



The Future of Education: Genetic Enhancement and Metahumanities

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Journal of Evolution and Technology - Vol. 25 Issue 1 – May 2015 - pgs 31-48

Abstract

Habermas has criticized the position that educational and genetic enhancements are parallel events (2001, 91). I, on the other hand, will provide reasons for the position that there is a structural analogy between educational and genetic enhancement such that the moral evaluation of these two procedures should be seen as analogous, too. I will show that an affirmation of educational enhancement suggests an affirmation of genetic enhancement. In addition, I offer reasons why both types of enhancement ought to be affirmed. I will progress as follows. First, I will explain the relevance of the question by considering transhumanism and posthumanism. Both are contemporary philosophical and cultural movements in which the question concerning enhancement is central. Second, I will compare educational and genetic enhancement, showing that Habermas' arguments concerning their relationship are implausible. In the conclusion, I will refer to the relevance of this insight to the future of education, when the humanities will need to be transformed into metahumanities.

Introduction

Habermas has criticized the position that educational and genetic enhancements are parallel events (Habermas 2001, 91). In response, I will provide reasons in favor of the position that there is a structural analogy between educational and genetic enhancement such that the moral evaluation of these two procedures ought to be viewed as analogous (contrary to Habermas 2001, 87). I will show that an affirmation of educational enhancement suggests an affirmation of genetic enhancement. (By genetic enhancement, in this context, I am referring to genetic enhancement by modification, but not to genetic enhancement by selection, e.g. by selecting fertilized eggs after *in vitro* fertilization and preimplantation genetic diagnosis.) In addition, I offer some reasons why both types of enhancement ought to be affirmed.

I will progress as follows. First, I will explain the relevance of the question by considering transhumanism and posthumanism. Both are contemporary philosophical and cultural movements in which the question concerning enhancement is central. Second, I will compare educational and genetic enhancement, showing that Habermas' arguments concerning the relationship between them are

implausible. In the conclusion, I will refer to the relevance of this insight to the future of education, when the humanities will need to be transformed into metahumanities.

1. Transhumanism, posthumanism, and genetic enhancement

It needs to be clarified how one employs the notions of transhumanism and posthumanism, or the transhuman and the posthuman, as there are probably as many meanings of these concepts as there are thinkers dealing with them. I will stress and focus on certain similarities that can be found among most transhumanist and posthumanist thinkers.

Transhumanism and posthumanism are contemporary philosophical movements. Transhumanism is connected more closely with the enhancement debate that takes place in the English-speaking world among analytical ethicists (see Ranisch and Sorgner 2014). Posthumanism is a movement that is more closely connected to the so-called continental tradition of philosophy, and there is a close link between posthumanist and postmodern thinkers. However, transhumanism and posthumanism have in common that they both reject the special status of human beings that has been connected with humanism (Sorgner 2014). This implies that they hold that human beings are not categorically different from other beings, and that we do not possess a Factor X that is distinct and separate from nature. Thereby, both movements reject central elements of the concept of “human dignity” as found in, for example, the German constitution. Even if few thinkers explicitly hold that human beings possess a special Factor X, this assumption is implicitly present at a fundamental level of the German constitution, which includes a rigid distinction between human beings and other living beings, i.e. these two types of living entities belong to two categorically separate ontological levels. On this approach, only human beings possess dignity. Legally animals are thus to be treated as mere things. Hence, human beings are implicitly attributed a Factor X that makes them distinct from animals and other natural beings (Sorgner 2010b).

Transhumanism affirms technological means for increasing the likelihood of altering human beings – regarded by transhumanists as “works in progress” – in order to bring about the transhuman or the posthuman (Bostrom 2005, 1). The meaning of the concepts of the trans- and the posthuman differs significantly among transhumanist thinkers (Sorgner 2009). However, quite a few transhumanists uphold the fully rounded personality as an ideal, which is similar to the Renaissance ideal for humanity (e.g. Bostrom 2001).

Posthumanism, on the other hand, is characterized by an attempt to move culturally beyond categorical dualities concerning ethical and ontological issues, and by a type of perspectivism. Posthumanists do not necessarily have any fundamental objections to technologically altering human beings. They do not uphold the absolute validity of the Renaissance ideal. Yet, there are concepts of the posthuman within the posthumanist discourse, too, which, have different meanings than within the transhumanist discourses e.g., that of Katherine Hayles in *How We Became Posthuman* (1999) or the cyborg of Donna Haraway’s “A Cyborg Manifesto” (1991, 149-181). Sloterdijk is another philosopher who can be described as posthumanist, as he employs a concept of the posthuman, e.g., in his speech “*Regeln für den Menschenpark*” (2001, 302–337).

The importance of trans- and posthumanism is founded on at least three historical events: 1. The inclusion by Darwin of human beings in natural processes (Rachels 1990); 2. the destruction by Nietzsche of the supernatural world (Sorgner 2007); 3. and the advancement of the natural sciences, in particular the developing power and potentials of gene technology (Knoepffler, Schipanski, and Sorgner 2007). Hence, thinkers in both the English-speaking and the continental world have realized that a paradigm shift concerning the concept of the *anthropos* is taking place. Only some backward-minded thinkers committed to rigidly religious worldviews – or members of the Frankfurt school – still believe in the rational subject that is somehow distinct from nature. Even though Habermas claims to propose a “soft naturalism,” he sticks to the concept of a special subject (Habermas 2004, 877) that cannot be reduced to neuronal processes (2004, 876). His naturalism is non-scientific (2004, 872), which implies a special status of the subject, as it cannot be analyzed by means of the natural sciences. I doubt whether this is a sensible way of applying the concept “naturalism.”

2. On the relationship between educational and genetic enhancement

Before any intellectual enterprise, the concepts one uses need to be spelt out: for example, it needs to be clarified what is genetic enhancement and what is educational enhancement. Both are difficult to define, and have to be described in a broad manner.

