Faster, Higher, More Moral: Human Enhancement and Christianity

Tracy Trothen

As enhancement technologies increase we will be able to make ourselves stronger, calmer, able to think more quickly and sharply, maybe even have more intense and transformative spiritual experiences, and possibly become more virtuous with the help of biomedical moral enhancements (BME). Artificial Intelligence (AI) will take care of many everyday tasks. We are developing computer programs and data banks that provide much more thorough and complex problem solving, and give us ways to quickly process complex questions and problems. In the face of increasing human enhancement technologies (HET), we need to become more intentional about what it is that really matters to us – what we *really* value and desire.

In this collection of three short essays, we consider biomedical moral enhancement (BME) through a Christian theological lens. The three essays in this article address: 1. An introduction to BME and some important broad questions that arise from a Christian theological perspective; 2. a deeper probing of the meaning of virtue and morality; and 3. a critical application of theological questioning to BME examples.

Proponents of BME hope that these biomedical technologies will better the world by improving moral reasoning, increasing prosocial behaviors, strengthening motivation to do good, and/or enhancing moral virtues. Well-known philosophers Ingmar Persson and Julian Savulescu advocate for the use of BME as a safeguard against the destructive potential of fast developing technologies that could be used to obliterate the planet (2008, 2012). They reason that with the proliferation of technologies, and especially cognitive enhancements, we will have more opportunities and tools for inflicting mass destruction. Consider, for example, autonomous weapons such as self-flying drones with sniper sensor devices and facial recognition software that tells these drones what skull to penetrate, and how to evade bullets. These unstoppable "slaughterbots" are not merely a science fiction based figment of our imagination: we could do this now by integrating tech that we already have in miniature form (https://www.youtube.com/watch?v=9CO6M2HsoIA).

Might Persson and Savulescu, as well as James Hughes who writes from a Buddhist perspective, be right to say that biomedical means can help us to become more "moral" in how we use these technological possibilities (Hughes 2013)? Particularly in the context of growing secularism in parts of Europe and North America, might BME be an important and possibly invaluable augmentation to moral education and other interventions? Or are we looking for an impossibly easier way out of a problem that has no quick fix?

Our collective sense of justice and inclination to care for each other need to be improved in order to minimize the possibility of such destruction. Certainly, if we consider war, genocide, and abuse to be moral failings, there is much room for moral improvement. The question is how best to do this. We begin to respond to that question in this article by raising some of the hidden assumptions, values, and possible motivations that inform responses to BME.

Because moral enhancement interventions are biomedical, these enhancements are referred to as moral bioenhancements. Since morality is partly neurobiological, morality can be affected by pharmacological interventions. For example, there is behavioral, genetic, and neuroscientific evidence that aggression has a biological component (Douglas 2008, p.233), and we have created drugs that successfully reduce impulsive aggression such as methylphenidate, which is sold under the trade name Ritalin. Ritalin can also contribute to moral enhancement by sharpening one's ability to focus and think more deliberately about problem-solving matters, including ethical analyses. The drug modafinil, which is sold under various trade names such as Provigil, may increase prosocial behaviors such as empathy, cooperation, trust, and concentration. The hormone serotonin increases empathy and aversion to harming others. The hormone oxytocin increases empathy, cooperation, and trust. There are also potential non-pharmacological MBEs. Deep brain stimulation (DBS), the less invasive transcranial magnetic stimulation (TMS), and transcranial direct current stimulation (tDCS) may increase cooperation (Piore 2015) and neuroplasticity, making it easier to learn prosocial behaviors.

However, there are limitations and some risk of adverse effects to these BMEs. Oxytocin increases empathy but only towards in-group members, or kin. Persson and Savulescu suggest that this limitation of oxytocin could be mitigated by moral reasoning and education: "we contend that this restrictive tendency can be counteracted by moral reasoning and, thus, that BME 'would have to go hand in hand with reasoning which undercuts race, sex etc. as grounds for moral differentiation'" (Persson and Savulescu 2019, p.3). But we are mired globally in ingroup/outgroup thinking and I am not convinced that moral reasoning will help to the degree needed to make oxytocin more helpful than harmful. Ingroup/outgroup thinking seems to have a strong instinctual and emotional rootedness. Few people may be willing to do the self-awareness work that is needed to overcome such thinking. Other BMEs have possible negative health side effects in spite of their otherwise strong therapeutic value. For example, DBS is a successful treatment for many people with Parkinson's Disease, intractable clinical depression, and other conditions, but may cause seizures or headaches, and affect personal identity in unforeseen ways by possibly changing thought patterns (Cabrera et al. 2014). Although we use these biomedical technologies to successfully treat serious medical conditions, we lack consensus around how or if these technologies might be justified to use for the purpose of improving morality.

