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CLIMATE CHANGE, MORAL BIOENHANCEMENT AND THE ULTIMATE MOSTROPIC

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Abstract: Tackling climate change is one of the most demanding challenges of humanity in the 21st century. Still, the efforts to mitigate the current environmental crisis do not seem enough to deal with the increased existential risks for the human and other species. Persson and Savulescu have proposed that our evolutionarily forged moral psychology is one of the impediments to facing as enormous a problem as global warming. They suggested that if we want to address properly some of the most pressing problems that cause catastrophic harm to our existence, we should enhance our moral behavior by biomedical means. The objective of this paper is, precisely, to reflect on whether a Moral Bio-Enhancement (henceforth MBE) program would be a viable option to confront the climate emergency. To meet this goal, I will propose the Ultimate Mostropic (hereafter UM) thought experiment, a hypothetical situation where we have already discovered the UM, an available, safe (without any deleterious secondary effects), extremely cheap and effective pill to enhance our cognitive, affective and motivational abilities related to morality. After briefly presenting the main argument of Persson and Savulescu regarding MBE and climate change, I will point out some of the difficulties that make MBE a daunting but exciting philosophical and scientific debate. In order to overcome these complications, I will describe the UM thought experiment, which involves two scenarios of the MBE program: (a) the state-driven, compulsory and universal enterprise, and (b) the initiative of voluntary individuals. I will show that the shortcomings of MBE programs through the UM in both scenarios make Persson and

Savulescu's proposal a not appealing pathway to mitigate climate change. In the final section, I will suggest that an inaccurate attribution of responsibilities underlies their proposal and that the collective inaction problem should be redirected primarily through a reinforcement of the political nature of the solutions.

Keywords: *Moral enhancement, climate change, global warming, human enhancement, ethics, moral philosophy, consequentialism.*

1. INTRODUCTION: THE PROPOSAL OF PERSSON AND SAVULESCU

Ingmar Persson and Julian Savulescu (2008, 2010, 2011a, 2011b, 2012, 2013, 2014a, 2014b, 2015a, 2015b, 2019a, 2019b, 2019c, and Savulescu & Persson, 2012) have defended on multiple occasions the ethical necessity to enhance the moral character of humankind. The core idea behind the argument of this academic tandem is that there is an obvious mismatch between our moral psychology resulting from evolution and the moral challenges raised by the developments of our techno-scientifically advanced societies. The power amassed by our civilizations might wreak havoc at a global level, causing irreversible and catastrophic harms to humanity, to other species that inhabit the Earth and to the world's ecosystems in general.

In *Unfit for the Future* (2012), Persson and Savulescu extensively explain the concern that human moral psychology is not prepared for many of the great global challenges of the 21st century. Many of our moral dispositions were engraved evolutionarily in our brains when human beings lived in small communities, which makes us "ill-equipped" (2012:12) to face global and distant issues in space and time. Persson and Savulescu are concerned about existential risks for humanity: those that could unleash a catastrophic "Ultimate Harm" that could make the continuance of worthwhile life on planet Earth impossible (2012:46). They consider phenomena such as climate change, wars, mass destruction weapons, and (bio)terrorism, but in this article I will only focus on climate change.

Persson and Savulescu point out empirically grounded obstacles that hinder the articulation of a collective agency against these types of problems. On the one hand, the human being tends to a *parochial altruism*,

creating a predisposition to focus on ingroup members, so that the degree of concern decreases as the spatial and emotional closeness is lower (2012:83). On the other hand, they consider that the *bias towards the near future* is even more worrisome (2012:27). The unpleasant events that seem temporally close affect us much more than those that seem more distant in the future, even if they are less important. The postponement of problems to a more distant future leads to personal and collective inaction. Another element to take into account is the common *causality-based morality*, which makes us feel much more responsible for our actions than for our omissions. In addition, the co-responsibility implied by a collective agency dilutes individual responsibilities in the collective enterprise, which may lead to the underestimation of one's responsibility and disillusionment due to dependence on others (2012:24).

Both authors note that the technological and cultural evolution of our societies has not matched that of our moral psychology, which evolved in small and close-knit communities. Human living conditions have changed radically, we live mainly in large populations, we have introduced enormous technological changes to the planet, and some even say that we have entered a novel geological era known as *the Anthropocene*. Many of the great problems we face, including the climate crisis, are now global. Not only is this a challenge to our biological moral dispositions, but also to our own political systems. In fact, Persson and Savulescu (2012:8, 83, 96) believe that liberal democracies are not sufficiently prepared to adopt the necessary measures to mitigate phenomena such as global warming. Indeed, the difficulty faced by liberal democracies is that of imposing policies that might prove unpopular by requiring sacrifices from individuals. However, the proposal of Persson and Savulescu is not to abandon liberal democracies, but to claim the urgent need for an enhancement of human morality in order to coordinate an effective response to issues such as climate change. That is to say, they propose the necessity of a Moral Bio-Enhancement (MBE) program.

Persson and Savulescu (2012:124) argue that MBE should be accompanied by traditional moral education and appropriate institutional and social reforms. They consider that the successes of the latter have been too moderate in face of the seriousness of the threat, so relying on them as the only solutions is discouraged. That is precisely why they believe that MBE is necessary, because neither traditional moral education, nor informing citizens about the unsustainability of the current levels of resource consumption, nor sociopolitical reforms might suffice. In no way

do they believe that enhancement is the definitive solution, since they recognize that the real possibilities of intervention are still minimal. They do stress that research lines aimed at studying both the limitations of human moral nature and the possible improvement of such dispositions should be prioritized, as in order to deal with these phenomena of colossal magnitude, the biological basis of morality should be influenced by all available means, either traditional means such as education, or cutting-edge biomedical interventions (2012:133).