In the secondary literature on education, there are probably as many definitions as there are experts in the field. The definition I am employing is a traditional one, one that is open and not too controversial. Concerning the ethical debate on enhancement, the situation is slightly different, since “enhancement” as *terminus technicus* is a fairly new philosophical concept. Many ethicists who use the concept leave it undefined in order to avoid the definitional challenges. I will put forward a definition that is closely connected to the concept of eugenics, in order to best evaluate the argument offered by Habermas. He was talking about liberal eugenics and not about “enhancement.” However, it has become fashionable to use the word and concept “enhancement.” There seems to be a tendency for bioconservative thinkers to use the term “eugenics,” due to its negative historical connotations, and for bioliberal thinkers to prefer the term “genetic enhancement,” as it is difficult to object to bettering people.

By the concept “education,” I refer to processes that can be described as the general transmission of culture by parents, whereby culture is closely connected to an ideal of the good (e.g. Eames 1977, 194; Ottaway 1999, 9; Olson 2003, 173; Sorgner 2004). Obviously, I am not implying that education takes place only if a specific ideal of the good gets transferred. This definition is open to various ideals of the good, so it can be valid for various historical and contemporary settings. I often employ the expression “educational enhancement” instead of “education” because, as in other cases of enhancement, the procedure aims at an improvement of the life of the child. An improvement or enhancement is related to a conception of the good, which does not necessarily imply that this conception is a stable one or one that can be described using words (see Sorgner forthcoming).

In the definition of education, I used the concept “parents” and I will employ it again when I specify the concept “enhancement.” I wish to stress that the concept “parents,” as it is used here, is an open notion that can be specified by talking about biological or cultural parentage. In addition, the concept is limited to neither heterosexual couples nor heterosexual and homosexual couples: instead, it is conceivable that children can come about by compiling genes from three people of the same sex or by bringing together a sperm cell with an egg cell containing genetic material from two mothers (given a specific mitochondrial disease, this option was legalized in the UK in February 2015). In these cases, all three people involved would be the parents. Opening up the concept of parenthood does not render the concept meaningless, and it is needed to differentiate between state regulated education (or enhancement) and liberal versions.

What about genetic enhancement? It needs to be stressed that eugenics and enhancement are not identical concepts. Eugenics relates specifically to the improvement of genes, whereas enhancement has to do with various types of improvement, whether genetic or otherwise. Eugenics can turn up in a liberal and a state-governed version. The use of the concept of enhancement in bioethical debates, on the other hand, presupposes a type of liberalism. However, the extensions of the two concepts overlap. I assume that “liberal eugenics” is a concept that can be subsumed under the concept “enhancement.” A fundamental, but oft-neglected, distinction concerning enhancement is that between *ex post* and *ex ante* enhancement. If a Quality X that represents a good is promoted successfully, the outcome is an *ex post* enhancement. If one consciously attempts to promote Quality X, then the attempt (or the process employed) can be described as *ex ante* enhancement. In this case, the outcome is uncertain. This is also the case concerning education. On this occasion, I am dealing with *ex ante* enhancement (compare Sorgner 2009).

The decision concerning an enhancement can be made either by oneself (autonomous enhancement) or by one’s parents (heteronomous enhancement). Autonomous enhancement is less problematic than heteronomous enhancement. However, primarily in the case of heteronomous genetic enhancement,

there is an analogy with educational enhancement. In both of these cases, parents decide what happens to their offspring.

It is never a case of genetic enhancement if the state or a government decides what ought to be done with people, as was done during the Third Reich, since this falls outside the concept of “enhancement.” As employed in bioethical debates, the notion presupposes a type of liberalism. The notion of “liberal eugenics” that Habermas employs can be distinguished analogously. The fundamental difference between “liberal eugenics” and “enhancement” is that enhancement applies to all types of human qualities. The term “liberal eugenics” can be employed meaningfully only when genes are altered. Thus, penis enlargement by means of an operation is a type of enhancement, but not an example of liberal eugenics. In this paper, I am focusing solely on some problematic cases of genetic enhancement that have the same extension as liberal eugenics, but different connotations. (Recall that I am dealing solely with genetic enhancement by modification in this context. I have dealt with genetic enhancement by selection in other publications (e.g. Sorgner 2013a).)

Many further distinctions concerning enhancement can be made (compare Sorgner 2006), and I cannot deal with them all. Yet, there is one more that I must mention at least briefly, as it will become relevant later on: the distinction between positive and negative genetic enhancement. Positive genetic enhancement is the conscious attempt to promote good genes. Negative genetic enhancement, on the other hand, refers to an attempt to hinder disadvantageous genes from spreading. The distinction is a problematic one, as the concept “disadvantageous genes” depends upon a concept of “disease” that is even more problematic. The more general relationship between positive and negative enhancement is likewise unclear. I will tackle this issue when I turn to Habermas’ proposals concerning therapeutic and nontherapeutic uses of enhancement.

Having defined genetic and educational enhancement, I need to spell out why there could be parallels between these two procedures. In both cases, decisions are being made by parents concerning the development of their child, at a stage where the child cannot yet decide for herself or himself. In the case of genetic enhancement, we are faced with a choice between genetic roulette and genetic enhancement. In the case of educational enhancement, we face the options of a Kaspar Hauser lifestyle or parental guidance. Given these options, it seems most plausible to claim that genetic enhancement and parental guidance usually bring about better results for the offspring than the alternatives, since the qualities brought about by means of enhancement are based upon parental choices that are normally made on the basis of experience. Parents usually love their children and want them to have the best possible starting points in life. Of course, parental decisions do not always produce good results. But as a rule of thumb, parental influence most often leads to better outcomes than those from chance or without any guidance. Parents uphold qualities on the basis of their experience, and having experience in the context of ethical decisions is necessary for making good ethical decisions, as Aristotle remarked about the foundation of prudence (*NE* 1142a).

One difference between the procedures of educational and genetic enhancement could be that education deals with the mind, whereas genetic enhancement relates to the body. However, this point is not raised by Habermas, and it could be answered easily, because 1. it implies a rigid separation between mind and body that is no longer plausible; 2. education also includes physical education; and 3. intelligence and related phenomena that can be enhanced genetically are properties of the mind as well as the body. In addition, 4., I have pointed out that the two procedures are parallel, but not that they are identical.

