

ALTRUISM AND MORAL ENHANCEMENT*

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Once upon a time there was a frog. One day, Frog was sitting by a riverbank when along came a Scorpion. "Hello brother Frog," said Scorpion. "I wonder if you might be so kind as to give me a ride across the river on your back." Frog knew that Scorpion could not swim. "I don't think that's a good idea," said Frog. "You have a deadly sting. You might kill me." "But why would I do that?" replied Scorpion. "If I stung you, we would both die." "Mmm," thought Frog. "That makes sense." "Alright Scorpion, jump onto my back and I will give you a ride across the river," he said. So Scorpion jumped onto Frog's back and Frog began to swim across the river. But halfway across, Scorpion took his deadly sting and stuck it into Frog's back. And as the poison filled Frog's body his arms began to stiffen and they both began to sink. "Why?" gasped Frog in despair. "Sorry Frog," said Scorpion. "It's my nature." And Frog and Scorpion died. (The fable of the Scorpion and the Frog)

RESUMO *Neste artigo, discutirei o que é altruísmo, distinguindo motivações altruístas (pura e impura) e comportamento altruísta (soft e robusta). Puro altruísmo é quando a motivação para beneficiar outra pessoa é exclusivamente aumentar o bem-estar do outro, e altruísmo impuro é quando a motivação para beneficiar outra pessoa é somente aumentar o seu próprio bem-estar, ou inclui este aumento do bem-estar próprio. Soft altruísmo é*

* Article submitted on 12/08/2019. Accepted on 10/12/2019. This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES/ Print program).

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simplesmente ajudar o outro, enquanto altruísmo robusto é promover a melhoria do bem-estar de outro indivíduo ao custo do seu próprio bem-estar. Tendo feito essas distinções, mostro que o altruísmo é uma exigência da moralidade. Argumento aqui que os três principais princípios da moralidade (imperativo categórico, regra de ouro e princípio da maior felicidade) são não apenas compatíveis com soft altruísmo mas também o recomendam. Finalmente, argumento que a probabilidade de as pessoas continuarem praticando atos altruístas é maior quando somos puramente motivados, e, se este é o caso, não apenas o aprimoramento moral clássico, mas também o aprimoramento moral biotecnológico pode cumprir o papel de trazer pessoas para o lado do altruísmo, estimulando suas motivações “other regarding” (concernente aos outros) e assim contribuindo para difundir o comportamento altruísta e a moralidade pelo mundo.

Palavras-chave *Altruismo, Comportamento altruísta, Motivações altruístas, Aprimoramento moral, Natureza Humana.*

ABSTRACT *In this article I will be discussing what altruism is, distinguishing altruistic motivations (pure and impure) and altruistic behaviour (soft and robust). Pure altruism is when the motivation to benefit another is exclusively to increase the other’s welfare, and impure altruism is when the motivation to benefit another is solely to increase your own wellbeing, or includes on some level, increasing your own welfare. Soft altruism is helping behaviour and robust altruism is improving the welfare of another individual at the expense of the altruist. Having made these distinctions I move on to show that altruism is a requirement of morality. I argue that the three main principles of morality (categorical imperative, golden rule and the greatest happiness principle) are not only compatible with, but also recommend soft altruism. Finally I argue that the probability of people continuing to practise altruistic acts is higher when we are purely motivated, and if that is the case not only classic moral enhancement but also biotechnological moral enhancement can have a role in bringing people over to the altruistic side, stimulating their ‘other regarding’ motivations, thus contributing to spreading altruistic behaviour and morality throughout the world.*

Keywords *Altruism, Altruistic behaviour, Altruistic motivation, Moral Enhancement, Human Nature.*

What is altruism?

According to Batson (2002, p. 485) altruism refers to a specific form of motivation for one organism, usually human, benefiting another. If one's ultimate goal in benefiting another is to increase one own's welfare then the motivation is egoistic, but if the ultimate goal in benefiting another is to increase someone else's welfare then the motivation is altruistic. Batson uses the term altruistic for this specific form of motivation. Batson recognizes that some biologists and psychologists use the term altruistic behaviour meaning simply behaviour that benefits another, but he does not recommend this use. Instead Batson (2014, pp. 1-3) puts forward the empathy-altruism hypothesis that empathic concern produces altruistic motivation (the empathy altruism hypothesis), where empathy emotion is in response to another's suffering, and altruistic motivation has the ultimate goal of increasing the welfare of another person. According to Marsh (2016, p. 59) altruism is a behaviour that improves the welfare of another individual at the expense of the altruist, and stresses that this definition captures a wide variety of human and non-human behaviours, from a heroic rescuer saving a drowning child to a mother rat who sacrifices her own caloric resources to nurse her young. De Waal (2008, p. 281) mentions directed altruism, which is helping or comforting behaviour directed to an individual in need, pain or distress.