Now, which is one of the great impediments that prevent us from mitigating climate change? According to Persson and Savulescu, motivation is one of the dispositions that are not being sufficiently successful, so it is worth assessing the possibility of enhancing it through biotechnological methods, since “[w]e need to be motivated to a greater degree” (2012:9). They start from the premise that we have enough information on how to combat climate change, but we are not showing the necessary will to carry out the appropriate actions.¹ This leads us to a classic question in moral philosophy: *akrasia*, the abyss between knowing the good and doing the good that we have known since at least Socrates (Harris, 2016).

The weakness of will of human beings has gained a reinforced dimension with the current environmental challenge. Persson and Savulescu (2012) point out that there is a general scientific consensus that climate change has an anthropogenic origin, mostly caused by the accumulation of greenhouse gases (namely carbon dioxide, methane, nitrous oxide, etc.) in the atmosphere that have been emitted by human activity (see Doran & Zimmerman, 2009).² Although we know, then, what the origins of the problem are, as well as some possible solutions, we are not taking the necessary measures to mitigate it. Some of the questions, therefore, involve how to deal more consciously with both positive responsibility (responsibility for the consequences of our actions) and negative responsibility (responsibility for the consequences of our omissions) and how to foster moral motivation to do what we are already convinced that we must do (Persson & Savulescu, 2012:123). If the *Tragedy of the Commons* did

¹ As Kulawska and Hauskeller (2018:376) stated, “[t]he problem, then, is not that we don’t know what to do, but, rather that we do not do it.”

² However, it is important to note that at a population level the scientific consensus itself is not a guarantee of shaping behavior if there is not a widely public perception of it. See Lewandowsky et al. (2013).

not have a technological solution, but required a fundamental extension of morality, especially through mutual coercion (Hardin, 1968), the tragedy of climate change in our shared world could be faced through an extension of “the horizons of our moral conscience” helped by biotechnologies (Persson & Savulescu, 2012:103). Persson and Savulescu’s MBE proposal has sparked a very interesting theoretical debate.

2. MORAL BIOENHANCEMENT: A DAUNTING DEBATE?

Throughout the history of humanity, we have always tried to improve morality by traditional methods, such as education, law, social rules, religion, punishment, literature, etc. Recently, some seminal publications pointed out to the possibility of considering biotechnological means to improve human moral behavior (Douglas, 2008; Persson & Savulescu, 2008; Faust, 2008). These papers opened up the debate on so-called moral bioenhancement or, simply, moral enhancement.³ In this second section, I will briefly show some of the main controversies raised in this academic literature.

One of the facts that makes MBE a puzzling debate is that some of the champions of human enhancement have been suspicious about it, such as John Harris (2011, 2013, 2016) and Nick Agar (2010, 2015). In addition, rivers of ink flowed in regard to the discussion of whether moral enhancement could lead to a curtailment of human freedom.⁴ But for the aims of this article it is more important to note that the debate has shown that there is wide disagreement about what a genuine moral enhancement would be. The great controversy is what the *moral* in

³ Lately, various papers have addressed the possibility of using Artificial Intelligence (AI) to enhance ethical decision making. These proposals cannot be considered cases of moral *bio*enhancement, but instead they are part of a broader discussion on moral enhancement. See, for instance, Whitby (2011), Savulescu & Maslen (2015), Klineciewicz (2016), Giubilini & Savulescu (2017) and Lara & Deckers (2019).

⁴ This is one of the topics that has been more extensively covered in the literature, but I think that it is not strictly necessary for the sake of my argument. In case of interest, see Douglas (2008: 479-480), Harris (2011), Pacholczyk (2011:272-6), Persson & Savulescu (2012:114 et seq.), Savulescu & Persson (2012), DeGrazia (2013), Persson & Savulescu (2013), Douglas (2013), Rakić (2014:247-8), Douglas (2014), Harris (2016), Earp et al. (2018:176-7), Glannon (2018), Diéguez & Véliz (2019), and Persson & Savulescu (2019a:9).

moral enhancement discussion actually means. As Raus et al. (2014:264) perfectly pointed out: “behind the seeming neutrality of the defining the concept, there often lie philosophical battles as to what constitutes morality and what it means to act morally”, that is, there is an evident tension between the descriptive and the normative dimensions of the concept. Following Pacholczyk (2011:253), Earp, Douglas and Savulescu gave the subsequent definition of moral enhancement:

[A] moral enhancement is a *beneficial change in moral functioning*. Here the idea is, first, to identify an underlying psychological or neurological function that is involved in moral reasoning, decision making, acting, and so forth (that is what makes the function “moral”, a descriptive claim) and then to intervene in it “beneficially” (a normative claim). But “beneficially” could mean different things, depending on one’s normative perspective. (Earp et al., 2018:168, italics in the original source).

Having said that, the initial disputes of the debate have been related to what moral dispositions should be enhanced. At first, the proposals of Persson and Savulescu (2008, 2012) and Douglas (2008, 2013) focused on capacities close to the emotional dimension such as empathy, sympathy, altruism, the sense of justice, trust and motivation. Following Kudlek (2019), these MBE supporters have focused on the direct modulation of certain affective dispositions, which has been a remarkable source of discussion.