Habermas has other challenges concerning the differences between genetic and educational enhancement. His main point is that genetic changes are irreversible, whereas educational ones are reversible (Habermas 2001, 90, 110). As a consequence, he sees genetic changes as endangering the autonomy of the person in question. He regards the enhancement process as an illegitimate type of instrumentalization of the person, and he holds that the consequences of genetic enhancement procedures question the equality of all human beings.¹ However, he regards genetic enhancement as a morally legitimate method insofar as it is employed for clearly therapeutic uses, because in such cases it is not supposed to attack the autonomy of the person (Habermas 2001, 91). I will deal with these

various points one by one. In the end, I will briefly address a final, but invalid, counterargument that has often been raised as a response to one of my presentations on this topic.

Habermas' arguments against genetic enhancement would not be plausible if educational and genetic enhancement were parallel processes, because then the subject status of the enhanced being is touched no more or less in the case of genetic intervention than in the case of educational intervention. The self-perception and understanding of a person who has been genetically enhanced depend upon his evaluation of the enhancement process and his perception of the relationship between education and genetic enhancement. Of course, there is a choice to accept or reject enhancement processes, whether the interventions made are educational or genetic. It is always uncertain whether genetic enhancement will be beneficial. However, it is also an open question whether education will have beneficial consequences in any specific case. It is, however, probable in both kinds of cases that the results will turn out better with parental involvement than without it – given that the enhancement methods are reliable.

2.1 Irreversibility of genetic enhancement²

One claim against a parallel between genetic and educational enhancement is that genetic enhancement is irreversible (Habermas 2001, 90, 110). As recent research has shown, however, this claim is implausible, if not outright false.

Let us consider the well-known case of a lesbian couple who were both deaf and chose a deaf sperm donor to have a deaf child (see Agar 2004, 12–14). Actually, the child can hear a bit in one ear, but this is unimportant for my current purpose. According to the couple, deafness is not a defect; it merely represents being different. The couple were able to realize their wish, and managed to have a mostly-deaf child. If germ line gene therapy worked, they could have chosen a non-deaf donor, modified the appropriate genes, and brought about a deaf child in this way. Note, however, that if the deafness was one of the inner ear, it would be possible for the person in question to go, later on, to a doctor and ask for a surgical procedure in which he receives an implant enabling him to hear. It is already possible to perform such an operation and insert such an implant.

Of course, it may be argued that in that case the genotype is not reversed, but merely the phenotype. This is correct. However, the example illustrates how qualities that came about due to a genetic intervention can be reversible. In this example, they can be changed by means of surgery. But, depending on the type of deafness involved, deaf people may be able to undergo surgery enabling them to hear again.

One could object that the consequences of educational enhancement can be reversed autonomously, whereas in the case of genetic alterations one needs a surgeon or external help to bring about a reversal. This is also incorrect, as I will demonstrate. Meanwhile, it is not true that all consequences of educational enhancement can be reversed. In addition, the availability of somatic gene therapy means that it is even possible to change a person's genetic makeup. One of the most striking examples in this context is siRNA therapy, by means of which genes can be silenced. In the following paragraph, I give a summary of what siRNA therapy has achieved so far.

In 2002, the journal *Science* referred to RNAi as “Technology of the Year,” and McCaffrey et al. published a paper in the journal *Nature* in which they specified that siRNA functions in mice and rats (2002, 38–39). Evidence that siRNA therapy can be used successfully in animals was published by Song et al. in 2003. By means of this type of therapy (RNA interference targeting Fas), mice can receive protection from fulminant hepatitis (Song et al. 2003, 347–51). A year later, it was shown that genes at a transcriptional level can be silenced by means of siRNA (Morris 2004, 1289–1292). Due to the enormous potential of siRNA, Andrew Fire and Craig Mello were awarded the Nobel Prize in medicine for discovering the RNAi mechanism in 2006.

Given the empirical data concerning siRNA, it is plausible to claim that theoretically the following process is possible, and, hence, that genetic states are not necessarily immutable: 1. An embryo with

brown eyes can be selected by means of preimplantation genetic diagnosis; 2. The adult does not like his eye color; 3. He asks medics to provide siRNA therapy to change the gene related to his eye color; 4. The alteration brings about an eye-color change.

Another option would be available, if germ line gene therapy worked, which it does not so far. In that case, we could change a gene using germ line gene therapy to bring about Characteristic X. Imagine that this characteristic is disapproved of by the later adult. Hence, he decides to undergo siRNA therapy in order to silence the altered gene again. Such a procedure is theoretically possible. However, we do not have to use fictional examples to show that alterations brought about by genetic enhancement are reversible; we can, instead, simply look at the latest developments in gene therapy.

A 23-year-old British male, Robert Johnson, suffered from Leber's congenital amaurosis, which is an inherited blinding disease. Early in 2007, he had surgery at Moorfields Eye Hospital and University College London's Institute of Ophthalmology, which represented the world's first gene therapy trial for an inherited retinal disease. In April 2008, the *New England Journal of Medicine* published the results of this operation, which revealed its success, as the patient gained a modest increase in vision with no apparent side-effects (Maguire et al. 2008, 2240–2248).

This case involved a therapeutic use of genetic modification. However, genes that can be altered for therapeutic purposes could also be altered for non-therapeutic ends (if we wish to uphold the problematic distinction between therapeutic and non-therapeutic ends). The examples mentioned here clearly show that qualities brought about by means of genetic enhancement do not have to be irreversible. As we'll see, the parallels between genetic and educational enhancement go even further.

2.2 Reversibility of educational enhancement

According to Habermas, character traits brought about by educational means are reversible (2001, 110–111). Because of this assumption, he rejects the idea that educational and genetic enhancement are parallel processes. Aristotle disagrees, and he is right in doing so. According to Aristotle, a *hexis*, a basic stable attitude gets established by means of repetition. (*NE*, 1103a). If you continually act in a brave manner, you become brave. By playing a guitar, you turn into a guitar player. By acting with moderation, you become moderate. Aristotle states that, by repeating a certain type of action, you establish the type in your character: you form a basic stable attitude, a *hexis*. In the *Catagories*, he makes clear that the *hexis* is extremely stable (Cat. 8, 8b27–35). In the *Nichomachean Ethics*, he goes even further and claims that, once one has established a basic stable attitude, it is impossible to get rid of it again (*NE* III 7, 1114a19–21). Buddensiek has interpreted this passage correctly by pointing out that once a *hexis*, a basic stable attitude, is formed or is established, it is, according to Aristotle, an irreversible part of the individual's character (Buddensiek 2002, 190).