In the field of Economics, Andreoni (1989, pp. 1448-1449) developed a model for giving that he called impure altruism as it includes a *warm glow*, i.e., "the joy of giving", a personal satisfaction or some kind of utility that comes from the act of giving. Since these motivations are selfish, Andreoni calls this model impure altruism.

So, what is altruism? Is altruism related to motivation, behaviour or both? What I want to propose here is that we should assume that altruism is about both motivation and behaviour and we therefore should differentiate between the two, using different related terms. When we are talking about *altruistic motivation*, we must keep in mind two basic types of altruism: pure and impure. *Pure altruism* is (incorporating Batson's definition), when the ultimate goal in benefiting another is to increase the other's welfare, and *impure altruism* is (incorporating Andreoni's definition) when the motivation to benefit another is solely to increase your own wellbeing, or includes on some level, increasing your own welfare. Batson doesn't recognize the motivation of benefiting others to increase your own welfare, as being altruist, but as we are still aiming to benefit others, even though for selfish reasons, I suggest that we consider that

this is still altruism, impure altruism to be exact, differentiating from its more genuine form, which is pure altruism.

In relation to *altruistic behavior*, I suggest that we should distinguish two forms of altruism. The first is altruism as helping behaviour (behaviour that benefits others) and improves the wellbeing of others, which I would call “soft altruism”, and the second is “robust altruism”, meaning improving the welfare of another individual at the expense of the altruists’, either reducing their fitness or significantly reducing their own welfare.

We would then have:

Altruistic Behaviour

- a) Soft altruism: Improving the welfare of another individual, particularly when the individual is in need; Helping behaviour (behaviour that benefits others).
- b) Robust altruism: Improving the welfare of another individual at the expense of the altruist, meaning reducing the fitness of the altruist or significantly reducing his own welfare.

Altruistic motivation

- a) Pure altruism: the motivation to benefit another is exclusively to increase the other’s welfare
- b) Impure altruism: the motivation to benefit another is solely to increase your own wellbeing, or includes on some level, increasing your own welfare.

It is possible to combine these two kinds of altruistic behaviours with the two kinds of altruistic motivation. We could for instance practice a soft altruist act (for example donating to charities a nominal amount of money that would not impact on our own welfare) improving the welfare of someone in need out of selfish motivations, to gain some kind of psychological reward, the so called *warm glow* that Andreoni describes or solely out of pure altruistic motivations, in order to increase another’s welfare. The same with robust altruism, we could donate one of our kidneys to a stranger (diminishing our possibilities of survival as there is always the possibility that in the future we could end up in need of the donated kidney) out of pure altruistic motivations, aiming to improve the welfare of the person to whom we made the donation, or out of selfish motivations such as to gain some kind of self-satisfaction, as we can see below:

<i>Altruistic Behaviour (AB)</i> X Altruistic Motivations (AM)	Pure altruism The motivation to benefit another is exclusively to increase the other's welfare	Impure altruism The motivation to benefit another is solely to increase your own wellbeing, or includes on some level, increasing your own welfare
Soft altruism Improving the welfare of another individual, particularly when the individual is in need; Helping behaviour (behaviour that benefits others).	Ex: <i>donating to charities a nominal amount of money that would not impact our welfare</i> out of pure altruistic motivations, in order to increase another's welfare.	Ex: <i>donating to charities a nominal amount of money that would not impact our welfare</i> to gain some kind of psychological reward,
<i>Robust altruism</i> Improving the welfare of another individual at the expense of the altruist, meaning reducing the fitness of the altruist or significantly reducing his own welfare.	Ex: <i>donating one of our kidneys to a stranger</i> out of pure altruistic motivations, aiming to improve the welfare of the person to whom we made the donation,	Ex: <i>donating one of our kidneys to a stranger</i> out of selfish motivations, to gain some kind of self-satisfaction

Whatever the motivations for either robust or soft altruism are (pure or impure altruistic motivations), the important thing is to recognize that both, soft and robust altruism, are altruistic behaviours, and if more of us practiced this the world would be a better place. My point here is that, in practical terms, what is important is that people practice more and more altruistic acts (soft or robust) regardless of the motivation, even though from the ethical and philosophical point of view the discussion about the motivations of the actions, if they are pure or impure, is one of the most important ever, since what is at stake here is the comprehension of human nature and if we are able or not to overcome selfishness.