Initially, Persson and Savulescu (2008:168-172; 2012:108) pointed out that altruism and the sense of justice are the goals that should be enhanced through MBE to increase motivation and cooperation. Both are, according to the authors, the “core of our moral dispositions” and both have a biological basis to be able to propose interventions by biotechnological means. More recently, there has also been talk about “first order moral emotions or capacities” (Earp et al., 2018:174), which would include “basic features of our psychology that are relevant to moral motivations and behavior, such as empathy and a sense of fairness” (Earp et al., 2018:178).

Moreover, Douglas defended a direct emotion modulation as a kind of “noncognitive moral enhancement” (Douglas, 2013:162). He thinks that “it seems clear that what is necessary for moral enhancement is the *fine tuning* of certain emotions in a person-specific way that is sensitive to prevailing circumstances” (Douglas, 2013:166, italics in the original

source). Douglas (2008, 2013) also suggested that one of the objectives of MBE could be not only fostering certain emotions but also reducing counter-moral emotions, among which he placed racial aversions and impulses towards violent aggressions.

John Harris (2011, 2013, 2016) has been one of the most notable critics of the newly presented conceptions of MBE. For Harris, to act morally is to act for the best “all things considered” (2016:4). According to him, increasing prosociability or decreasing violent behavior does not improve the ability of agents to consider all aspects, nor does it improve moral judgments or change them (Harris, 2016:83-4). Stimulating emotions does not provide rules, neither principles, nor moral content. However, the idea of MBE does not seem bad to him per se and he defends that it would be more useful to implement a cognitive enhancement that would increase our ability to think ethically, since he affirms that it is precisely when moral emotions fail that moral reasoning becomes most necessary (2016:112).⁵

Nevertheless, it must be acknowledged that Persson and Savulescu do not deny that cognitive enhancement may be indispensable for MBE, but “finding out what we are justified in believing to be morally right does not automatically make us act accordingly”. (Persson & Savulescu, 2008:173). Internalizing moral doctrines and improving the ability to reason does not seem to be enough for them. In fact, not even a phenomenon such as the Flynn Effect (which shows an increase in IQ scores in recent decades) can reverse the short-term tendency and other limitations of our evolutionarily forged myopic moral psychology (Persson & Savulescu, 2012). The authors’ proposal demands taking into account both the reasons that force us to act morally and the indispensable motivation to put them into practice, although it is true that they put the emphasis on this last provision because they believe that it is the one that needs to be reinforced the most (Rakić, 2014; Persson & Savulescu, 2015b:350, 2019c).

Nonetheless, the criticisms that have arisen have shifted the focus of some of the new proposals towards aspects more linked to rationality. Schaefer and Savulescu (2019) have proposed a “procedural moral enhancement” that seeks to improve deliberations in order to arrive to

⁵ One of Sparrow’s criticisms (2014a:25) went in the same direction: “[e]nhancing an individual’s moral agency would therefore require more than simply reshaping their inclinations — it would require improving their capacity to act for the right reasons.”

principles and thus improve the decision-making of individual agents. They have highlighted six factors related to moral reasoning that would be the objectives to promote the reliability of agents, i.e., logical competence, conceptual understanding, empirical competence, openness to revision and the search for possible faults in one's own reasons, empathic understanding, and avoidance of bias (Schaefer & Savulescu, 2019). In the same line, Earp et al. (2018:171 et seq.) have defended that there are strong reasons to pursue a MBE program that enhances the reasoning process itself, since improving rational deliberation increases the probability of arriving at moral beliefs and better decisions and, consequently, producing better actions, or what is the same, more moral actions (Earp et al., 2018:172).

Consequently, it could be said that a genuine moral enhancement that seeks to avoid some of the previous problems should stress the emotional, the cognitive and the motivational dimensions of morality.⁶ However, this is something that is too distant to be accomplished by the current state of the art of moral enhancement technologies.

Sparrow (2014b:27) stated that “[t]he debate about moral bioenhancement is a strange affair by virtue of being so far ahead of the science that it presumes.” Actually, it is dubious that there has been such presumption. From the very beginning, it has been acknowledged that there is a “paltry research effort” and a limited knowledge to biomedically influence moral behavior (Persson & Savulescu, 2008:172) and that the technical feasibility of these types of interventions is plausible only in the medium-term future (Douglas, 2008:242). Certainly, moral enhancement science is still in its infancy (Persson & Savulescu, 2012:11; Crockett, 2014:370). On the one hand, there have been remarkable advances in the interdisciplinary scientific approaches underpinning the biological, psychological, genetic and neurological foundations of morality. More so than ever before, we are aware of some important predispositions, limitations and biases of our evolutionary forged moral psychology. However, the science of morality is considerably limited, as are the methods for intervening in it.

Most of the debate has been concentrated on currently available “sexy drugs” (Sparrow, 2014a:25) or “rudimentary” methods (Handfield et al., 2016:742), such as the administration of oxytocin, serotonin (especially, Selective Serotonin Reuptake Inhibitors), propranolol, methylphe-

⁶ DeGrazia (2014) offered a complete formula of MBE including those dimensions.

nidate, etc. All of them offer some advantages and drawbacks in terms of their impact on human psychology.⁷ Nonetheless, it is highly probable that the pharmaceutical and biotechnological methods to modulate moral behavior will continue growing inasmuch as the scientific knowledge about the biological foundations of human morality keeps increasing steadily.