Aristotle's position receives support from Freud, who put forward the following claim: "It follows from what I have said that the neuroses can be completely prevented but are completely incurable" (Freud quoted by Malcolm 1984, 24). *Angstneurosen* were supposed to be particularly striking examples (Rabelhofer 2006, 38).

Much time has passed since Freud, and further research has taken place. In recent publications concerning psychiatric and psychotherapeutic findings, however, it remains clear that psychological diseases can be incurable (Beese 2004, 20). Psychiatric disorders are not, of course, intentionally brought about by educational means. However, much empirical research has been done in the field of psychiatric illnesses and their origin in early childhood. The robust finding that irreversible illnesses can come about from events or actions in childhood entails that irreversible outcomes can happen by means of proper educational measures.

Medical research has shown, and most physicians agree, that posttraumatic stress disorders can not only become chronic, but also lead to permanent personality disturbances (Rentrop et al. 2009, 373). They come about as a result of exceptional events that represent an enormous burden and change within someone's life. Obsessional neuroses are another such case. According to the latest numbers,

only 10 to 15 per cent of patients get cured, and in most cases the problem turns into a chronic disease. (Rentrop et al., 2009, 368). Yet another example is provided by the borderline syndrome, which is a type of personality disorder. It can be related to events or actions that have taken place in early childhood, such as violence or child abuse. In most cases, this appears as chronic disease (Rentrop et al. 2009, 459).

Given these examples, it is clear that actions and events during one's lifetime can produce permanent and irreversible states. In the psychiatric examples, the outcome is a disadvantage to the person in question. In the case of an Aristotelian *hexis*, by contrast, it can be advantageous if the person establishes a virtue in this manner.

To provide further intuitive support for the position that qualities established by educational enhancement can be irreversible, simply think about learning to ride a bike, tie one's shoe laces, play the piano, or speak one's mother tongue. Children are educated for years and years to undertake these tasks. Even when one moves into a different country, or if one does not ride a bike for many years, it can be difficult, if not impossible, to remove the acquired ability. Hence, it is very plausible that educational enhancement can have irreversible consequences, and Habermas is wrong again. Genetic enhancement can have consequences that are reversible, and educational enhancement can have consequences that are irreversible. Given these insights, the parallel between genetic and educational enhancement obtains additional support. However, I will consider some further points that Habermas raises.

2.3 *Autonomy*

To support his main point of critique – his denial of a parallel between educational and genetic enhancement – Habermas raises many further questions. According to him, genetic (but not educational) enhancement limits the potential for an autonomous way of life (Habermas 2001, 45). To support this claim, he explains that there exists a clear distinction between something that has grown and something that was made in the life world (2001, 83). Only human beings who have solely grown are supposed to have their full autonomy.

The distinction between what has grown and what was made is problematic. It seems highly implausible to hold that human beings who grow up are *solely* growing up. Human beings are in a permanent interaction with their environment and their culture, and they are also influenced by whatever they get to eat and drink. In addition, could one not argue that we are already making human beings? This happens if a woman goes to a sperm bank and asks for the sperm of a Nobel Prize winner, which can be done in the US, although sperm from good-looking, intelligent, and athletic Ivy League students has proved to be more popular (Agar 2004, 1–2; Sandel 2007, 74).

In another sense, we are already making human beings whenever we choose partners with whom we can have children. When we decide to have unprotected sex at a certain time, we are potentially making human beings. To hold that only human beings who are genetically enhanced are being made is too simple and rigid a position to be plausible, particularly if we consider the consequences of educational enhancement in more detail. For example, a child who grows up in an extremely religious environment, and so receives a religious education, can be indoctrinated irreversibly. In such a case, we might claim that the child was made, as it acquired characteristics that it cannot remove. Habermas might not agree that this is possible, since he might reply that the grown autonomous subject decides which educational means he or she does or does not accept. This would accord with his emphasis on the rationally motivated affirmations of an independent subject (2001, 99). At this point, however, it becomes clear that he clings to an anthropology within which human beings have a special status, since they and only they are supposed to be rational and independent subjects. Although Habermas claims explicitly that he is in favor of a "soft naturalism," he uses the concept of a special subject that is beyond any empirical analysis (see Habermas 2004, 876–77). He puts forward a view of human beings that is extremely implausible after Darwin, Nietzsche, and Freud, and after post- and transhumanism.

Habermas draws further inferences. He holds that genetic enhancement might cause a break within humanity: it might divide us into human beings who are grown and autonomous, and human beings who were heteronomously made and are therefore less autonomous. His description implies that the less autonomous ones are somehow inferior (compare the 1997 film *Gattaca*, which depicts a situation in which genetically selected humans regard themselves as superior). No matter what the consequences would be, Habermas holds that genetic enhancement touches a question concerning the identity of a species (2001, 45). In a way, he is correct, since genetic enhancement could, in principle, bring a new species into existence. Some transhumanists refer to human beings who develop the potential of becoming members of a new species as “transhumans,” and to the members of a new species as “posthumans.” However, we cannot exclude the possibility that the same result could come about by educational enhancement. Nietzsche held that, by means of educational enhancement, we can establish preconditions for the next evolutionary step to occur, so that a new species of overbeings can come into existence (Sorgner 2009). Hence, the identity of our species could be altered not only by genetic enhancement, but also by educational enhancement.

Habermas goes even further in his critique. He correctly holds that people have the right to an open future, but then claims that genetic enhancement limits the life plans of the enhanced people, as their freedom of choice will have been limited (Habermas 2001, 105). To be autonomous, human beings must be the sole authors of their way of life (2001, 109). Habermas’ claim is simply false, however, as the freedom of choice of a genetically enhanced human being is not limited, but is merely altered compared to the non-enhanced person.³ Every human being has a genetic makeup. The question is who decides upon, and brings about, the genetic makeup. In the one case, it is chance, and in the other case it is a parental decision. The parents do not limit the decisions of their child, but merely alter the preconditions. A child who is not genetically enhanced also has a genetic makeup that determines some of her or his strengths and weaknesses.