How altruism works

If altruism is understood as a helping behaviour, it seems that it is not unique to humans and certainly can be observed in other mammals. De Waal

and Preston (2017, p. 499) remind us that there is an increasing amount of evidence indicating that even rodents are affected by other rodents' pain and offer help, for instance when rats learn how to free a trapped conspecific by learning to open a small door (Rice; Gainer, 1962, p. 23). Also, consolation defined as comforting body contact aimed at distressed others, was observed in the great apes and in some macaque species, canines, elephants, rodents (De Waal; Preston, 2017, p. 500). De Waal thesis is that empathy evolved in animals as the main proximate mechanism for directed altruism, where directed altruism is understood as helping or comforting behaviour directed at an individual in need, pain, or distress (De Waal, 2008, p. 282).

De Waal (2008) and De Waal and Preston (2017) seem to reach a conclusion very similar to Batson (2014) who proposed the empathy–altruism hypothesis. The empathy–altruism hypothesis claims that empathic concern (another-oriented emotional response elicited by and congruent with the perceived welfare of someone in need) produces altruistic motivation (a motivational state with the ultimate goal of reducing that need). The difference here is that for Batson the ultimate goal of the altruistic motivation caused by empathic concern is always, necessarily, to reduce someone else's needs, while for De Waal the reduction of someone's need is closely connected with reduction of one own's stress. For De Waal and Preston (2017, p. 502) empathy may promote aid-giving behaviour between conspecifics, as altruistic and consoling responses seem to arise from the transfer of emotion from the target to the observer, which in turn motivates the observer to approach and console the target, thus reducing the negative state of both parties. Leaving aside the question of what is the ultimate motivation of the act (yourself or someone else) what is important here is that empathy, understood as empathic concern, seems to be the underlining factor at least in this particular mechanism that leads to altruism: altruism in response to the perception of someone in need.

But what system is this and where does it come from? According to Marsh (2016, p. 62) altruistic care in response to the distress of a vulnerable individual is thought to emerge from systems that evolved to support parental care in what she calls care-based altruism. Preston (2013, p. 1307) calls this kind of altruism, altruism responding. Altruistic responding is most salient in cases of heroic responding but can be observed any time one perceives another's distress or need, which in turn motivates one to act in the moment, at a current cost to oneself. This form of aid, he notes, is observable across mammalian species, and appears to have early roots in the instincts and neural system that evolved to care for helpless new-born offspring. Preston (2013, p. 1329) suggests that 8 general areas of the brain probably are involved in this mechanism, i.e.,

ACC (anterior cingulate cortex), DLPFC (dorsolateral prefrontal cortex) HPP (hippocampus), MeA (medial amygdala), MPOA (medial preoptic area of the hypothalamus), NaCC (nucleus accumbens), OFC (orbital frontal cortex) and sgACC (subgenual region of the anterior cingulate cortex).

Marsh (2016, p. 64) notices Oxytocin has a preeminent role in the caring system with many studies across species showing that when oxytocin receptors are chemically blocked, maternal behaviour declines, and when oxytocin is intranasally administered it can increase parental and alloparental care in many species Ricckembacker *et al.* (2017, p. 10) provide evidence that rat dams modulate their defenses by the presence of offspring. When exposed to the inescapable threat alone, rat dams freeze robustly, but no freezing is observed when the pups are present. Instead, rat dams with young pups, unable to move from the nest, display defensive responses geared towards the threat actively protecting the pups. Their studies also show that oxytocin in the central amygdala underlies the suppression of maternal freezing required for active defense of pups. They found that rat dams injected with the oxytocin antagonist, OTA, in the CeL failed to suppress freezing, displaying robust levels of this behavior despite the presence of their pups. Also, the role of the amygdala in this process seems to be extensive. A study by Chang *et al.* (2015, p. 16013) on primates (rhesus macaques) shows that infusion of OT into BLA increases both the frequency of prosocial decisions and attention paid to the recipients of prosocial decisions. Pfaff and Sherman (2015, part one chapt. 3) propose that in the neural circuitry between the amygdala and the prefrontal cortex there is an “emotional switch” that exerts a judgment of good or bad. They theorise that high OT (peptide oxytocin) activity working through OTR (specialised receptor) in the amygdala and prefrontal cortex would enforce a switch position that yields prosocial behaviour. They studied how exactly oxytocin produces the effects that promote social behaviour and highlighted the evidences, which points to the amygdala.