3. THE ULTIMATE MOSTROPIC: A THOUGHT EXPERIMENT FOR THE MORAL BIOENHANCEMENT PROGRAM

And there's always *soma* to calm your anger, to reconcile you to your enemies, to make you patient and long-suffering. In the past you could only accomplish these things by making a great effort and after years of hard moral training. Now, you swallow two or three half-gramme tablets, and there you are. Anybody can be virtuous now. You can carry at least half your morality about in a bottle. (Huxley, 1932/1977: 235).

The novel *Brave New World* is an inexhaustible source of references for the human enhancement debate. Yet some quotes need to be carefully invoked, as in this case. In the book, *soma* is not a drug that helps people to face the problems of reality, but to escape from them, to get away from that dystopian scenario in which the inhabitants of *Brave New World* live.⁸ Here I am borrowing the idea of a completely extended drug that has a powerful impact on our moral dispositions, but not intending to take us away from our social reality, but rather to make us stronger agents to deal with its problems. A *good soma* would help us not to only rely on “hard moral training” and to carry “at least half your morality” in a pocket. Let us imagine that we have already discovered the Ultimate Mostropic⁹ (UM).

⁷ See, for instance, Persson & Savulescu (2008, 2012), Crockett (2014), Levy et al. (2014), Rakić (2017), Lara (2017a), and Terbeck & Francis (2018).

⁸ John Harris (2016:49) pointed out that the positive connotations that the expression “brave new world” had in Miranda’s mouth in Shakespeare’s *The Tempest* becomes strongly negative in Huxley’s work.

⁹ The term ‘mostropic’ was coined by Phil Torres (2017:691), following the model of *nootropic*. While a *nootropic* is used to refer to a pill that fosters cognitive abilities (also known as *smart drugs*), a *mostropic* would be a pill that improves moral abilities. The term ‘*nootropic*’ was coined by Corneliu E. Giurgea (1972). See also Giurgea (1982).

The UM thought experiment is based on the most optimistic possible scenario. I am supposing that we rank (by major social agreement or by a secret plan of the governments) the MBE program at the top of our research investments. Thus, it would have high priority in the resource allocation strategy, having more urgency than other competing important scientific research lines such as cancer therapy, AI, life-extending treatments, etc. I also presume that in a few years we will discover a drug for the MBE program and that we will do it in time to mitigate the most deleterious effects of climate change. The UM pill has passed all the necessary human trials and is already available for widespread consumption. Furthermore, it is extremely cheap and completely safe (without unwanted off target consequences and without secondary health risks). The uptake of a UM pill would enhance cognitive, emotional and motivational abilities related to moral behavior far beyond what is normal in members of the human species. Moreover, the advances in personalized and precision medicine would provide that everyone reaches at least a minimum of moral capacities that is considerably superior to those that any normal human could statistically have.¹⁰ In order to avoid concerns about over-medicalization, let's suppose, for instance, that one pill per week would be enough to meet this goal.

This thought experiment has an undeniable advantage:¹¹ it allows us to think more plainly about the most important scenarios to distribute the UM. I distinguish two main settings in which the MBE program could be undertaken: (a) a compulsory universal MBE strategy, and (b) a voluntary intake of the UM. In this second case, the program would not be obligatory and would rely on the decisions made by individuals for their own sake.¹² I will try to show that both pathways have enough

¹⁰ This way could serve to overcome the justified skepticism of Sparrow (2014b:23), who said that there is no guarantee due to natural human variation that the same biotechnological intervention would generate the same response at a population level. See also Pacholczyk (2011:260).

¹¹ Here I align with the *pragmatic optimism* of Agar (2004), who defended that imagining that enhancement technologies were already available and safe would allow us to think more clearly about their ethical encouragement or dissuasion.

¹² Moreover, there have been specific proposals of moral enhancement through genetic engineering or Genetic Preimplantation Diagnosis. See, for instance, Faust (2008), Walker (2009) and Douglas & Devolder (2013). In these cases, which I am not considering here, the decision for moral enhancement would be made by the prospective parents, with the exception of Walker, who also considered state promotion.

serious defects to make us not to be over-enthusiastic regarding MBE as a method to mitigate climate change.

A) STATE-DRIVEN, UNIVERSAL AND MANDATORY MBE PROGRAM

Persson and Savulescu do not offer any systematic account of the challenge of implementing MBE, because they think that “it’s premature to spend much time on such speculations, since we’re so far from being in possession of safe and effective forms of biomedical moral enhancement” (2019c, unprefixed page). As a result, in *Unfit* they do not address directly whether MBE should be compulsory or voluntary (see 2012, 2014b:251; Rakić, 2014:247; Schlag, 2019). They have only done sporadic references to these issues in different works.¹³ Their policy recommendation is rather that we should rank MBE at the top of our research investments. However, I think that it is more sensible to foresee the possible impediments of both application pathways before embarking on any research of a mostropic for mass-consumption.

The first possibility that I am going to explore is that of a universal compulsory plan that would apply to all citizens, which was their initial suggestion, as it can be seen in the following fragment:

If safe moral enhancements are ever developed, there are strong reasons to believe that their use should be obligatory, like education or fluoride in water, since those who should take them are least likely to be inclined to use them. That is, safe, effective moral enhancement would be compulsory. (Persson y Savulescu, 2008:174).

According to Persson and Savulescu (2008; 2015b), MBE is so necessary and so urgent that it could be justified to extend it to a population level. Persson and Savulescu are aware of how difficult it would be to implement a global MBE program, but this does not discourage them

¹³ For instance, it seems clear that they defend that MBE should be compulsory

for children (2012:113; 2015b:351; 2019c).

from defending a hypothetical moral obligation of the project.