2.4 Instrumentalization

Habermas raises still another issue. He claims that in using genetic enhancement parents will instrumentalize their children, as a child cannot object to what happens to him. Yet, instrumentalization takes place whenever Person X uses Person Y merely as a means to an end. For comparison, consider some problematic cases of educational enhancement, for example little girls living dreams of their mothers (perhaps becoming a model, being a nun, or being absolutely spoiled with luxury goods). Habermas explains that it might make us sick to imagine that our nature was instrumentally altered before birth (2001, 94), as such a procedure might have significant consequence upon our self-understanding. But this does not have to be the case if we understand educational and genetic enhancement as parallel events. If they are understood as parallel, then the consequences of the one would not be better or worse than those of the other.

In addition, we can doubt that it ought to be prohibited to use a person solely as a means to further ends. Hoerster has presented a good example against the absolute validity of that prohibition, and has suggested plausibly that we can distinguish between morally legitimate and morally illegitimate types of instrumentalization (2002, 15). Still, one further thought needs to be added: If we prohibit genetic enhancement, because human beings are instrumentalized during the process, then educational enhancement should also be forbidden. However, we can reject the central accusation that during the process of genetic enhancement parents merely instrumentalize their child. The accusation is false: it is (usually) not a case of a mere instrumentalization, since the parents also love and respect the child, and this influences the process of genetic enhancement. The parents might *partly* instrumentalize the child, but that is not, in itself, morally wrong. By way of comparison, an employer partly instrumentalizes his employee, but this does not entail that he treats the employee immorally. In short, there are many plausible reasons that explain why Habermas’ position – his accusation that a child is treated immorally during the process of genetic enhancement – is highly implausible.

Although there are many reasons for rejecting Habermas’ position concerning instrumentalization, the most important one is more fundamental than anything discussed to this point. The moral objection to using persons solely as a means presupposes a radically dualistic ontology that is highly dubitable. To

explain this in more detail, I propose to present a slightly longer argument.⁴ In 2.4.1. I will analyze the challenges related to the prohibition of treating a person solely as a means.

2.4.1. Why treating a person solely as a means is not morally problematic

The concept of human dignity is central in many constitutions worldwide. It plays a particularly central role in the German foundational law (Sorgner 2010b, 23–29), where Kant’s conception of dignity is particularly influential (Sorgner 2010b, 82–108). In fact, there are two aspects that German law inherited from Kant, both of which are highly problematic.

First, even though that it is acknowledged by the German constitution that non-human animals are not objects, they are supposed to be treated like objects. Hence, the law implicitly includes a categorical dualistic separation of animals from human beings.

Second, it is legally forbidden to treat a person solely as a means. This insight applies both to oneself and to other persons, as becomes clear in the following two regulations. First, peep shows in Germany are legally forbidden, even if it is the dancer’s autonomous wish to earn money in that way (Welti 2005, 397). Second, it is forbidden to shoot down a hijacked airplane, even though it seems to be flying directly into a nuclear power station, as long as there are innocent persons on board (BVerfG, 1 BvR 357/05 from 15.2.2006). In each case, the regulation was justified by reference to the Kantian thought that it is morally wrong to treat a person merely as a means. In the following reflections, I will, first, question a basic assumption on which these regulations rest; second, consider what options follow from these reflections; and, third, analyze the challenges from those options. I will show clearly that the German law needs to be altered with respect to its prohibition of treating a person solely as a means.

2.4.1.1. Challenging Kant’s basic assumptions

The Kantian moral prohibition of treating a person solely as a means rests on a distinction between persons and things. Persons participate in the world that is governed by the laws of nature and the laws of freedom. Things, however, participate solely in the world that is governed by the laws of nature. This distinction implies that only persons do not belong solely to the natural world (Kant 1902ff, vol. 4, 428–34). Kant did not affirm an anthropocentric conception of personhood, but a logocentric conception of personhood, since it was not necessary for him that only human beings can be rational beings, and hence persons. In the German legal context, however, the distinction between persons and things turns into an anthropocentric conception, since only human beings are seen, and legally treated, as persons.

Is this a plausible anthropology today? Darwin, Nietzsche, and contemporary trans- and posthumanist thinkers might all have reasons to doubt it (Badmington 2000, 9). Given recent biological research, given that human beings and great apes have common ancestors, and given a basically naturalist understanding of the world, it is more plausible to hold that there is merely a gradual difference between human beings, great apes, plants, and maybe even stones.

Nietzsche’s anthropology provides a possible non-dualist anthropology that attempts to grasp the relevant concepts philosophically. On this approach, all entities turn into constellations of power-quanta, and human beings are seen as a specific type of animal, sometimes even a “sick animal” (KSA, GM, 5, 367). However, this sickness identified by Nietzsche is not necessarily a deprecation of human beings. It has several implications. It means that humans have developed a special capacity, namely that of not immediately having to follow their instincts. This can have both beneficial and problematic consequences. It can be beneficial, as it enables human beings to create culture, develop technologies, and realize sublimation processes. It can be problematic, though, as it separates acts from the immediate realization of instincts – although instincts are often more reliable, concerning one’s own interests, than intellectual reflections (Sorgner 2010b, 184–91).

2.4.1.2 Moving beyond Kant's basic assumptions

As both philosophical and scientific reflections lead us to doubt the Kantian anthropology on which the German foundational law rests, what can be done to take these insights into consideration?

Posthumanist insights are not generally accepted in Germany. Instead, many citizens still uphold a Christian understanding of the world that tends to confirm the basic Kantian assumptions. Still, it must be asked whether a social-liberal democracy ought to be based upon a premise that affirms a strong metaphysical anthropology, namely one that regards human beings as constituted of a material body and an immaterial soul. By contrast, animals, plants, and stones are regarded as objects and as not participating in any world outside the material naturalist one. This seems to go against the fundamental norm of freedom on which democracies rest. In the case of Germany, over thirty per cent of citizens can be classified as naturalists, skeptics, or atheists who are being treated paternalistically by a Christian-Kantian form of legal regulation. Unfortunately, this group of people is not politically organized enough for effective resistance. Members of the Catholic and the Protestant churches, on the other hand, have strong institutions and hence an enormous amount of power to influence political decision. Consequently, the current form of legal regulation treats at least one third of the German population with an aggressive type of paternalism. This runs counter to the central value that the norm of freedom ought to have within a democracy. In conclusion, the German approach to legal regulation ought to be revised.