In a breakthrough article Marsh *et al.* (2014, p. 3) reinforce the role of amygdala in connection to altruism in humans. She carried out research on what she calls extraordinary altruists, a group of people who donated one of their kidneys to strangers, and her findings support the hypothesis that extraordinary altruists may represent the antithesis of highly psychopathic individuals, in whom reduced amygdala responsiveness to, and impaired recognition of others fearful facial expressions, has previously been observed as well as reduced amygdala volume. In this study of extraordinary altruists, contrarily to what is commonly seen in psychopaths, it was found that extraordinary altruists present

enhanced volume in the right amygdala and enhanced responsiveness of the amygdala to fearful facial expressions.

But it seems to me that the most important result of this study is that the data reveals support for the possibility of a continuum of caring formed at the low end of the scale by highly psychopathic individuals and at the high end by highly altruistic individuals. These findings suggest that highly altruistic individuals may represent the inverse of psychopathic individuals, i.e., individuals with reduced empathy and concern for others, even though it is unrelated to the patterns observed in other antisocial populations that are not associated to psychopathy.

I suggested then (Nahra, 2018, p. 651) that we should take seriously this proposal for the continuum of caring among human beings and discuss it further. I proposed that if extraordinary altruists and psychopaths represent respectively the bottom and the top of this continuum, we could then put forward the hypothesis that the continuum also includes, in the middle of the scale, all kinds of selfishness and selfless behaviour, varying from those who think they should always put themselves before everyone else in any circumstance, to those who think that fairness requires that we act in an altruistic way, but sometimes fail to do so when they have the opportunity. At the same time, the scale of altruism would vary, roughly speaking, from the impure altruist at the bottom, who benefits others in order to obtain some kind of benefit for themselves, moving to the robust altruist, the ones who benefit the other even to a cost to themselves, and finally to the top, the extraordinary altruists, who would perform the most selfless acts. Along this spectrum of caring it might be possible to classify and find patterns of behaviour as well as patterns of neural activity and genetic resemblances.

Furthermore Sonne and Gash (2018, p. 3) proposed in relation to the selfish/selfless spectrum that the spectrum be initially plotted as an inverted U-shaped curve with the x-axis representing the range from extreme selfishness to extreme selflessness and the y-axis representing the percent population at each point hypothesising that the landscape and peak of the curve shifts for given populations based on social and cultural factors (neuronal-based heredity) and genetic makeup.

There is still a lot of research to be done in order to verify if really there is a continuum of caring in human beings and how it works in relation to human populations, but the results we have up to now are very promising. If a continuum of caring really exists, the obvious question is what can be done in order to move people in the direction of altruism? Wouldn't it be necessary to use moral enhancement in its classic form, through education, alongside with biotechnological moral enhancement?

Altruism and moral principles

Although altruism and morality cannot be synonymous, altruism is certainly one of the main components of morality. Morality requires “the point of view of the universe”, meaning that if people want to be moral, they have to go beyond their personal interests, and this is exactly what altruism is about. Savulescu (2012a, p. 108; 2018, p. 192) even suggest that there are two core moral dispositions, one is altruism and the other one is a sense of justice.

However, we know that sometimes people commit bad acts out of altruism, when for example someone acts in a patronising way, trying to impose their own views of good on others. One problem is that altruism seems to present the in group-bias and this is reinforced by the fact that people tend to donate to those close to them, except in times of natural catastrophes, when the number of donations for helping victims clearly increases, regardless of the proximity of the donators to the victims. There is also the bias towards the near future (Savulescu, 2012a, p. 109), which diminishes our capacity to take future generations in consideration in our actions.