Obviously, just because something is compulsory for the whole population does not mean that it has to be morally reprehensible. Completing primary and secondary education, paying taxes or respecting the traffic rules are practices that all citizens have to comply with in many countries. Moreover, these obligations can be considered morally desirable. Nevertheless, doubts arise from this kind of project. I am going to point out three important shortcomings of, following Glannon's terminology (2018:80), a "state-sponsored compulsory enhancement". Firstly, in liberal democracies it is likely that there would be serious difficulties in accepting it. Secondly, several control mechanisms should be developed in order to ensure that the plan is successfully accomplished. Thirdly, it would be extremely burdensome to put a global MBE program into practice, despite the exceptionally low price of the UM.

Persson and Savulescu (2012) recognize that implementing MBE at a massive scale would be much easier in societies with authoritarian or dictatorial regimes than in democratic governments, although this does not seem to them to make such political systems more acceptable. According to them, MBE could be a way of preserving liberal democracies. I think that this idea is problematic. An abrupt and mandatory MBE program is very likely to be rejected by a considerable fraction of the citizenry of democratic societies. Moreover, it is an issue that should be discussed publicly and democratically, passing through the filters of discussion, deliberation and adoption characteristic of these models of government. Yet MBE supporters might argue that this new restriction of freedoms could be imposed from contractualist positions.

Tvrtko Jolić (2014) has reflected that a universal MBE program for all citizens could be considered as a kind of "biological contract" (reformulating the classical social contract) according to which obligatory moral enhancements are postulated to guarantee the security and survival of humanity on Earth. As in Hobbes' social contract (1651), in which people renounce part of their sovereignty and freedom, transferring them to the State in exchange for security and peace, the biological contract would mean that citizens renounce to part of their sovereignty over some of their own biological characteristics in favor of the government and for practically the same reasons (Jolić, 2014:87). Walter Glannon (2018:76) also thinks that this type of MBE should have a social contract theory as a bedrock. Glannon states that there is an obvious conflict between individual liberties and the collective interest of avoiding harm (the most

extreme harm being human extinction). Persson and Savulescu do not explicitly sustain a contractualist position in support of their proposal. What they do subscribe is the liberal principle, following Mill (1859), of restricting freedom in order to avoid harm to others and to guarantee security (Savulescu & Persson, 2012).

However, problems could also arise even if there was a general acceptance of a new biological-social contract due to the prevailing need of MBE to combat climate change. Sparrow (2014a:29) stated that even if a universal MBE program were democratically approved by a majority, this could not be done without imposing it on the minority that rejects it. Moreover, I think that there could be cases of conscientious objection or even organized and widespread initiatives of civil disobedience that attempted to reverse the incipient rule of UM consumption, as was the case in some countries with mandatory military service.¹⁴

I am obviously considering these possibilities in a scenario in which MBE would be developed explicitly; in other words, that the program would be implemented publicly and by informing the citizens. But, conversely, there might be an alternative: carrying out a “hidden [moral] enhancement” (Kulawska & Hauskeller, 2018:386). Imagine that it could be done administering the UM formula in the water system, without changing the flavor of tap water, similar to what we do with fluoride. This moral enhancement without the citizens’ knowledge could overcome some of the problems I have just raised. Still, it is very possible that it would lead to the emergence of new ones. For instance, many people might be suspicious of a sudden change in their behavior, but also in that of their fellow citizens (Kulawska & Hauskeller, 2018). If the work colleague who always arrives in her gas-guzzling all-terrain vehicle were to start commuting by public transport, it would be at least a source of curiosity. Furthermore, it would pose a serious threat if the governing elite were the only one to know that a universal MBE program is being carried out. This would bring democratic systems closer to the authoritarian systems that Persson and Savulescu seek to avoid (Schlag, 2019).¹⁵

¹⁴ This argument, nonetheless, is not very persuasive. It could be counter argued saying that even if minorities do not take the pill, the overall benefit would still remain clear. I thank this comment to David Rodríguez-Arias.

¹⁵ According to Schlag (2019), a worldwide secret MBE program would require a *benevolent enhancer*, whose acts beyond democratic control pose several problems.

The second concern is related in some way to that latter problem. At the beginning of the MBE program, several mechanisms of control, along with coordination and cooperation networks, should be established at a state and supranational level. Global institutions should be created to guarantee that the plan is being accomplished in all the states of the world. Within the states, moreover, some monitoring should be implemented to ensure that all citizens are taking the UM regularly, that is, intensive *surveillance* would be an undisputable requirement. However, this raises the everlasting question of Juvenal, which Harris (2016:105) remembered: “*Sed quis custodiet ipsos custodes?*—But who guards the guardians?” Then, some kind of supervision of those who supervise (*sousveillance*) would be needed. As Glannon (2018:81) said:

[T]here would remain the daunting task of enforcing compliance. This would require different levels of co-ordinated social and political action. It would also assume the moral integrity and public acceptance of those empowered with overseeing these tasks. This may assume too much.

Third, even if the UM were extremely cheap, the economic costs and the practical challenges for its distribution are discouraging. We do not currently have, and it seems like we are not going to in the near future, institutional mechanisms for the “widespread implementation” of the MBE program (Hanfield et al., 2016:742). Extending MBE to the world’s seven billion people seems frankly impossible (Kulawska & Hauskeller, 2018:387), even more so if the population continues growing. In addition, John Harris (2016:137) cited the example of the eradication of the poliovirus by means of an extensive but not universal vaccination program, to signal the not very realistic prospect of a worldwide MBE program:

Even if the eventual moral enhancement could be applied as easily as via, for example, the oral administration of something on a sugar lump, we know from experience with the polio vaccine that it would be impossible to ensure anything like universal coverage. Moreover, unlike with vaccination, there will not be the benefits of ‘herd immunity’ to help mask deficits in coverage.