What does it imply to revise the premises of the foundational law? In its current form, the foundational law has a strong metaphysical implication: only human beings are seen as participating in a material as well as in an immaterial world. It is, however, problematic for the foundational law of a liberal-democratic society to have an ontological basis, so it cannot be appropriate to simply replace this form of regulation by another in which human beings and animals are seen as merely gradually different. That would be swapping one ontological position for another. It would, instead, be more appropriate to stress a political norm of negative freedom. However, the main question that I propose to address here concerns the prohibition of treating a person solely as a means.

So far, I have shown that the Kantian moral prohibition implies an ontological distinction between persons and things. Persons have autonomy, and hence dignity, which implies that no finite value can be attributed to them. Things, on the one hand, can have a merely finite value, which is the reason why they can be treated solely as a means. Persons, on the other hand, cannot be identified with a finite amount of value, and consequently must not be treated solely as a means.

Hence, the intellectual basis on which Kant's moral prohibition rests is a highly problematic ontological understanding that is currently not shared by at least one third of the German citizens. Still, they are forced to be judged on this basis, since this approach to regulation is part of the German law. It has consequences such as the prohibition of peep shows as well the prohibition of shooting down hijacked airplanes with innocents on board.

If the prohibition of treating a person solely as a means rests on a dubious and politically unacceptable ontological foundation, we need to address the consequences of the prohibition. Two immediate options come to mind: First, due to there being merely a gradual difference between human beings and other entities, there are no more mere "things," and hence it will have to be morally prohibited to treat any entity merely as a means. Second, it can be argued that the prohibition of treating a person solely as a means is not applied, even currently, as a universally valid regulation: for instance, if someone commits a criminal offence, he can be put into prison, or even killed in specific circumstances (let us say, if he is threatening to kill someone else). Hence, treating a person solely as a means can be both morally legitimate and morally illegitimate (Hoerster 2013, 11–23). If this judgment applies to persons, then it applies to all other entities, given that there is only a gradual distinction between all the entities in question.

2.4.1.3. Challenges related to these moves beyond Kant's basic assumptions

What follows if we distinguish morally legitimate and morally illegitimate ways of treating a person solely as a means? If we take this approach, the question has to be asked anew: What is moral and how can we conceptualize morality? Alternatively, there are different questions if we postulate only a gradual distinction between human beings and other entities. What are the implications, on this approach, of a prohibition on treating solely as a means? Does it imply that I must no longer eat salmon? Is it morally problematic to walk on grass?

A further issue arises, one that I have mentioned briefly. If the moral prohibition is altered in one of these two ways, does this not imply that one ontology has simply been replaced with another in the legal context? If so is it not problematic to allow *any* ontology to influence legal decisions, since social-liberal democracy implies openness to a great variety of rival ontologies that are legitimately available to its citizens? If this is so, it may be advisable to move beyond any ontological discourse when dealing with matters of legal discourse, as this is the only way for the state to remain ontologically neutral and avoid morally problematic intrusions into its citizens' personal decisions.

2.4.1.5 Intermediate conclusion

By this point, several challenges have become clearer that have particular relevance to the German legal context. It seems appropriate and necessary to move beyond the prohibition of treating other persons solely as a means, and also beyond the tradition of allowing ontological positions within the constitution of a social-liberal democracy. In each case, there is a looming contradiction of the initial premises of liberal democratic constitutions.

2.5 Equality

A related but distinct issue is that of equality. Habermas claims that genetic enhancement – but supposedly not educational enhancement – destroys symmetrical relationships among free and equal people (2001, 45). He supports this by reference to his distinction between the grown and the made, along with his reflections on autonomy. If the genes of someone, Person X, are altered irreversibly by someone else, Person Y, but X cannot bring about the same type of changes in Y, then this creates an asymmetrical relationship that will, supposedly, destroy the relationship of equality. As genetic changes do not have to be immutable, however, this is a false concern. Furthermore, even if such an intervention created an asymmetrical relationship between Person X and Person Y, this need not have any effect upon equality as a normative ideal.

In addition, ordinary kinds of education can bring about states that are irreversible. Hence, processes are currently being used that create asymmetrical relationships without any grave moral problems. Simply being a parent necessitates being in an asymmetrical relationship with one's children. It does not follow, however, that equality as a normative ideal will have to be abandoned just because some human beings are related in an asymmetrical manner.

We might wonder what type of equality Habermas has in mind. If equality can exist only between identical entities, and we assume the strongest version of the Leibnizian concept of identity, then we have to conclude that no equality can exist in the empirical world between two distinct objects. If Habermas has a type of normative equality in mind, then I see no compelling reason why it would have to be given up if some human beings were genetically enhanced.

2.6 Therapy and enhancement: a problematic distinction

In contrast to his negative remarks about genetic enhancement, Habermas does accept that gene therapy can be morally legitimate in at least some cases (Habermas 2001, 109), even though it has the consequences discussed above. This seems to be a self-contradictory, or at least highly problematic, position. Gene therapy is morally legitimate according to Habermas, as it does not undermine the autonomy of the subject. But this judgment does not apply to genetic enhancement, since it technically

alters human nature (Habermas 2001, 92). This position seems problematic, if he regards it as dangerous that the limits of our species get altered by means of genetic enhancement *per se*. We could wonder if this worry does not already apply in the case of gene therapy.

Habermas is skeptical concerning most all-purpose goods (intelligence, humor, patience...), which are goods that support all conceptions of a good life. Consequently, he is critical of genetic enhancement, as he does not think that we can have a catalog of goods that are actually beneficial for all human beings, but he thinks that such a catalog would be needed for the process to be a morally legitimate one. Despite all this, he upholds the values of health and a longer life (Habermas 2001, 91), and regards parental care for these qualities as corresponding with the autonomy of their child (Habermas 2001, 48). Many critical questions must be raised concerning this judgment:

1. First, I wonder why genetic enhancement aimed at promoting the life span is morally illegitimate. Habermas has clearly said that it is legitimate for the parents to make decisions for the child that promote the child's life span, and that such decisions do not interfere with the child's autonomy. He claims the same concerning decisions about the child's health, which suggests that he does not regard gene therapy as morally objectionable. If this is correct, then he should not object to genetic enhancement that aims for a longer life span of the child.

