: Wydawnictwo Znak.

GROMKOWSKA-MELOSIK, A. (2011) *Edukacja i (nie)równość społeczna kobiet. Studium dynamiki dostępu*. Kraków: Oficyna Wydawnicza Impuls.

GYNGELL, C. (2012) Enhancing the Species: Genetic Engineering Technologies and Human Persistence. *Philosophy & Technology*. 25 (4).

HAYWARD, J. (2012) Beyond belief. *New Internationalist*. 454.

HOCKEMEYER, D. *et al*. (2011) Genetic engineering of human pluripotent cells using TALE nucleases. *Nature Biotechnology*. 29 (8).

HOLUB, G. (2010) Creating Better People?: Some Considerations on Genetic Enhancement. *National Catholic Bioethics Quarterly*. 10 (4).

JASKULSKA, S. (2010) Stereotypy płci mają się dobrze: co myśli uczeń, że myśli dziewczyna, a co chłopak? Z wypowiedzi gimnazjalistów. In: Hejwosz, D. & Jakubowski, W. (eds.). *Kultura popularna – Tożsamość – Edukacja*. Kraków: Oficyna Wydawnicza Impuls.

JIN, Z. *et al.* (2011) The hyperactive Sleeping Beauty transposase SB100X improves the genetic modification of T cells to express a chimeric antigen receptor. *Gene Therapy*. 18 (9).

KASAHARA, N. *et al*. (2011) Myocilin mt.1 gene promoter single nucleotide polymorphism (-1000C>G) in Brazilian patients with primary open angle glaucoma. *Ophthalmic Genetics*. 32 (1).

KLICHOWSKI, M. (2014). *Narodziny cyborgizacji. Nowa eugenika, transhumanizm i zmierzch edukacji*. Poznań: Wydawnictwo Naukowe UAM.

KLICHOWSKI, M. & PRZYBYŁA, M. (2013) Cyborgizacja edukacji – próba konceptualizacji. *Studia Edukacyjne*. 24.

LAWTON, G. (2012) What will we be like?. *New Scientist*. 213 (2854).

LEONARD, B. (2010) Controversial Issues in Biology Education? You Bet! Here Are Some. *American Biology Teacher*. 72 (7).

MAHDI, E. & ABOLFAZL, F. (2011) An overview of the basics of generate transgenic hen „bioreactors." *Annals of Biological Research*. 2 (6).

MAHER, T. (2012) Reshaping the Human Species. *Technology Review*. 115 (4).

NARLI, S. & SINAN, O. (2011) A Mathematical Approach in Evaluating Biotechnology Attitude Scale: Rough Set Data Analysis. *Educational Sciences: Theory and Practice*. 11 (2).

PALESE, E. (2012) Robots and cyborgs: to be or to have a body?. *Poiesis & Praxis*. 8 (4).

POWELL, R. & BUCHANAN, A. (2011) Breaking Evolution's Chains: The Prospect of Deliberate Genetic Modification in Humans. *Journal of Medicine & Philosophy*. 36 (1).

PRUSAK, B. G. (2005) Rethinking „Liberal Eugenics." *Hastings Center Report*. 35 (6).

RAZ, A. E. (2009) Eugenic utopias/dystopias, reprogenetics, and community genetics. *Sociology of Health & Illness*. 31 (4).

Regulating Eugenics (2008) *Harvard Law Review*. 121 (6).

STAFFORD, B. M. (2007) Self-Eugenics: The Creeping Illusionising of Identity from Neurobiology to Newgenics. *New Formations*. 60.

ZAREMBA BIELAWSKI, M. (2011) *Higieniści. Z dziejów eugeniki*. Wołowiec: Wydawnictwo Czarne.