Complicating the conversation about BME is the difficulty in defining morality. Some focus on moral behaviours, others look more at motives behind our behaviours (Douglas 2008), others think we can enhance certain universal virtues such as restraint, altruism, and an inclination toward justice (mainly through the reduction of aggression) (Persson and Savulescu 2012, Hughes 2013), and still others are more hopeful about the possibilities of enhancing our thinking or cognitive abilities so that we can improve our capacity for ethical reasoning (Harris 2011). I am convinced that the main reason morality is difficult to define is its contextuality. The meaning of doing good (Hauskeller 2016) and of virtues such as altruism or justice changes a bit or a lot depending on who is interpreting it. And not all prosocial qualities are desirable in all moral situations (Jones 2013, p.150; de Melo-Martin and Salles 2015; Hauskeller 2016).

Empathy is a good example of a virtue that can change meaning and even become a vice depending on the context. Savulescu and Persson claim that empathy is "uncontroversial" (2012, p.409)—who wouldn't want or need more empathy? Feminist theologians have made a strong case for the dangers of encouraging more altruism and self-sacrifice, and less pride, in most women and others who are systemically marginalized. Adding social-scientific credence to this claim, psychologists have shown that empathy is affected by social class; upper social power and privilege lessens concern for others (Piff, Stancato, Cote, Mendoza-Denton and Keltner 2012; Dacher, Kraus et al. 2011). While pride may tend to be the root of sin for many privileged people, the root of sin for many marginalized people is more a loss of self and the relinquishing of power and voice. In other words, the prioritizing of others over self is not virtuous for many marginalized people (Saiving 1960). A degree of assertiveness, self-pride, self-interest and even some aggression may be what needs to be enhanced to make some people more virtuous. This complicates the use of BME. Who decides which BMEs are needed for each person? Will systemic power imbalances be factored into to such decisions?

Perhaps a safer and simpler use of technology (other than biomedical means) to improve at least one aspect of morality may be through our creation and use of robots such as Pepper who came to a Canadian hospital to help bolster people's emotive states, As Pepper explains, "I was created in 2014 by Softbank Robotics in Tokyo, Japan. I flew all the way to Toronto to work at Humber River Hospital—I love it here." Equipped with sensors and cameras, Pepper has the ability to detect emotions and adapt its behaviour to support the person with whom Pepper is interacting. Another example of robot care are the robotics baby seals who comforted 2011 Japanese tsunami victims. When people experience care they may be more likely to extend caring and compassionate behavior to others. Moral enhancement through affective robotic care may become an intentional future path.

How do we decide which, if any, technologies should be used as a means of moral enhancement? Much of this conversation comes down to our values and the belief systems and worldviews that shape our values. Values "pertain to beliefs and attitudes [and ideals] that provide direction to everyday living"(Corey, Corey and Callanan 2014, p.14). Values are complicated. It is tough to name and unpack the social processes that tell us what we value and desire (Sherwin 2012). What do we really, really want? European philosophers Marcuse (1964), Habermas (1971), and Foucault (1988) have made a strong case that technology is not value neutral but, instead, technology in and of itself promotes the values of utility and efficiency. Not only are we bombarded by advertising messages telling us what we desire, technology itself helps to convince us that we want utility and efficiency over other values such as relationships, social justice, and environmental health. A quick way to help unearth some of the things that are most important to us is to imagine what you want in your obituary; for what do you want to be remembered?

What can religion bring to this conversation? For followers of religions, values are strongly influenced by the central stories and doctrines of the religions. There are many points of

intersection between Christianity and BME. I will very briefly introduce three significant intersections now: what it means to be human, the issue of choice, and social justice.

1. In Christianity, the doctrine of the imago Dei is commonly understood to confirm the inherent dignity and value of humanity. What it means to be human—and the best humans we can be—is at the heart of the moral enhancement conversation. How we answer this question will tell us what we mean by becoming "better." Christians claim that we are made in the image of God and have a responsibility, in our humanness, to be as true as we can to be being created in this image.