2. Second, it needs to be stressed that a gene diagnosis that is a prerequisite to genetic enhancement, and gene therapy, already includes an alteration of the genes (Koechy 2006, 75–77). Hence, gene therapy, of which he approves (in some cases, at least), presupposes a process, the alteration of genes, of which he disapproves. This looks like an unstable position.

3. Third, I need to stress that there is no clear-cut distinction between therapy and enhancement. The concept of therapy presupposes a concept of the disease. However, the definition of the concept "disease" is highly problematic: 1. If we wish to give an objective definition of "disease," then we need to have a natural understanding of what human beings are. As disease is a normative concept, this creates problems, because we would get statements like: A natural being is so and so tall, has capacities A, B, and C and has such-and-such a sexual orientation; 2. Subjective definitions of the concept "disease" include many problems. Someone is ill, if he feels bad. But this definitely does not have to be the case with cancer. One can have a malignant tumor without feeling it in the beginning; 3. The concept "disease" changes over time. This becomes particularly clear if we consider the history of the concept, particularly concerning psychological diseases. Experience shows that the concept can be manipulated to further the interests of the political leaders. Given all these reflections, I conclude that Habermas' position concerning disease is highly problematic. This insight gets further support due to the fact that Habermas' notion of therapy on the one hand seems to include processes which represent prime examples of enhancement procedures (prolonging the health-span or preventive measures, Habermas 2001, 91), but on the other hand seems to be limited solely to extreme maladies (Habermas 2001, 109).

As Habermas does not provide us with any clear definition of what a disease is, we can use a concept of "disease" which implies that procedures that many would refer to as genetic enhancement are actually merely a type of therapy. Insofar as Habermas regards gene therapy as morally defensible, he would have to approve the actions in question.

2.7 Educational enhancement is necessary but genetic enhancement is not

Finally, I wish to address a counterargument against my thesis concerning the parallel between genetic and educational enhancement. Though Habermas does not put this forward, it has been raised against my position at quite a few presentations that I have given on this topic. It does rely on a point mentioned by Habermas – that all newborns are in need of help (2004, 884). Accordingly, one could argue:

1. Newborns need human support to survive.
 2. All human support is a type of education.
 3. Genetic enhancement, on the other hand, is not necessary for survival.
- Therefore, genetic and educational enhancement are not parallel processes.

On this argument, genetic enhancement is distinguishable from morally supportable forms of educational intervention in not being necessary for the survival of the child.

One can reply in various ways. However, the most important reply is associated with the latest epigenetic research, which reveals the intimate interconnectedness between educational and genetic enhancement. Nietzsche put forward education as a means to bring about the posthuman. Given epigenetics, he thereby implicitly also affirmed genetic enhancement. Still, one could wonder: Can education bring about changes that have an influence on the potential offspring of the person who gets educated? As inheritance depends upon genes, and genes do not get altered by means of education, we used to believe that education cannot be relevant for the process of evolution. Hence, Lamarckism, the heritability of acquired characteristics, has not been very fashionable for the same period of time. However, in recent decades doubts have been raised, based upon recent research in epigenetics. Together with Japlonka and Lamb, I can stress that “the study of epigenetics and epigenetic inheritance systems (EISs) is young and hard evidence is sparse, but there are some very telling indications that it may be very important” (Japlonka and Lamb 2005, 248).

Besides the genetic code, the epigenetic code, too, is supposed to be relevant for creating phenotypes, and it can be altered by means of environmental influences. The epigenetic inheritance systems belong to three supragenetic inheritance systems that Japlonka and Lamb distinguish. These authors stress that “through the supragenetic inheritance systems, complex organisms can pass on some acquired characteristics. So Lamarckian evolution is certainly possible for them” (Japlonka and Lamb 2005, 107).⁵

Given recent work in this field it is likely that stress,⁶ education,⁷ drugs, medicine, or diet can bring about epigenetic alterations that, again, can be responsible for an alteration of cell structures (Japlonka and Lamb 2005, 121) and for the activation or silencing of genes (2005, 117).⁸ In some cases, the possibility cannot be excluded that such alterations might lead to an enhanced version of evolution. Japlonka and Lamb stress the following:

The point is that epigenetic variants exist, and are known to show typical Mendelian patterns of inheritance. They therefore need to be studied. If there is heredity in the epigenetic dimension, then there is evolution, too. (2005, 359)

They also point out that “the transfer of epigenetic information from one generation to the next has been found, and that in theory it can lead to evolutionary change” (Japlonka and Lamb 2005, 153). Their reason for holding this position is partly that “new epigenetic marks might be induced in both somatic and germ-line cells” (2005, 145).

A “mother’s diet” can also bring about such alterations, according to Japlonka and Lamb (2005, 144); hence the same potential as the interventions previously discussed (genetic enhancement and education) logically applies to the next method of bringing about a posthuman: i.e. non-genetic enhancement by means of drugs, medicine or diets. As has become clear already, such measures can lead to an enhanced version of evolution, given recent research in the field of epigenetics. Given these insights, it is clear that educational and genetic enhancements are processes that do not exist independently of one another. If one process is necessary, this also applies to the other.

3. Conclusion

Given the above analysis, I conclude that Habermas is wrong when he denies that educational and genetic enhancements are parallel events. In addition, I have mentioned some reasons why educational enhancement in most cases is better than undergoing a Kaspar Hauser type of development (I deal

with this issue in more depth in other articles, e.g. Sorgner 2013a). We can also conclude that genetic enhancement ought to be affirmed – analogously to our affirmation of educational enhancement – with no need to settle distinguishable questions, such as the moral status of the embryo or which conception of the good to employ when making decisions about education and enhancement.

In order to reach a clearer understanding of *which types* of genetic enhancement should (and should not) be undertaken, we would need to consider the moral status of the embryo and which conceptions of the good ought to apply on a political level. I have addressed both questions elsewhere (Sorgner 2013c; forthcoming). For current purposes, I stress that negative freedom is a precious achievement. During and since the Enlightenment, we freed ourselves from the paternalistic oppression of religious and aristocratic leaders. Thereby, we established the right to live according to our respective conceptions of the good, as long as this does not interfere with the rights of someone else. Consequently, I suggest that *In dubio pro libertate* is an adequate principle for a democracy. If there is a conflict between several groups beyond a certain significant size, then the opinion ought to be legalized in favor of more freedom. Hence, the state should refrain from making demands based upon metaphysical and religious prejudices.

