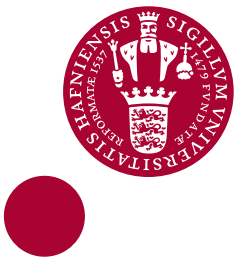

Perfecting or selecting?

When ‘kinds of children’ are the objective

Wahlberg, Ayo

Published in:
Journal of Marketing Management

DOI:
10.1080/0267257X.2020.1862475

Publication date:
2021

Document version
Peer reviewed version

Commentary for Special issue on "Transhumanisms, geneticised markets and perfectible consumers", Journal of Marketing Management

Perfecting or selecting? When 'kinds of children' are the objective

By Ayo Wahlberg, Department of Anthropology, University of Copenhagen

The transhumanist dream is to harness human ingenuity in the fields of biotechnology, computer science and artificial intelligence not 'just' in efforts to eliminate suffering caused by disease thereby improving quality of life and wellbeing, but also to "augment… human intellectual, physical, and emotional capacities" (Bostrom 2003: 493). And it should come as no surprise that reproductive science is one of those biotechnological fields that transhumanist movements are banking on, e.g. by combining *in vitro* gametogenesis (making gametes from stem cells in the lab), *in vitro* fertilization (IVF) and preimplantation genetic diagnosis (PGD) of resulting embryos to select for and breed 'cognitively superior embryos'. While such sci-fi scenarios might seem that much closer to reality following news of the birth of the world's first genetically modified humans in China following CRISPR-aided embryo editing in 2018, transhumanists, biologists, bioethicists, social scientists and science journalists alike will do well to temper any dreams or concerns about "perfectibility" with a substantial dose of humility. Yes, there have been considerable breakthroughs and developments in reproductive science in recent decades, but to suggest that "biological control" (see Franklin 2007) has now been entirely relocated from cells to the fingertips of embryologists and computer scientists is to direct attention away from much more pressing social and ethical challenges facing those families who are either confronted with or actively pursuing selective reproductive technologies (SRTs) today.

Over the past few decades, human reproduction has come to be parcelled out into specialised fields of gamete donation/retrieval, fertilization, implantation, gestation and birth. While these

developments have, in large part, been aimed at assisting (in)fertile couples in their quests for conception, healthy pregnancies and safe births, they have also introduced possibilities for selection at every step. 'Good quality' gametes are sourced from university campuses around the world as sperm banks and egg agencies carefully screen and select their donors according to biological, medical as well as social criteria. Once gametes are fertilized *in vitro* by embryologists in fertility clinics, resulting embryos can be biopsied and genetically tested (perhaps even whole genome sequenced) to determine gender or identify those which are carrying unwanted genetic mutations and therefore to be discarded. Once wanted embryos have developed sufficiently in IVF laboratories, they can then be implanted in the hopes that a pregnancy will result. For any couple, once a wanted pregnancy is confirmed a host of possible prenatal screenings and tests become available (though it must be underlined, they are not always affordable or desired) – ranging from non-invasive prenatal testing (NIPT) to ultrasound scanning, triple tests, chorionic villus sampling and amniocentesis – all of which have been developed to detect foetal abnormalities, "serious genetic diseases" or indeed the gender of the foetus. Expecting couples who choose and are able to access such prenatal screening and/or testing can then use resulting information to make decisions about whether or not to terminate their pregnancies, although this is not a legal option in a number of countries. In some cases, termination takes place at such a late stage that the woman must go through an induced stillbirth.

At the same time, those gamete banks, fertility clinics, hospital maternity services, birthing centres and direct to consumer genetic testing companies that provide these selective reproductive services have become the bedrock of a multi-billion-dollar industry. Consumers can go online and 'click a donor' after browsing through online catalogues with pictures and donor profiles (Kroløkke 2009; Almeling 2011; Martin 2018,). Couples in search of "family balancing" can travel to clinics in the USA to access sperm sorting and/or Preimplantation Genetic Diagnosis (PGD) to determine the sex of their embryos before implantation (Bhatia 2018). Expecting couples can book a time at a street-corner sonography clinic (Gammeltoft 2014), order non-invasive prenatal tests from direct-to-consumer genetic companies (Mozersky

2015) or attend prenatal testing at a private hospital (Rapp 2000; Shih 2018), if their national health insurance does not already provide them. Most recently, a global scandal unfolded at the 2nd *International Summit on Human Genome Editing* held in Hong Kong from 27-29 November 2018, as it transpired that the world's first genetically edited babies, called 'Lulu' and 'Nana', had apparently been born after their CCR5 genes were disabled by Dr. He Jiankui as a protective measure against HIV using CRISPR techniques to genetically edit embryos before implantation. Also in November of 2018, the Stem Cell Institute at Harvard University announced that it was planning to use CRISPR to edit sperm cells "to show whether it is possible to create IVF babies with a greatly reduced risk of Alzheimer's disease later in life" (Regalado 2018).