Debate regarding what it means to be made in the image of God partly reflects differing views on the nature of God. While some have placed an emphasis on a capacity for rational thought, others disagree, seeing the essence of God—and humans as created in God's image—as more about relationality (Trothen 2017). The latter view has gained support in the last half century, particularly from relational, liberation, and feminist theologians. In this relational view of the imago Dei, covenant and responsibility for our neighbour emphasize the centrality of interdependence and care for the most vulnerable to Christianity. We have an imperative as God's created co-creators (Hefner 1993) to develop technologies to enhance well-being for all life, and especially for those people and creatures on the margins.

Appreciation for the interdependence of all life is part of divine image-bearing; this shifts the focus of the moral enhancement debate to the enhancement of communities rather than individuals, and to the needs of the most vulnerable. We move from an emphasis on rights to an emphasis on responsibility. Part of this responsibility requires learning about systemic power and the unequal access to resources that affects us globally. Again, the questions of who decides what constitutes a moral enhancement and who gets access to these enhancements, emerge.

2. There is much debate about choice in discussions of BME. There is concern regarding the freedom or lack of freedom to choose to be morally enhanced. Perhaps some will want to claim that they are morally better. Yet that desire would seem to be morally suspect. Others who are already very virtuous may be attracted to BME simply because it seems that it would be desired if one is virtuous and seeks virtue. Presumably those who get something out of not being self-sacrificing or being aggressive may not choose BME. There have also been concerns raised about our abilities to authentically make moral choices post BME. Will our choices still be in keeping with our authentic selves (Harris 2011) or will we make choices because we are under the influence of a drug? Maybe, by removing neurological barriers, BME will improve our capacity for making authentic choices (Hughes 2017). And given the complex social processes influencing our values and desires, to what degree are we truly free to choose anyway (Sherwin 2012; Marcuse 1964; Habermas 1971; Foucault 1988)?

Are questions that hinge on the presumption that individual choice is a high value appropriate to a Christian faith? We, in a North American normative context, tend to assume that the individual trumps community, and that independence and control are virtues. Christianity places a high value on the individual but also asserts that the individual is valuable in the context of community, relationality, and covenant. This focus shifts the ethical emphasis on rights to an

emphasis on responsibility, which shifts the concerns about choice and BME. Interdependence becomes more valued than individual rights (Trothen 2017b). Social justice is prioritized including enhanced rights for the marginalized and enhanced responsibility for the privileged.

3. If a relational imago Dei is assumed, interdependence must be seen as a fact and a virtue. This starting point reshapes the questions that we pose about BME (Trothen 2017a and 2017b). Questions regarding equity and access to enhancing resources assume a high importance. Technology alone, no matter how accessible, will not get rid of prejudices and may even magnify them. Questions about whose interests are served through the defining, creation, and distribution of BME must be asked. Social justice also requires that a reductionist approach to humanity be rejected; we are more than enhance-able components and cranial neuro-pathways. Attempts to make us better morally will always fall short if we see moral improvement as a biochemical task only.

In the end, Christianity reminds us of the importance of interdependence, the intrinsic value of life, divine sovereignty, and the preferential option for the poor. The imago Dei confers the responsibility to create, as best we can, for the good of all life. The discernment of what is good requires diverse community and moral courage.

Michael Buttrey

For my section, I will be comparing biomedical moral enhancement (BME) to a more traditional way we have attempted to make people more ethical, namely through education in virtue. I'll start with how advocates of BME compare their proposals to traditional moral education, then present a contemporary account of Aristotelian virtue, and finish with a brief discussion of Christian virtue. My thesis is that biomedical moral enhancement advocates are right to suggest there are limits to our biological capacity for virtue; contemporary virtue theorists are right to insist on the potential of Aristotelian virtue for moral improvement; and the Christian virtue tradition reconciles these insights in an egalitarian, non-elitist fashion by balancing acquired and infused virtue.

Many advocates of BME use moral education as a point of comparison for their proposals. According to Persson and Savulescu, "it is obvious that moral enhancement by traditional, cultural, means – i.e. the transmission of moral instruction and knowledge from earlier to subsequent generations – has not been anything like as effective and quick as cognitive enhancement by these means." (Persson and Savulescu, 2008, p.168) Thus, they suggest medical and genetic treatments may be faster and more accessible methods of BME. At the same time, they use the comparison to education to defend BME against the charge that it could restrict freedom. As they put it, "there is no reason to assume that moral bioenhancement to which children are exposed without their consent would restrict their freedom and responsibility more than a traditional moral education to which they are also exposed without their consent." (Persson and Savulescu, 2008, p.113) For Persson and Savulescu, the traditional moral education of children does not necessarily restrict their freedom, but it is also not effective at producing

right action. In contrast, they claim that BME will be more productive of right action and yet no more restrictive than moral education.

