

The Art of Misunderstanding Moral Bioenhancement

Two Cases

INGMAR PERSSON and JULIAN SAVULESCU

Abstract: In our book *Unfit for the Future* and a number of papers, we have argued that there is a dangerous mismatch between, on the one hand, the tremendous power of scientific technology, which has created societies with millions of citizens, and, on the other hand, our moral capacities, which have been shaped by evolution for life in small, close-knit societies with primitive technology. To overcome this mismatch before it results in the downfall of human civilization, human beings stand in acute need of moral enhancement, not only by traditional means but also by biomedical means, should this turn out to be possible. After summarizing this argument, we respond to two critics, Michael Hauskeller and Robert Sparrow.

Keywords: enhancement; moral enhancement; moral bioenhancement; Michael Hauskeller; Robert Sparrow; freedom; autonomy; John Harris; agency; God Machine

In our book *Unfit for the Future*¹ and a number of papers,^{2,3} we have developed an argument about moral enhancement by biomedical means—moral bioenhancement—that has received a good deal of critical attention. We have responded to some of this criticism elsewhere^{4,5,6,7} and shall respond to two further critics in the second section, after having presented a summary of our argument.

Summary of Our Argument in Favor of Moral Enhancement

The gist of our argument is that there is a mismatch between the enormous powers of action that human beings have developed, thanks to scientific technology, and their moral psychology, which has been adapted to life in small, close-knit societies with primitive technology, in which human beings have lived for the most part of their history. Although humans now have the power to affect life all over the globe, they are morally myopic, disposed to care more about what happens in the near future to themselves and some individuals who are near and dear to them. They are in need of moral enhancement to bring their moral attitudes more in line with their powers of action. Spelled out in a bit more detail, our argument could be presented as consisting of four main claims:

- 1) *It is easier to harm us than to benefit us.* To illustrate, whenever you drive, you could easily kill a number of people, for example, by ploughing into a crowd. But you have rarely, if ever, had the opportunity to save the lives of an equal number of people, because this requires, first, that these lives are threatened and, second, that you are in a position to eliminate that threat. However, it is not just that the *magnitude* of the harm that we can cause can be greater than the magnitude of the benefits that we can provide; it is also the case that there are normally many more *ways* or *means* of causing harm of a given

magnitude than there are ways of benefiting to the same degree. This is because there are more ways of disturbing a well-functioning system, like a biological organism or an ecosystem, than of improving it to the same extent.

- 2) *Due to the progress of scientific technology, we are now in a position to cause ultimate harm, that is, to make worthwhile life on this planet forever impossible.* We review two means of causing ultimate harm: nuclear and biological weapons of mass destruction and environmental destruction and climate change. To fabricate a nuclear bomb is comparatively difficult, though it might in the imminent future be within the capacity of a well-organized terrorist group. Biological weapons of mass destruction are far easier to fabricate—indeed, a single individual could do so. The exponential growth of scientific knowledge is likely to put in the hands of an increasing number of people such weapons of mass destruction, and if an increasing number of us acquire the capacity to destroy an increasing number of us, a small number of us who are malevolent or deranged enough to use this power will suffice to put all of us at a significantly greater risk of death and grave injury.
- 3) *Because our moral dispositions are designed for life in small communities with limited technology, there is considerable risk that we shall cause ultimate harm.* We survey several aspects of our moral psychology that are better suited for life in small, close-knit communities with limited technology—in which human beings have spent most of their 150,000-year-long history—than for life in huge, modern societies with powerful technology: (1) a bias toward the near future, according to which we heavily discount the importance of events in the more remote future; (2) an altruism that is restricted to kin and a small circle of personal acquaintances; (3) an incapacity to sympathize with larger numbers of people; (4) an act-omission doctrine, according to which it is harder to justify causing harm than letting harm occur, which functions as a bar against the greater easiness of causing harm; and (5) a conception of responsibility as causally based, according to which we are responsible for an effect in proportion to our causal contribution to it, so that our responsibility is proportionally diluted when we cause things together with other agents. These dispositions explain why, untroubled, we go on collectively acting in ways that cause harmful climate change to people in the distant future and fail to alleviate suffering in developing countries.
- 4) *We need moral enhancement, if possible, by biomedical means, alongside the traditional means of moral education, to minimize the risk of us causing ultimate harm with the advanced technology we need to give a huge human population good lives on this planet.* We do not deny that human beings have developed morally in the course of their history, by means of traditional moral education. However, this development has been very modest in comparison to the growth of our powers of action as the result of scientific progress, and much more moral development must occur quickly to reduce the risk that we shall cause ultimate harm through our enormous powers of action. So we regard it as imperative to explore biological and medical means of moral enhancement, as a supplement to intensified moral education of a traditional sort. In principle, such biomedical means of enhancement could be effective, because moral dispositions like altruism have a biological basis. Research in this area, however, is still in its infancy, so it is too early to judge its prospects. Moreover,

even if effective means of moral bioenhancement are discovered, there is the problem that these means must be administered by human beings who are morally imperfect and, thus, could be misapplied, as other kinds of scientific technology have been. The road ahead to moral bioenhancement is, then, full of pitfalls, but our predicament is so grave that we conclude it must be tried.