What these selective reproductive technologies (SRTs) have in common is that they have been developed to influence birth outcomes in very specific ways in conscious efforts to prevent or promote the birth of certain kinds of children through the *selective* 1) editing of gametes and embryos; 2) fertilization of gametes; 3) implantation of embryos; or 4) abortion of foetuses (Gammeltoft & Wahlberg 2014). As Tine Gammeltoft and I have argued, different from 'helping hand' assisted reproductive technologies (ARTs) (see Strathern 1992), "SRTs can be thought of as a vote of no confidence against nature, as they do not so much stand in for natural biological processes as they seek to steer or obstruct these same processes" (Wahlberg & Gammeltoft 2018: 6).

It is against this global backdrop of increasingly technologized selective reproduction that critiques of "backdoor eugenics" (Duster 2003), "designer babies" (see Roberts & Franklin 2006) and "tampering with nature" (Habermas 2003) have been put forward, as ethicists, social scientists, philosophers and legal scholars have highlighted the dangers of genetic discrimination and the perpetuation of "ableist perfectionism norms" (Kaposky 2018). Societal pressures and what Heinsen (2018) has called "structural directiveness" in preimplantation and prenatal screening trajectories often guide couples to discard embryos or terminate pregnancies that are deemed "imperfect" because of a congenital abnormality or genetic mutation that can lead to disease or disability when an "affected" child is born (see Gammeltoft

2014; Löwy 2017). These critiques have been absolutely crucial in their highlighting of how lacking support for families living with disability as well as widespread social discrimination of disability disqualify any suggestion that couples can make "autonomous reproductive decisions" based on the information they receive through prenatal care. However, if events at the 2018 Hong Kong summit on human gene editing are anything to go by, they have not succeeded in denting the continued development of new techniques of selective reproduction. Indeed, now that CRISPR technologies are actively being used in laboratories to edit the DNA of human gametes and embryos, "saviour siblings" are being "made to order" using PGD and so-called "three parent babies" are being produced using mitochondrial replacement therapies, perhaps we have finally reached that historical moment when humans in fact have begun "designing" babies (see chapter 1 in Roberts & Franklin 2006). There are at least three reasons that we should resist contributing to any hyping of these most recent of technological developments and any purported claims that humanity can now control its own perfectibility biologically.

Firstly, if we are to look at the scale of selective reproduction in today's world then abortion of female foetuses following ultrasonography continues to be by far the most widespread form of "brute" selection made possible by increasingly accessible sonography, especially in parts of the world where "son preference" prevails (Tran 2018). And, while PGD and sperm sorting can also be used to select for sex the number of PGD cycles carried out for sex selective purposes are tiny in comparison. There is not much "designing" or "perfectibility" going on when it comes to sex selective reproduction. And, as Tran Minh Hang's exceptional ethnography of how women experience sex selective abortion in Vietnam has shown, there is an urgent need to attend to the personal consequences (for women, couples, their families and healthcare professionals) of those reproductive governance regimes which have enabled huge numbers of abortions following determination of sex prenatally.

Secondly, as Rayna Rapp has recently reminded us, while "many potential consumers of selective repro-technologies increasingly believe that complex traits such as intelligence, height, beauty, musicality and more have become the objects of… selection. This is hardly the

case: scientific technique works most effectively at selecting out undesirable traits" (Rapp 2018: vii). As already noted, preimplantation as well as prenatal screening and testing techniques have been developed to "catch" or "detect" embryos and foetuses with certain known genetic mutations, chromosomal abnormalities or congenital malformations that can cause disease and disability of varying kinds. In these cases, particular embryos are discarded and foetuses are aborted because they have a "faulty gene", "chromosomal anomaly" or "malformation". In the case of PGD, those embryos that are selected for implantation are far from "genetically perfect" and the children who are born will begin a life filled with the risk of serious disease, whether communicable or noncommunicable, like so many others who have were born "naturally" without a particular known genetic mutation. And those who choose to abort a foetus following prenatal testing may then choose to 'begin again' in their quest for conception. As prenatal screening and testing comes to be routinized globally, we must continue to ethnographically study the ways in which couples, women and healthcare professionals experience prenatal care and agonise over late termination of pregnancies following detection of an anomaly.

Finally, while the development of gene editing techniques certainly point towards a potentially new era of selective reproduction, if there is one thing that we have learned from the scandal surrounding He Jiankui, surely it is that, however path-breaking CRISPR technologies have been, we will do well to self-administer sharp doses of humility if we are pitting human ingenuity against the complexities of the human genome and gene regulation. Numerous questions have been raised about just what it was that He Jiankui "edited" and there are many concerns about the future health of Lulu and Nana because of possible 'off target' effects. In contemporary genomic research, a language of "precision", "editing" and "targeting" prevails, but these terms have a much harder time bearing out empirically. Selective reproduction at the molecular level remains primarily a task of identifying unwanted "genetic mutations" or "chromosomal abnormalities" and preventing children with these mutations from being born by discarding "affected" embryos or aborting foetuses.