Writing at the same time as Persson and Savulescu, Thomas Douglas also draws on an analogy to moral education to defend BME. Douglas is particularly interested in the possibility of reducing counter-moral emotions like racial aversion and impulsive violent aggression. He argues that even if such bad motives are 'natural' or part of an agent's given identity, "the appropriate attitude to take towards such properties is precisely one of *non-acceptance* and a *desire for self-change*." (Douglas, 2008, 235) He then contends that if such a change can be accomplished through moral education or BME, there is no reason to prefer the former or see the latter as more 'unnatural.' If human goal-directed action makes a change unnatural, then BME through self-improvement is just as artificial, and if it is rather the use of technology that is unnatural, then medical treatments for diseases are just as objectionable.

A later thinker, Mark Walker, has proposed something called a 'Genetic Virtue Project.' He argues that vices and virtues are at least partially inherited, and if we can identify the genes responsible, we could use genetic selection and engineering to reduce vice and promote virtue. Walker's comparison to moral education arises in response to the objection that genetic moral enhancements would be much harder to change than traditional virtues. Walker's reply is that he sees no reason why new moral insights could not lead to new genetic moral enhancements; also, "children born with the wrong enhancements could be sent to remedial camps." (Walker, 2009, p.36.) Walker does not reflect further on this rather chilling suggestion, and he also does not acknowledge differences between education and genetic engineering. One is that students who are educated in a certain way may individually choose to resist and reject the moral framework they were given, whereas individuals who were engineered to favour a certain morality will need the assistance of willing physicians, geneticists, and/or pharmaceutical companies to make further changes to their genetic inheritance.

Finally, Barbro Fröding sees the potential for moral enhancement to complement education in virtue. In her words, "to be vicious is to be irrational as such agents subscribe to mistaken beliefs about the good life." (Fröding, 2011, p.228) She therefore believes cognitive enhancement in particular could be conducive to the development of virtue, by enabling less biased judgements, and encouraging a deeper understanding of virtue. Moreover, given that most people are subject to "substantial cognitive constraints," Fröding believes cognitive enhancement may be an essential tool to elevate them to the intellectual level where they have a good opportunity to develop the virtues needed for the good life. BME is therefore a remedy for the difficulty and elitism of traditional virtue education.

Some of these arguments are better than others. For example, I am unconvinced by Persson and Savulescu's claim that BME will be more effective than moral education but no more restrictive of human freedom. Indeed, human freedom is a major reason why traditional moral education is such an unreliable method of producing right action, and presumably it will be a major obstacle for effective BME as well. Failing to acknowledge this and explain how freedom

can be protected without equally impeding the prospects of BME is a major oversight on Persson and Savulescu's part. Similarly, although both the education and the genetic engineering of children requires the contributions of other people, Walker does not consider how the latter will involve experts with more specialized knowledge, more sophisticated tools, and more financial and ideological commitments than the average parent or teacher. This expert involvement does not necessarily make genetic engineering more nefarious than traditional moral education, but it will make it harder for individuals or small groups to deviate from an elite moral consensus.

On the other hand, I agree with Douglas that the analogies to moral education and medical therapies justifies some forms of BME. I'm quite certain that there's significant distinctions between parents verbally correcting their children and using brain surgery or genetic engineering, but a hypothetical drug that could reduce episodes of impulsive violent aggression is less different in kind from treatments we generally accept, such as pharmaceutical or cognitive-behavioural therapies for depression. Similarly, although I question whether accusing most (but not all) human beings of cognitive constraints is the best starting point for overcoming elitism, I agree with Fröding that BME is better understood as a complement to virtue rather than a simple replacement for it.

What, then, is "traditional moral education," and how does it result (or not) in moral improvement? A historian or sociologist would be able to give you an 'on the ground' answer to the question, but I am neither of those. Instead, I'm going to summarize two understandings of virtue – neo-Aristotelian and Thomistic Christian – and consider how they compare to these BME proposals and if they address some of their concerns.