But even if it is true that some bad consequences can happen out of altruism and if indeed it is true that there is some bias related to altruism, particularly when we look at large populations and to how the majority of people act, also it is true that on a personal level some people overcome this, as for example, the extraordinary altruists in Marsh’s study who donated a kidney to strangers. Overcoming the bias to the near future also can be seen by the number of people who do care about the future generations and who are willing to sacrifice their personal short-term interests in order to preserve the interests of future generations.

If this is so, then, despite the possible distortions and bias, altruism can be put on the right track for some people who do the right thing, and if it can be done on a personal level, it can be done on a much bigger scale, with these behaviours and attitudes being spread across the world.

Regarding altruistic actions, moral enhancement in its classic form has an important role in order to spread this behaviour. If, for example, we consider soft altruism, i.e. altruism as behaviour that benefits others and improves the wellbeing of others, soft altruism is **a demand of the three main moral principles**, i.e. the **utilitarianist greatest happiness principle** (the greatest happiness of the greatest number), the **kantian categorical imperative** (acts according only to that maxim whereby you can, at the same time, will that it should become a universal law) and the universal **golden rule** (do unto others as you would have them do to you).

But why is soft altruism a demand of these three principles? Beginning with the greatest happiness principle, which requires us to maximise happiness and minimise suffering in the world. What soft altruism demands of us is to improve the welfare of others, diminishing their suffering. When we do this, however, we are satisfying part of the requirements of the utilitarian principle since we are contributing to other's happiness and for the minimisation of their suffering.

A possible objection to this view is the one that considers that exactly because utilitarianism requires the maximization of happiness the requirements of utilitarianism in relation to altruism would be much higher than the other principles. In the case of donating for charities an utilitarian would be required to always donate to the most efficient charities, for the most pressing and important causes and for those who need more, whoever they are and wherever they are, while the categorical imperative and the golden rule wouldn't have this requirement. Even if it is true that utilitarianism sets the parameters for helping higher than the other principles, utilitarianism certainly asserts the necessity of helping behavior, as much as the other principles.

If you move on to look at the categorical imperative, benevolent acts are one of the requirements of this principle, as Kant states in the GMS. The beneficence duty is for Kant (GMS AA 04: 424) an imperfect duty, as it doesn't determine how much help has to be given to others nor who are the people that we must help, leaving room for discretionary decisions, but the obligation to help is there. Benefiting others is what people do when they practice soft altruistic acts and it is one of the requirements of the Categorical Imperative. This is an action that can be universalised, whilst choosing to refrain to help others and lead a life of abstaining to help others (even if you do not cause harm to anyone) is something that, according to Kant, we "cannot will", since it is irrational.

A possible objection here is that the Categorical Imperative is just a rational principle and it has nothing to do with empathy or any other emotion that may motivate people to act altruistically. But even if it is not clear if the categorical imperative can motivate our actions, as Kant himself admits when he says that it is impossible to proof of any action that it was done "for the sake of duty", i.e., motivated only by the categorical imperative, it is clear that actions can be done in "conformity with duty", i.e., there are actions that can be universalized and these are the actions that are morally admissible, contrarily to those actions that cannot be universalized and so, are morally wrong. The categorical imperative then is an important criterion to distinguish which actions should and which actions should not be practiced, morally speaking. In this sense, the categorical

imperative is one of the most important criteria to judge actions, and precisely actions (not motivations) are what is fundamental about soft altruism. What soft altruism demands of us is helping behaviour, and when we help others, we are satisfying an important requirement of the categorical imperative.

Finally, the golden rule in the negative form (do not do unto others what you would not like them to do to you) recommends that we abstain to cause harm to others, which is compatible with altruism, but it is not yet altruism. In the positive form however (do unto others as you would have them do unto you), the golden rule recommends soft altruism. Imagine, for example, someone who is passing by in front of a house that is on fire and hears someone inside screaming for help. If the person is in a condition to help, and if they abide by the golden rule they will help (as they will do in this instance the same as they would want the passer by doing for them if they were the victim inside the house).

Therefore, we can see that the three main principles of morality are not only compatible with, but also recommend soft altruism. One of the main points that the three principle have in common is precisely the requirement that people act taking others into consideration, being able to overcome selfishness and going beyond self-interests. The greatest happiness principle requires that when we act, we take into consideration not only our happiness but also the happiness of the greater number. The categorical imperative requires that we are able to act in a universal way, taking into consideration not only our own interests but also what is rational to do from a universal point of view. Again, this attitude requires us to go beyond self-interest sometimes, in order to be moral, and again, altruism is an important instance of this requirement. Finally, regarding the positive form of the golden rule, this clearly demands of us to act in a way that we take others into consideration, leaving our own interests aside for a moment, putting ourselves in the position of the others and taking into consideration not only our own interests and desires, but the desires and interests of others. All these three principles of morality have in common the requirement that we have to go beyond ourselves in order to benefit others, and this is exactly what soft altruists do, they benefit others as if they were in the others shoes. In this sense, altruism embraces this attitude that is common and essential to all moral principles and all of them require it.