Why insist on downplaying human ingenuity when there so clearly are many rapid developments taking place within reproductive science which may well end up as routinized

elements in a technologically parcelled out human reproductive process? I am certainly not suggesting that we should not be on our guard, calling out (and preventing the work of) the likes of He Jiankui and highlighting the social and stigmatizing effects of selective reproduction for different families and children around the world. This is a crucial task for social scientists, ethicists, philosophers and legal scholars. What I am arguing is that we will do well to keep any claims being made about selective reproduction within empirical bounds, namely by asking if selective reproduction is taking place today, in which forms, for which purposes, by which actors and with which effects? Let us replace notions of "designing" and "precision" with an empirical interest in the "selecting out", "discarding" and "terminating" that underpin selective reproduction in the 21st century and let us work towards ending the resulting discrimination and stigmatization of those families and children who live with disability and face multiple difficulties in their daily lives.

References

Almeling, R. (2011). Sex cells: The medical market for eggs and sperm. Univ of California Press.

Bhatia, R. (2018). The Development of Sex-Selective Reproductive Technologies within Fertility, Inc. and the Anticipation of Lifestyle Sex Selection. In Selective reproduction in the 21st century (pp. 45-66). Palgrave Macmillan, Cham.

Bostrom, N. (2003). Human genetic enhancements: a transhumanist perspective. The Journal of value inquiry, 37(4), 493-506.

Duster, T. 2003. Backdoor to Eugenics. New York: Routledge.

Franklin, S. (2007). Dolly mixtures: The remaking of genealogy. Duke University Press.

Gammeltoft, T. M. (2014). Haunting images: A cultural account of selective reproduction in Vietnam. Univ of California Press.

Gammeltoft, T. M., & Wahlberg, A. (2014). Selective reproductive technologies. Annual Review of Anthropology, 43, 201-216.

Habermas, J. 2003. The Future of Human Nature. Cambridge: Polity.

Heinsen, L. L. (2018). Moral adherers: Pregnant women undergoing routine prenatal screening in Denmark. In Wahlberg, A. & Gammeltoft, T. (eds) Selective reproduction in the 21st century (pp. 69-95). Palgrave Macmillan, Cham.

Kaposy, C. (2018). Neoliberal Perfectionism. Boston Review, 43(3), 43-47.

Kroløkke, C. (2009). Click a donor: Viking masculinity on the line. Journal of consumer culture, 9(1), 7-30.

Löwy, I. (2017). Imperfect pregnancies: A history of birth defects and prenatal diagnosis. JHU Press.

Martin, L. J. (2018). They Don't Just Take a Random Egg: Egg Selection in the United States. In Wahlberg, A. & Gammeltoft, T. (eds) Selective Reproduction in the 21st Century (pp. 151-170). Palgrave Macmillan, Cham.

Mozersky, J. (2015). Hoping someday never comes: deferring ethical thinking about noninvasive prenatal testing. AJOB Empirical Bioethics, 6(1), 31-41.

Rapp, Rayna. 2000. Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America. 1 edition. New York: Routledge.

Rapp, Rayna. 2018. Foreword: The Egg Imaginary. In Wahlberg, A. & Gammeltoft, T. (eds) Selective Reproduction in the 21st Century (pp. v-viii). Palgrave Macmillan, Cham.

Regalado, A. (2018). Despite CRISPR baby controversy, Harvard University will begin gene-editing sperm. MIT Technology Review. https://www.technologyreview.com/2018/11/29/103725/despite-crispr-baby-controversy-harvard-university-will-begin-gene-editing-sperm/

Roberts, C. & Franklin, S. (2006). Born and made: An ethnography of preimplantation genetic diagnosis. Princeton University Press.

Strathern, Marilyn. 1992. Reproducing the Future: Anthropology, Kinship, and the New Reproductive Technologies. New York: Routledge.

Shih, L. W. (2018). Moral Bearing: The Paradox of Choice, Anxiety and Responsibility in Taiwan. In Wahlberg, A. & Gammeltoft, T. (eds) Selective reproduction in the 21st century (pp. 97-122). Palgrave Macmillan, Cham.

Tran, M. Hang (2018). Global Debates, Local Dilemmas: Sex-selective Abortion in Contemporary Viet Nam. ANU Press.

Wahlberg, Ayo & Gammeltoft, Tine (2018). Selective reproduction in the 21st century. Palgrave Macmillan.