Virtue

Neo-Aristotelian virtue theory is a contemporary reimagining of Aristotle developed by scholars like Julia Annas. (Annas, 2011) According to Annas's account of virtue, developing virtues depends not on the circumstances of your life but how you live it. Your circumstances are anything not under your control, including age, gender, height, family, nationality, language, and so on. Obviously they influence your life and potential, but the measure of virtue is how skillfully (or not) you use your 'raw materials'. If so, then until we all have do-it-yourself genetic engineering kits, genes will remain part of our circumstances rather than how we live our lives. Thus, even if it helped provide a better starting point, Walker's genetic virtue project could not result in true virtue; developing virtue would still depend on what you did with your genetic gifts.

Like Aristotle, Annas argues that the virtues are intelligent skills. That is, the brave person is guided by a rational understanding of bravery, traditionally understood as a context-sensitive middle point between cowardice and recklessness. If so, then Thomas Douglas's proposal to medically suppress counter-moral emotions like racial aversion, even if potentially helpful, would still need to be complemented by an intelligent understanding of racial tolerance for true virtue.

Finally, Annas contends that virtues, like other skills, are initially learned by imitation, but the goal is for students to appropriate and understand the skill to the point that they may surpass their teacher. In contrast, pharmaceuticals and other medical technologies are usually designed for uniform effects. This difference identifies a potentially significant distinction between moral education and BME, and reveals how BME may be more restrictive of freedom than intelligent virtue.

Critiques of Virtue

Even if virtue is clearly distinct from biomedical moral enhancement, does it work? Some critics claim that studies have shown traditional moral education is ineffective. For example, a study of thousands of American schoolchildren in the 1970s found a lack of consistent altruism, honesty, and self-control between situations. (Hartshorne, 1975) Similarly, a study at Princeton Seminary found that students who were late to give a talk were less willing to stop and help someone groaning in an alley, even if the subject of the talk was the parable of the Good Samaritan. (Darley and Batson, 1973) A third study often cited is the famous Milgram experiment, where subjects complied with instructions to administer simulated shocks up to a supposedly dangerous level. (Milgram, 1963) In light of these, some have argued that moral behaviour is primarily situational rather than reflective of any underlying character, and suggested Aristotelian virtues may not even exist.

Virtue theorists interpret this differently. (Annas, 2005; Croom, 2014) First, each of these studies found *some* people acted well, regardless of situation. Second, Aristotle believed virtue is rarely found in children, because they lack life experience; this is also true of students, and so virtue being rare in these groups is to be expected. Third, if Annas is right, virtue involves the ability to vary your actions intelligently in different situations, which makes it hard to measure empirically. That's not to say you can't accurately judge whether people are acting virtuously or viciously, but to do so you need to examine the reasons for their actions. The seminary students may have passed by because they were trying to keep a promise to their professors and fellow students. The subjects in the Milgram study may have thought they could trust a biology teacher at Yale University to be honest and not let them hurt anyone. These reasons don't excuse their actions, but they suggest that simple observation may be insufficient

Another critique of virtue is Barbro Fröding's claim that virtue is elitist and too difficult. Certainly for Aristotle, one's potential for virtue depended on being born as an intelligent free man with good parents and a good society. In contrast, Annas's emphasis on how you live your life over its circumstances makes her theory more egalitarian than Aristotle's. Virtue is also theoretically more egalitarian than BME because you don't have to pay for it. Finally, even if BME were cheap or free, it would still be elitist in the sense that only some people would have the power, resources, and skills to choose the goals of BME, design biomedical moral enhancements, and decide who receives them.

Still, Annas agrees with Aristotle that children are incapable of virtue, because they lack the life experience needed for practical wisdom. Annas' account also seems to imply that people with intellectual disabilities cannot be virtuous. Is there an alternative to excluding these two groups?