Overall, the universal and state-driven MBE program could create huge controversy in the political arena of liberal democracies, strenuous multi-directional control mechanisms would be required and it seems to be extremely difficult, almost impossible, to put into practice in the near future.

B) MBE PROGRAM FOUNDED ON THE INITIATIVE
OF VOLUNTARY INDIVIDUALS

The second possibility would be to allow this type of enhancement for individuals who decide to undergo it voluntarily, probably through the requirement of informed consent. The state could not only legalize the UM, but also promote it or offer it free of charge to the volunteers, if it were considered a public good.¹⁶ It has been said that a safe and voluntary MBE would not necessarily cause great controversy (Rakić, 2014, 2017:292). Moreover, it has been claimed that adults who autonomously undergo such interventions act with even greater freedom than children and young people who receive moral learning in traditional formal education (Lara, 2017b:173). I think that voluntariness makes MBE only *prima facie* non-controversial in this case. Although I consider that this second option would have more ethical acceptability than the universal and compulsory program, there are some aspects that can also be unfavorable.

My first doubt is whether a voluntary MBE program would be a successful strategy to encourage people to improve their moral behavior in relation to climate change. The potential public that could demand these interventions is uncertain. For some, it would be paradoxical that people who consider that they need MBE (because they are not motivated enough to act morally) are yet motivated to undergo this type of program (Cortina, 2013). For others, this is not necessarily paradoxical (Lara, 2017b; Persson & Savulescu, 2019c). After all, we already consume products that help us to accomplish what we are convinced we want to do, such as when we have a few glasses of wine to get closer to dance with the person we are attracted to.

Nevertheless, in order to estimate the demand, it should be taken into account whether there is a reluctance to change the so-considered core features of identity, among which moral dispositions are commonly placed. Jason Riis, Joseph P. Simmons and Geoffrey P. Goodwin (2008) carried out a very revealing study on the preferences of people regarding different types of psychological enhancement, disclosing a major tendency to reject improvements in what are considered fundamental characteristics of personal identity.¹⁷ The authors suggested that the volun-

¹⁶ See Rakić (2014:249) for different stimuli to publicly encourage voluntary MBE.

¹⁷ See DeGrazia (2005) and Brey (2009) to read different perspectives on the topic of human enhancement and identity.

tariness of these interventions is conditioned by beliefs about whether or not the features to be promoted are relevant personality traits (Riis et al., 2008:495). The mental traits linked to emotion were considered by people as aspects deeply rooted in their own identity and whose modification causes greater reticence, also due to the tendency to want to preserve their own personal identity (Riis et al., 2008:497). Empathy and motivation, for instance, were among the dispositions that people were less likely to enhance, as opposed, for example, to mathematical ability or the ability to learn foreign languages (Riis et al., 2008:499).¹⁸

The UM would undoubtedly enhance psychological characteristics that are closely related to personal identity. Yet it would also enhance other traits that are not necessarily so connected to it, which might be an important trade-off. It is possible that the other important enhancements¹⁹ that the UM would provide could compensate for the potential change of identity in a lot of people. Thus, the empirical results of the previous study must be taken much more cautiously. The factors that determine the demand would be more uncertain in this speculative scenario.

That being said, the concern is common in the literature that the most reluctant people to MBE would likely be those who need it the most (Persson y Savulescu, 2008, 2012, 2015b; Harris, 2016; Torres, 2017). Therefore, it is difficult to assume that those with less developed moral abilities²⁰ are likely to undergo MBE procedures. John Harris's slogan

¹⁸ This should not be taken as a reason to refute the permissibility of making such modifications; rather, it should be taken into account as a factor to foresee a possible low demand. The authors, in fact, point out that while people were reluctant to modify features that altered their identity, they did not object to others doing so (Riis et al., 2008:502). They also suggested that this concern about identity could be diminished by advertisements and marketing messages (Riis et al., 2008:503-4).

¹⁹ This would be the case if the UM constituted a sort of "general-purpose device" (Schlag, 2019).

²⁰ Raus et al. (2014:266 et seq.) rightly stated that determining what constitutes an average or normal level of moral functioning is an extremely complex issue that would ultimately lead to normative justifications. In the same way, they postulated a problematic distinction between moral therapy and moral enhancement due to individual diversity that could create three types of interventions. Intervention X would take a subject with dysfunctional moral capacities or below average to the normal level, which would be considered a moral therapy. Intervention Y would take a subject with normal moral abilities to a higher level than the average, which would constitute a moral enhancement. Finally, intervention Z would move a subject with lower than average moral capacities to a level higher than normal, which would include both aspects of

“ethics is for bad guys” (2016) shows that those who need ethics the most are also those who reject them the most. If the primary goal of the UM is to enhance moral behavior, it is rather improbable that the “bad guys” will feel attracted to consume it. Furthermore, in connection with the climate emergency, it is plausible that only the people who are aware of this urgent challenge would request it (Kulawska & Hauskeller, 2018:386). In view of this, a provisional conclusion could be that voluntary MBE would be permissible, but that at a strategic level it is very unlikely that it would be effective to mitigate global warming. As Sparrow (2014b:21) suggested: “it seems unlikely that enough people—and the right people—would voluntarily undergo moral bioenhancement such that this would be sufficient to reduce the risk of climate change.” However, there is another important precaution that can even discourage the ethical permissibility of voluntary MBE.