Soft altruism is a demand of the three principles; it is a kind of an ethical minimum that coincides among all of them. The three principles can set different parameters of how much we should help, but they all coincide establishing that we should help those in need and, being so, they all recommend soft altruism.

Altruism, moral enhancement and human nature

We need now to say a few words about human nature and the motivations of our altruistic acts. Is pure altruism possible or does only impure altruism exist? Can humankind overcome selfishness? If pure altruism does not exist then what even the most robust altruistic people have been doing up to now is just rewarding themselves, and at the moment they stop receiving any reward for acting altruistically, they will stop practising altruistic acts. We do not know actually if pure altruism exists or not. Kant seems to be right when he said that ulterior human intentions and motivations are unknowable (GMS AA 04:407)¹ and even when we do make sacrifices performing good actions we never know if the true cause of our action wasn't a secret impulse of self-love masquerading as the idea of duty.

However, two things we know for sure: a) if pure altruism doesn't exist, we are nothing but a species that up to now has managed very well to disguise our true selfish nature, and if indeed we are hard wired that way probably only biotechnological moral enhancement could change our nature. On the other hand, b) if pure altruism does exist maybe the task of pushing more and more people towards the side of altruism on the selfishness/selfless spectrum (even if the task is still a humongous one), is made more simple, but it certainly needs classic moral enhancement and still cannot dispense with biotechnological moral enhancement.

If the motivations of our actions are impure, we can still practice both, soft altruist actions and even robust altruist actions. However, for those who act out of impure motivations, if for some reason the self-reward is not there anymore, they would never again practice any altruist action. Now, if we consider that the majority of people do act out of impure motivations, this is an important result because it means that if we want to keep these people acting altruistically we have to hope that nothing changes in their personality and they continue to get some contentment in practicing altruistic acts, or otherwise they will stop acting altruistically.

1 Kant states, "It is indeed absolutely impossible by means of experience to identify with complete certainty a single case in which the maxim of an action—however much it might conform to duty—rested solely on moral grounds and on the person's thought of his duty. It sometimes happens that we make a considerable sacrifice in performing some good action, and can't find within ourselves, search as we may, anything that could have the power to motivate this except the moral ground of duty. But this shouldn't make us confident that the true determining cause of the will was actually our sense of duty rather than a secret impulse of self-love masquerading as the idea of duty. For we like to give ourselves credit for having a more high-minded motive than we actually have; and even the strictest examination can never lead us entirely behind the secret action-drivers—or, rather, behind the pretended action-driver to where the real one secretly lurks—because when moral worth is in question it is not a matter of visible actions but of their invisible inner sources".

On the other hand, if people are purely motivated, i.e., if the reason for practicing altruist acts is only benefiting someone else or improving others welfare, they will carry on practicing altruist acts regardless of any changes about what make them content or not. Therefore, although people can still carry out altruistic acts from pure or impure motivations, if we want altruistic acts to continue to be practiced by human beings over generations, a population of pure altruists is much more reliable to reach this goal than a population of impure altruists.

In my proposal, altruism is related to actions and behaviours but it is also related to motivations. In order to avoid misunderstanding and in order to understand better what altruism is and how it works, it is important to distinguish altruistic behaviour and altruistic motivations. This distinction become still more important if we want to promote altruism in the world. If the probability of people carrying on practicing altruistic acts is higher when we are purely motivated, and considering that the difference between pure altruists and impure altruists lies precisely in the motivation, then it is important to discuss ways of motivating people in a pure way. It is important that gradually people move from having selfish motivations to practice altruistic acts to the point where their motivation to benefit another person (s) become exclusively to increase the other's welfare.