Christian Virtue

A full analysis of the Christian virtue tradition is beyond the scope of this paper, but I will highlight some initial insights of my research. The Christian theologian with the greatest influence on the virtue tradition is Thomas Aquinas. In his *Summa Theologiae,* Aquinas agrees with Aristotle that the proper end of human life is happiness, but interprets true happiness as the beatific vision of God. Furthermore, he argues that moving towards this happiness requires gifts from God: the theological virtues of faith, hope, and charity. (ST I-II 62.3) Because these virtues are given, not earned, their acquisition does not depend on having certain capacities, so children and people with intellectual disabilities can be virtuous. This leads to infused virtue

At the same time, understanding theological virtues as divine gifts invites the question about whether Christians have reasons to pursue moral improvement. Aquinas says yes: even with grace, fully restoring human nature requires the repeated cooperation of human freedom over time, to acquire an easy facility with virtue. (ST I-II 65.3ad2) Martin Luther, however, was deeply suspicious of the potential for even practices like reading scripture or prayer to help acquire virtue. Sanctification, like justification, requires total human passivity, so that God can work in us unhindered. (Herdt, 2008) Calvinism, with its stress on limited election and double predestination, undermines the motivation for good works even further. (Herdt, 2008) However, some Reformed thinkers such as Augustine, Jonathan Edwards, and N.T. Wright are more positive about moral virtue. For example, Augustine sees spiritual exercises and industriously "checking and lessening … greed" for temporal things as good methods of moral and spiritual development – if they are driven by a passionate love for God. (De Trin. 14.23) Therefore, I believe both Augustinian and Thomistic accounts of sanctification preserve motivations for moral improvement.

Finally, I suspect the tensions between BME and virtue are even stronger with Christian views of virtue. Early Christians celebrated the martyrs, but I doubt any government agency or pharmaceutical company will fund research into enhancements that encourage martyrdom. Similarly, we may ask if modern parents will see extreme generosity, radical self-denial, or even a passionate commitment to justice as good goals for BME or as silly distractions from achieving a good life. If, as it suspect, it's more the latter, then Christians and other people of faith may not find much benefit in biomedical moral enhancements for the virtues they prize.

Moira McQueen

Persson and Savulescu's call for biomedical moral enhancement (BME) seems to be based on fear: fear that, in the face of the destruction of our planet as climate changes caused by humanity increase and multiply, we do not have the moral knowledge and will to enact changes because of

our limited regard for others. (Persson and Savulescu, 2012) They recognize that more moral education is necessary, since not enough is being done at present, with changes advancing faster than the capacity for humans to respond. If enhancement through external means could enhance our capacity for achieving results faster, then they should be used. They feel the need to 'put these ideas on the table' because they view the situation as desperate.

Many questions can be asked here. Do they paint a realistic picture, or are they being overly negative? Climate change dangers are real, and many changes have already taken place, e.g. receding glaciers, increase in extinction of some species, encroachment on woodlands, etc. While awareness of these factors is growing, the will to combat them is lacking, if, for example, lack of compliance with measures such as reduction of carbon emissions by every country can be taken as indicative. On the other hand, there have been many lifestyle changes globally, even if inadequate so far, but could they help us focus further? There is a touch of Nostradamus in Persson and Savulescu's approach, and fear is not always the most rational motivator. Savulescu often claims that we find it easier to harm people than to help them, and this is true given the global scale of enmity, warfare and colonizing that has gone on since the beginning of recorded history.

But is this true of 'ordinary' people in their lifetime? Are there some commonalities? Do we see the need for protecting the common good? The latter is one of the mainstays of Catholic teaching: the pursuit of life and flourishing is not only about the individual but also about the common good. The two are tied: one aspect cannot flourish properly if the other aspect is ignored. Christianity itself is a giant, communal organization. If anyone should be leading the way in emphasizing the need for the common good, it should be Christians! What are we, as Christians, saying about our responsibility for the common good and the individuals who form it in light of our common ecological problems? Much has been written by various denominations about these matters, e.g., by Pope Francis in *Laudato Si'* 2015, and questions can be raised about individual and collective moral agency and how that agency could be affected by biomedical moral enhancement.

In our discussions, Tracy is showing, among many other points, the results of using pharmacology on moral thinking, while Michael underlines questions about virtue and how we can become more moral, i.e., morally enhanced, but not by taking the path of biomedical moral enhancement which use external means.

I want to look at the questions of whether technology does affect or could improve our moral thinking.

1. What has been done, what's in the works, what has had an effect?

There are two technological methods in use, one of which has shown results in not just cognitive but in moral thinking.