The last problem of this second distribution scenario is related to the emergence of the *free rider* figure. In order to tackle the environmental crisis, it is undeniable that cooperation rates should be increased, but doing it through MBE could increase the number of people who would take advantage of this enterprise for their own self-interest (Glannon, 2018:78 et seq.). Those who are not willing to take the UM could reinforce their competitive and selfish goals at the expense of the people who will engage voluntarily in the MBE program. The free rider in the context of the climate crisis would think that others will do what he/she has to do to mitigate global warming. In addition, he/she could malignly take advantage of the increase of general cooperation due to the amount of morally enhanced people. It has been said that this risk is even more significant if MBE were to mainly foster elementary prosocial dispositions (namely, the tendency to trust, altruism and helping motivation towards others), for instance, using oxytocin (Lara, 2017a). In Handfield et al.’s opinion (2016:744), increasing “elementary prosocial dispositions will not translate into a reliably increased rate of cooperation. It will instead be an environment that is congenial for infiltration by exploitative, uncoop-

therapy and enhancement. The authors pointed out that these differentiations make the MBE debate even more difficult and that this type of approach ends up collaterally raising the question of what types of deficiencies should be medicalized (Raus et al. 2014:267). According to my previous characterization, the UM would produce interventions Y and Z. See also Agar (2010).

erative agents.” Therefore, from a consequentialist viewpoint, the spread of the free rider figure would be totally undesirable.

Consequently, the free rider problem should neither be underestimated, nor overestimated. In this thought experiment, the UM would also enhance moral abilities that are not only elementary social dispositions. Some could argue that the cognitive enhancement provided by the regular consumption of this drug might counterbalance these prospective perils, enabling morally enhanced people to detect when free riders are unfairly taking advantage of them. Moreover, the social and external coercion against those who behave dishonestly for their own selfish welfare could dissuade the cheaters from adopting dangerous courses of action for society and the planet. In fact, this is something that we already try to do. The State could also strengthen penalties in the most serious cases and new laws could be created to typify new crimes and offenses. In addition, to think that morally enhanced people would be “meek” or “compliant”, or easier to exploit or to deceive, is an untenable prejudice (see Walker, 2009:42-3). In our case, therefore, the free rider problem would not become a definitive reason to deny the ethical permissibility of a voluntary MBE program. It would rather make us more wary about the potential risks of exploitation, corruption and abuse in this second setting.

Summarizing, both distribution methods of the UM have relevant shortcomings. As Kulawska and Hauskeller (2018:387) said in relation to MBE: “[i]t is both problematic to enhance only some people and to enhance everyone.” Between the two, the weakest is the worldwide and compulsory program, which is almost impracticable and would lead to substantial public controversies at least in the first stages of the development. The second one is not ethically undesirable, although it could create some unwanted but uncertain evil consequences if the figure of the free rider were significantly extended. Actually, what is likely about the voluntary MBE program is that those who need to enhance their impacting behavior on the climate catastrophe would probably be the most reluctant to take the UM.

4. (MIS)ATTRIBUTION OF RESPONSIBILITIES, POLITICAL (IN)ACTION AND CLIMATE CHANGE (IM)POLICIES

One complex problem of tackling climate change is the attribution of responsibilities. There is no scientific doubt that global warming has an

anthropogenic origin. This fact could be translated into sentences such as “humanity is responsible for climate change” or “human beings have created this phenomenon.” This could lead us to say that every human (or every member of the *Homo sapiens* species) is responsible for climate change. Yet this type of inference could be troublesome for an accurate attribution of responsibilities.

On the one hand, it is undisputable that individual human behavior has consequences for global warming. Hence, it could be said that all of us are co-responsible for this phenomenon to different degrees. This fact is unfortunately undervalued and it should be stressed greatly to make people more aware of the accountability of their lifestyle in relation to the environmental crisis. On the other hand, however, it is undeniable that we are *unequally responsible*. There are people, companies and countries that contaminate more than others. Actually, there are a few companies (namely, the producers of fossil fuels) that have historically contaminated more than a lot of countries in the world, and continue to do so.²¹ Acknowledgement of the degree of responsibilities is therefore essential to hold the different agents accountable for their imbalanced contribution to climate change.

Persson and Savulescu are aware of this fact. Actually, they pointed out that most of “the worst sinners” of climate change (in relation to the countries with the highest greenhouse gases emissions per capita) are also those who will not suffer the most devastating consequences of global warming (2010:665, 2011:493). Therefore, a universal and compulsory MBE program is less well-grounded if we pay adequate attention to the scale of responsibilities. Why should we enhance the morality of all humans if we are not equally responsible? Some might argue that those who should be morally enhanced are precisely those who contaminate the most, including the people in wealthy countries, the executives of companies and the politicians of the governments that contribute to this hazardous phenomenon the most. Still, I think that this kind of reasoning could be misleading.