If we apply this norm to questions concerning the status of the embryo, it follows that this is unclear metaphysically. On this occasion, I cannot provide an in-depth discussion of the moral status of the embryo, but I will make a few brief comments. There is a group that identifies embryos with adult human beings. However, there are other large groups that regard an embryo as a collection of cells that ought to be given special consideration because of their implicit potential, but not the same rights as a human being. A liberal state would have to allow both groups to live in accordance with their principles, as long as they do not interfere with the rights of others. Here we can identify another parallel between genetic and educational enhancement: In both cases, parents make decisions about the lives of other human beings that do not yet have all human rights.

If it is accepted that genetic enhancement by modification and education are structurally analogous processes, this insight needs to be considered when thinking about the future of parental education under the altered cultural conditions of recent decades. Emerging technologies, human-machine interfaces, and new scientific insights are changing our way of grasping the world. Transformative sciences and technologies seem to dominate the way the world works, and to carry out whatever projects are feasible. The humanities seem to be out of place amidst rapid scientific and technological developments, and consequently their relevance seems to diminish.

We are living in an age of bioengineering and emerging technologies. However, the most fundamental and urgent questions concerning ethical, ontological, legal, political, social, and cultural issues cannot be addressed appropriately solely by means of the natural sciences and engineering, as this task lies outside the scope of their expertise. To approach all the latest questions in a thoughtful and comprehensive way, we need informed intellectual reflections, insights concerning our place in cultural history, and an awareness of the great plurality of philosophical, ethical, and religious positions that have been dominant in human history. At the same time, it is an open question whether specialists, experts, and scholars from the humanities in its traditional form possess all the necessary skills. I doubt that they do, and I also doubt that they start from appropriate premises, because they assume that solely human beings are categorically ontologically separate from all other natural beings.

The concept of “humanities” in its traditional sense is connected to the term *humanitas* and to the *artes liberales*. Both concepts are closely related to ancient times about 100 BCE: to Varro, Cicero, and others. Since then, these concepts have been connected to the affirmation of categorical dualities. Thanks to Kant’s account of issues relevant for the humanities, categorical dualities are still associated with the central concepts in question: for example, mind/matter, culture/nature, genes/environment. Yet, it is this aspect of the humanities that has been challenged by the latest scientific insights and discoveries, and by technological developments. Epigenetics, posthumanism, transhumanism, embodied theories of mind, and further scientific research all cast doubt on the affirmation of categorical dualities, and have inspired attempts to move beyond this way of conceptualizing the world. This has severe consequences for many different fields of inquiry, even for ethical, legal, and

political issues: for example, questions relating to autonomy and the supposed moral prohibition of treating a person solely as a means. To consider all of these implications with due seriousness, we will have to move away from the traditional humanities toward an approach that we can helplessly refer to as “metahumanities.” This move has particularly relevant implications for the question of education in an age of transformative sciences and emerging technologies. I suggest that the following three insights need to be considered as implications of founding education upon the emerging metahumanities, whereby the initial two suggestions are relevant for parental education and the final suggestion is one that needs to be considered in schools and universities.

First, genetic enhancement by modification and education are structurally analogous processes. In this paper, I have argued in detail that this is the case. Second, gene analysis will become a prerequisite for a well-informed education. A future publication of mine will explain and clarify many aspects relevant concerning this insight. Bioprivacy, and big gene data will be the keywords in this context, and I expect these keywords to lead to intense future discussions, as well as enormous revisions in the field, of the future of occupations and insurance companies as well as education. Third, the categorical distinction between genetic and environmental influences will dissolve, and the relationships between these influences will form an additional school subject within the metahumanities. It will involve consideration of all the following: bioarts; evolutionary epistemology, aesthetics, ethics, economics, and so on; embodied theories of the mind; epigenetics; new types of spirituality and mysticism; non-dualist accounts of rights and dignity; revised concepts of the family; naturalistic conceptions of the good life; the relevance of cultural history with respect to norms, values, etc.; and difficult questions relating to non-anthropocentric ontologies and the avoidance of speciesism.

In this article, I have provided a number of detailed reasons for suggestion number 1. The parallel between genetic enhancement by modification and education is one insight that must be considered when discussing the future of education. In other words: We can expect that genetic enhancement by modification will be a central issue for the future of parental education.

Notes

1. If genetic alterations were irreversible, were made in the interest of children, and were actually in the best interest of the child in most cases, then it could be seen as good that they are irreversible. However, this is not a line of thought that I will consider here.
2. Sections 2.1, 2.2. and 2.7 contain further developed passages from an earlier article of mine (Sorgner 2010a, 4–6).
3. Helpful complementary arguments concerning this issue can be found in chapter 4 of Blackford’s monograph *Humanity Enhanced* (Blackford 2014, chap. 4).
4. The following argument rests on a revised and expanded version of Sorgner (2013b).
5. “Heritable variation – genetic, epigenetic, behavioural, and symbolic – is the consequence both of accidents and of instructive processes during the development” (Japlonka and Lamb 2005, 356). A striking case is that of the evolution of language: “Dor and Japlonka see the evolution of language as the outcome of the continuous interactions between the cultural and the genetic inheritance system” (Japlonka and Lamb 2005, 307).
6. “Waddington’s experiments showed that when variation is revealed by an environmental stress, selection for an induced phenotype leads first to that phenotype being induced more frequently, and then to its production in the absence of the inducing agent” (Japlonka and Lamb 2005, 273).
7. Jonathan M. Levenson and J. David Sweatt show that epigenetic mechanisms probably have an important role in synaptic plasticity and memory formation (2005, 108–118).

8. “Belyaev’s work with silver foxes suggested that there is a hidden genetic variation in natural populations. This variation was revealed during selection for tameness, possibly because stress-induced hormonal changes awakened dormant genes” (Japlonka and Lamb 2005, 272).

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