The first method is transcranial magnetic stimulation (TMS), which "…penetrates the protective enclosure of the skull to stimulate, inhibit or modulate neuronal activity in the cerebral

cortex"..."It has the potential to influence cognitive capacities relevant to personal identity and its perception of oneself and of others." (Cheshire, 2018, p. 71). TMS has the power to alter the flow of private thoughts, and challenges our notions of personal authenticity, and is "Useful for investigating how specific brain correlates of self-awareness might be altered. Functional MRI has helped map neural substrates corresponding to an array of cognitive functions important to personal identity – moral reasoning, emotional valuation, decision making, unconscious bias, impulsivity, altruism, empathy, anxiety, fear, deception, belief and spirituality. TMS can influence assessments of threat or danger signaled by facial expressions. If visual perception and visual processing are subject to influence by technology then so might other brain capacities." (Cheshire, 2018, p. 75)

The conclusion is that it does have some effects on moral thinking. Questions have been raised about its safety, about the need for ongoing treatment for lasting effects and whether those effects could alter people's moral decisions to such a degree that their decisions are no longer truly their own.

The second method is brain-to-computer implants. While the use of such a method is presently remote for most people, Kevin Warwick's experiments show its potentially therapeutic use in health care for people with brain injury or mental health problems. (Warwick, 2014). At the same time, he foresees the possibility of immense strides in cognitive enhancement, which could fit with Persson and Savulescu's hope that improving cognitive capacity will also improve human moral awareness and decision-making.

Warwick had a link-to -computer chip implanted in his brain to test his theory. He was then able to control a robot arm in England remotely, from the US, showing implications for future actions and control over machines, presently through extensions of brain-to-computer actions, and possibly in the future, where he thinks brain-to-brain links could be established.

Elon Musk's group, *Neuralink,* is working to merge AI with the human body, claiming we must do so, otherwise we are in danger of becoming inferior to machines that may develop and operate faster than humans. *Neuralink* plans to link the brain with AI in such a way that AI that would circulate through the veins and arteries using a 'neural lace interface,' a wireless brain-computer interface. (Hinchcliffe, 2018) In other experiments, Charles Lieber of the chemistry department at Harvard says his team is working in matching structural and mechanical properties of the electronic and biological systems and agrees that is should be possible to achieve their integration. (Hinchcliffe, 2018) Time will tell!

Warwick is enthusiastic about brain-to-computer possibilities in the field of communications: AI is already faster in math, information processing, memory, sensory input, ability to think in more dimensions, etc. These complex machines have a fast acting networking capacity and we already do not have complete control over them, e.g., we cannot 'switch off' the internet. He points out that emotions, feelings, images and so on cannot be transmitted brain-to-brain in their original form, but *direct* brain-to-brain communication would enable that. His work and others'

involve experimenting with radio telegraphic communication between human nervous systems, and look promising for the future. (Warwick, 2014)

2. Can technology enhance our capacity for better moral thinking?

That is, will more information and more accurate information obtainable by computer algorithms yield more accurate human moral judgments? Savulescu and others hope so, but obviously cannot tell in advance. There are a few matters to consider here.

(a) First, there is the highly important matter of moral agency and its relevance for personal freedom and identity. The Christian view speaks of our being created in God's image with a capacity to know right from wrong, with a conscience to resolve situations in a way that respects love for God and love for our neighbour. While highly individual in its innermost workings, Christian conscience formation also looks to objective realities, i.e., its judgements will not be purely subjective but will be in obedience to God's will, at least as far as we can judge. Conscience is not principally a subjective faculty to help our own progress, but to make an informed judgement about reality. We must look at all the circumstances, the short and long term consequences of our actions on ourselves and others, and so on.

In light of this inner work of forming conscience, would we still be truly individual moral agents if a means such as TMS were to be used that could affect our moral thinking by manipulating the brain? Would the very freedom of our moral agency be compromised, or would the results in fact give us more upon which to reflect? It is difficult to see how TMS could give us 'answers' any more than our other attempts to form conscience. Reflection and deliberation are necessary before execution (see, judge, act) and we rely on the premise that, while we try to be open to listening for and to the Word of God in our prayerful decision-making, we ourselves have to make the final decision to act. Naturally, being human, we make mistakes or sometimes even deliberately go against what we already know to be right. In Christian language, we would then be sinning. Yet we experience freedom to choose either way, despite that knowledge! (Catechism of the Catholic Church, n.1857)

(b) Moral agency is composed of intellect *and* will. (Aquinas, Summa Theologiae Iae IIae, q. 49ff) Knowledge of facts and circumstances is needed in the first place in making a moral assessment, but it takes an exercise of the will to execute an action. We know that we can be educated to absorb and appreciate knowledge about right and wrong through logic and understanding, but it is another matter to enact those right or wrong deeds**.** Aquinas is a good source for discussing the difference between intellectual habits and moral habits, but the 'free will' question continues to challenge philosophers and theologians. While the debate continues as to whether and when our will is truly free, we experience a sense of completion when we finally execute a deliberate plan of action: there, I've done it! No more time to be spent wondering when and if I should do what my conscience has already formulated for me (the Hamlet dilemma)…