Prioritizing the implementation of the MBE program on those who contaminate the most would only translate the formerly analyzed problems of both pathways of the UM into the novel plans. To *only* morally enhance the entire population of the countries that emit the largest number of greenhouse gases per capita (most of them liberal democracies) could cause fierce political controversies, would require profound intra-

²¹ See Frumhoff et al. (2015) and Griffin (2017).

and interstate control mechanisms and would still be incredibly economically burdensome. It could also unfairly put these countries at an advantage or disadvantage in relation to the ones that would not be enhanced. There are also considerable differences in the lifestyles and ecological footprints among citizens within affluent countries. In addition, if we do it *only* with the political leaders of those governments we can favor or disfavor the political opposition, which might be considered particularly relevant in democratic systems. If we do it *only* with executives of the most polluting companies, moreover, we could create partial (dis)advantages with their competing economic rivals. Thus, why is it important to achieve an appropriate attribution of responsibilities in relation to climate change?

Identifying the principal causal agents of global warming is crucial to lead and to coordinate *political actions* (i.e., actions directed by governments) against the climate emergency; that is, to require policies to drastically reduce the untenable actions (and omissions) committed by them, without necessarily changing the agents themselves. Phil Torres (2017:692) had an insight into this: “there are two ways of mitigating agent-tool risks: intervene on the tool or intervene on the agent. Moral bioenhancement is an agent-oriented strategy for reducing existential risk because it attempts to modify agents.” I think that Persson and Savulescu have erroneously prioritized changes in the agents and not in the tools that create the risks. In the case of global warming, some of the perilous “tools” have been obvious for a long time (unsustainable industries, polluting factories, non-renewable energy, non-electric cars, traveling by plane, etc.), but others are less widely known to a lot of people (food of animal origin, the heating in households and hot water for daily showers, clothing, deforestation caused by the production of different commodities, etc.). Establishing the connection between each causal agent (individuals, companies or governments) and the specific tools is not always easy. Still, it is important to acknowledge that the most important of them rely on social structures rather than on isolated individuals. Climate change is of course a moral problem for individuals, but it is primarily a political problem that should be addressed at a societal level.²²

²² Sinnott-Armstrong (2005) defended in a challenging paper that there are not individual moral obligations according to principles in relation to global warming. He stated that this massive scale problem primarily raises obligations for the governments (2005:312). I definitely agree with him on the latter point.

Surely, climate change raises several moral problems and partly because of that we expect that some ethical requirements meet the response that we give to it (Agar, 2015:345). But it is mostly a political challenge. Our social structures determine to a large extent the response that we can give to this phenomenon (Kulawska & Hauskeller, 2018:379). For instance, a person may be willing and morally motivated to buy an electric car, but she needs the urban environment to be conditioned to recharge it when the battery runs out. Moreover, if highly polluting cars are forbidden from driving into the center of large cities, at the same time it is necessary to complement this limitation of access with public policies that promote better and more economical public transport. John Harris (2016:144) already warned that it is insane to mainly address global problems that depend on social structures such as severe poverty or climate change at an individual level: “[i]n a real sense it is gross self-indulgence, not to mention self-defeating, to try to address these big problems at the level of individual morality.” Sparrow (2014a:29) has also been very critical with seeking the solutions to the world’s evils in MBE to the detriment of politically coordinated institutional enterprises:

[T]here is little reason to believe that they could not be solved by addressing these structural issues while leaving human nature as it is now. Removing the institutional incentives that reward selfish behaviour and the pursuit of short-term goals over long-term goals would do more to produce ‘more moral’ behaviour than any program of biomedical interventions.

Not only does choosing to resort to moral enhancement to try to solve the world’s ills evince an implausible combination of technological utopianism, naïve sociobiology, and political pessimism, it would also be politically dangerous.

The point that I would like to stress here is that MBE programs (especially the universal and compulsory one) are *enormously political*, as I have tried to show in the third section. Paradoxically, the “political pessimism” blamed on them by Sparrow (in some way justified by their distrust in the effectiveness of liberal democracies and traditional policies) ends up needing a “political optimism”, because MBE programs would require exhaustive and far-reaching political actions in order to be accomplished. However, it seems that Persson and Savulescu’s suggestion is not just another policy proposal to mitigate climate change. Rather, MBE would constitute an attempt to guarantee the success of the rest of

the policies, a sort of condition of possibility for them. This is explicitly manifested in the following sentence: “[w]e have never thought that political action is unnecessary, but we believe that moral enhancement is necessary for accomplishing requisite political actions, for instance, to combat climate change” (Persson & Savulescu, 2015a:55). This shows a significant misgiving not only about human moral nature, but also about the institutional design needed for the mitigation of existential risks. Maybe some degree of suspicion about both of them could be reasonable, but not trusting the political power to enforce changes and capabilities of human beings to adapt to such variations at all could have a deleterious paralysing effect, including for embarking on MBE programs.

5. CONCLUSION

The implementation account of MBE has been notoriously absent in the works of Persson and Savulescu. In this paper, the UM thought experiment has allowed us to foresee that MBE in the best possible scenario would not be suitable in either of the two main modes of application. The very interesting debate on MBE should not become a distracting factor from seeking the real (political) solutions that must be fostered to mitigate the climate emergency. The challenging proposals of Persson and Savulescu, nevertheless, should serve us to understand more profoundly the limitations of our human morality and of our political systems.²³ Their merit consists in forcing us to take more seriously the task of devising effective measures to diminish the environmental collapse and global warming. Finally, contemporary environmental problems have to be approached from realistic (often unpleasant) and already known solutions. In the blatantly outrageous case of the climate catastrophe, we are leaving for tomorrow what we should have done yesterday. There is no time to lose.

²³ Recently, Persson and Savulescu (2019b:37) have noted that if MBE were to lead to the end of the capitalist market economy in order to achieve global sustainability, they have no reason to oppose it.

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