This brings us to the discussion on moral enhancement. Moral enhancement is connected to motivations (Douglas, 2008, p. 229) and biotechnological moral enhancement can have a role in bringing people towards the pure altruistic side, stimulating their 'other regarding' motivations, thus contributing to increase the population of pure altruists and contributing to spreading altruistic behaviour and morality throughout the world. If altruism is a behaviour that evolved in the mammals and it is connected to systems that evolved to support parental care, it could be, in principle, fostered by biotechnological moral enhancement, since it has neurobiological and genetic bases. More importantly, if there is a selfish/selfless spectrum with the extremes represented by the psychopath on one side and extraordinary altruists on the other, it suggests that there are important individual differences to be considered in order to change in the future the shape of the inverted U curve that I previously mentioned, and these differences are probably due to neural, genetic and cultural differences among individuals. If this is the case, classic moral enhancement through effective public policies of education for solidarity and respect for others has a huge role to play in this process, but biotechnological moral enhancement will also have a place, when available.

It is important here to make some clarifications. I am not arguing in favour of a generalized and indiscriminate use of biotechnological moral enhancement, when it is available, and I certainly don't want to argue that it is our duty to genetically morally enhance an embryo. However I am with Savulescu and Person (2008) and Douglas (2008) and I don't think that cognitive enhancement and classic moral education are enough to make humankind progress morally, as Harris thought (Harris, 2011, p. 103, 104).² On the other hand, I am not with Savulescu when he says that if it were safe, moral enhancement should be compulsory (Savulescu; Person, 2008, p. 174; 2019, p. 7). I am in line here with Rakic (2014, pp. 248-249) who argues for voluntary moral enhancement, even though at the same time I admit an exception to the voluntary character of moral enhancement and I accept that in order to avoid grossly immoral acts it wouldn't be wrong to develop a futuristic God Machine, as Savulescu (2012b, pp. 409-410) thought, a God Machine that only ever intervened in human action to prevent great harm, injustice or other deeply immoral behavior from occurring, for example, murder of innocent³.

Nevertheless, I don't intend in this article to discuss in detail the pros and cons of the biotechnological moral enhancement. My point here is much more modest, I just want to suggest that if a purely motivated population, a population of pure altruists, is much more reliable than a population of impure altruists to practice altruistic acts (soft or robust) and considering that it is highly desirable that humankind practice altruistic acts now and throughout the future, then biotechnological moral enhancement could have a role promoting altruism. Biotechnological moral enhancement, as I understand it, fosters autonomy as it is meant to be used primarily by people who want to behave in more pro social ways, but cannot. The degree of this incapacity for presenting a more pro-social behaviour could vary from a mere psychological or social difficulty to act in a selfless way, to more severe forms, i.e., psychiatric or other severe mental conditions that make them prone to anti-social behaviour, psychopathy being the most extreme of these conditions, but not the only one, since other

2 There is an ongoing debate on this subject among John Harris, Julian Savulescu and Tom Douglas since 2008 when Douglas and Savulescu proposed the idea of Moral enhancement (Douglas, 2008, 2013, 2014; Savulescu and Person, 2008, 2012a, 2012b, 2016; Harris, 2011, 2013).

3 According to Savulescu and Persson The God machine was designed to give human beings near complete freedom. It only ever intervened in human action to prevent great harm, injustice or other deeply immoral behavior from occurring, for example, murder of innocent people no longer occurred. As soon as a person formed the intention to murder, and it became inevitable that this person would act to kill, the God Machine would intervene and the would-be murderer would change his mind. The God Machine would not intervene in trivial immoral acts like minor instances of lying and cheating. It was only when a threshold insult to some sentient being's interest was crossed would the God Machine exercise its almighty power.

forms of mental conditions such as antisocial personality disorder, narcissistic personality disorder and borderline personality can also be the cause of this impairment. If there are people who are genuinely willing to behave in more pro social ways but they feel they can't, these are the people that biotechnological moral enhancement could help, and for these people this would be a very liberating thing to do, because then they would be free to act in accordance with their inner own selves, without the limitations set by conditions that now are beyond their control.

To conclude I will refer back to the fable of the Scorpio and the Frog that I used as the epigraph of this article. When the day arrives where people will no longer be able to blame their own nature for their wrong doings and argue that invincible forces made them do the wrong things that they actually didn't want to do, as the Scorpio of the fable did and many human beings also do, this will be the day that authenticity and freedom will finally meet humankind. In order to achieve this, moral enhancement in its classical form is necessary and at the same time, we cannot dispense with biotechnological moral enhancement, when it is available.

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