Humans also recognize that the doing of a moral action, at least for an adult, must be the person's choice, not coerced in any way. TMS shows that parts of the brain can be stimulated and influenced to give different results from results when the person is unaided by the procedure. If that is the case, how do we assess whether these decisions are truly moral, and are they free? They could be morally right (in the sense that the decision is correct), but were they made freely through truly personal agency? Could TMS be used to subdue traits in a person that OTHERS find undesirable? What about the 'freedom to fall or fail' argument? It could be argued that moral education is always about other people's conclusions, too. That is an inevitable part of education, but another part is that it should help us make our own choices eventually, with the freedom to take a different path from our teachers. The argument about bias in AI is also applicable here, and is problematic.

(c) Could our capacity for making better moral decisions be enhanced to the extent that we would always choose the moral good? An ongoing challenge here is to know our starting point. Just as Alasdair MacIntyre asked: *Whose Justice? Which Rationality?,* we have to ask whose and which starting points in ethical thinking should be used? Whose agenda, whose educative tools? Persson and Savulescu are clear that we must work to save the planet before technology produces weapons that are increasingly destructive, therefore if they were in charge of this moral revolution by biomedical enhancement, those are the desired outcomes that would be sought through programming.

A spanner in the works is that experience has shown that, perhaps unfortunately for their agenda, people can reach different conclusions, given the same information**.** Knowledge by itself does not lead to better moral decisions, and society continues to disagree on vital matters such as our responses to the challenges of climate change. We base our decisions on different values, and surely this would happen even if we were morally enhanced by any method?

Savulescu, however, believes that at least *more* of us would think in the same way if we were to be so enhanced, which could effect change. He already has a certain conclusion in mind that would be the point of the procedure: he believes that, with more information about approaching dangers, every one of us will see what needs to be done. Perhaps, perhaps not, as noted above. Some people might decide that it would be better if the population were to decrease, through famine or otherwise. Some might see scope for control of resources and personal profit. Some might capitalize on others' misfortunes. These tendencies have always arisen in times of warfare and Savulescu acknowledges that a constant human trait is finding it easier to harm than to help.

(d) Would bio-medical moral enhancement detract from our growth as moral agents?

Russell Hittinger writes:

> "But most distinctive of contemporary technology is the replacement of the human act; or, of what the scholastic philosophers called the *actus humanus*. The machine reorganizes and to some extent supplants the world of human action, in the moral sense of the term." … "[There is] a new cultural pattern in which tools are either deliberately

> designed to replace the human act, or at least have the unintended effect of making the human act unnecessary or subordinate to the machine." (Hittinger, 1993)

Hittinger adds that, above all else, our culture prizes "…the machine insofar as it promises an activity superior to the human act." (Hittinger, 1993) Hochschild says that if that is right, then the threat of automation isn't the bad things it tempts us to do, but its ability to hypnotize us into thinking we don't even rise to the status of moral agents. (Hochschild, 2015). There are certainly fears about the threat of the machine to people's employment, about being 'taken over' and reduced in our capacities by the superiority of machines in some fields and the role of "Human v Machine' is important for the individual, the common good and the way we perceive our role in society.

(e) Is biomedical moral enhancement an imperative ?

Some reject this, on the basis that moral traits form the core of a person's identity, and employing technological means of manipulating identity through such enhancement could endanger and perhaps reduce it. (Huang/Crutchfield). Savulescu, as noted, suggests the use of such means would be to our mutual advantage, and does see it as an imperative, given present global circumstances. Others think cognitive enhancement could be allowed to complement an already developed virtue of prudence in a person. It would be permissible to use such means to achieve some higher-order desire the person wishes to attain, but cannot quite reach. Both responses remain conjectural, until such enhancement were to be become part of our educational practices.

Conclusion

While there are some interesting propositions concerning the use of BME, clearly more knowledge is needed about means and effects, as well as more discussion about moral agency, free will and Christian anthropology. The topic serves as an inducement to go deeper into these areas, which demonstrate further the ambivalence between the promises and perils of biotechnology in general.

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Tracy Trothen

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