It is useful to distinguish between two types of proposal about moral bioenhancement: a *confident* one and a *cautious* one. (This is a simplification: there is in fact a whole spectrum of possible views, with varying degrees of confidence/cautiousness.) These types of proposals differ with respect to the following three issues.

- 1) A confident kind of proposal declares that there *are* effective and safe biomedical means of moral enhancement waiting to be discovered, whereas a cautious proposal merely asserts that it is *possible* that there be such means. In this regard we defend a cautious proposal, arguing that it is possible that there are effective and safe biomedical means of enhancing central moral dispositions—which we take to be altruism and a sense of justice—first, because these dispositions are biologically based and, second, because there isn't anything in the concept or nature of moral dispositions that makes them, in principle, inaccessible to biomedical modification. With respect to the second point, we have argued⁸ against John Harris, who maintains that moral behavior presupposes a sense of freedom that puts it beyond the pale of biomedical influence, and we shall say a bit more about the issue in the next section. We have, however, stressed that the science of moral bioenhancement is still in its infancy, such that it is far too early to tell whether any effective and safe biomedical means will be found if this line of research is pursued, which we believe to be desirable.
- 2) A confident kind of proposal is quite optimistic about the probability that, if discovered, effective and safe biomedical means of moral enhancement will be properly applied on a large enough scale to solve the moral megaproblems of our times—for example, anthropogenic climate change and weapons of mass destruction. By contrast, a cautious proposal warns of the risk that such means could be misused, as other pieces of scientific technology have been misused, or that there will be a lack of an interest in developing and applying them at all. The cautious proposal we have put forward stresses⁹ a bootstrapping problem consisting in the fact that there is a significant risk of misuse, because it is human beings in need of moral enhancement who have to administer the techniques of moral bioenhancement.
- 3) A confident proposal about moral bioenhancement claims that *more or less by itself* it will enable us to cope with the great moral problems facing humanity. A cautious proposal concedes the need to fit in “a programme of more extensive moral bioenhancement . . . with more thoroughgoing traditional moral education and with various possible reforms of laws and other social institutions,” as we put it.¹⁰ Admittedly, we don't attempt to work out this fitting in, but that is because we think that research into biomedical means of moral enhancement still hasn't advanced far enough to enable us to envisage what such a program might look like in detail.

Misunderstandings of the Argument

Misunderstanding the Object of Moral Bioenhancement

As we write in *Unfit for the Future*, “the core moral dispositions, which are the foremost objects of moral enhancement, are altruism and a sense of justice.”¹¹ We say the same in the paper¹² that Robert Sparrow¹³ especially targets. Nevertheless, Sparrow claims that our “discussion proceeds as though altering *behaviour* . . . is moral enhancement.”¹⁴ Perhaps the cause of Sparrow’s error is that, in the paper he targets, we imagine the existence of a “God machine” that prevents people from perpetrating grossly immoral or criminal acts (more about this thought experiment later). However, we write explicitly that “the God Machine is not itself moral enhancement.”¹⁵

Taking into account that we speak of motivation and feelings when we are concerned with moral enhancement, Sparrow complains that “even altering feelings as well as behaviour seems to fall significantly short of making people better persons.”¹⁶ But, as remarked, we do not take the object of moral enhancement to be any old feeling; rather, it consists of the specific feelings of altruism and a sense of justice. Moreover, we recognize, as Sparrow himself points out,¹⁷ that boosting altruism by itself does not suffice to make people inclined to act more morally, because it may make people favor those close to them. A heightened sense of justice is needed to rectify this sort of favoritism.

Because Sparrow, after all, realizes that we take moral enhancement—whether by traditional moral education or by biomedical means—to comprise motivation, it is mysterious why he takes us to be denying that “acting *for the right reasons* implies that our motives for acting are tracking the reason that we have to act.”¹⁸ For instance, it is—possibly enhanced—altruism that could make us act for the reason that someone is in need of help. Someone who is more altruistic is precisely more likely to be motivated by such considerations about the weal or woe of others. So Sparrow’s objection on this score strikes us as puzzling.

Sparrow adds that, in order to act for the right reasons, we need “to have the appropriate beliefs about what moral action would consist in.”¹⁹ We agree, but we insist that having correct beliefs about what morality requires does not *suffice* to make us act accordingly. Another necessary condition is being appropriately motivated. However, simply being more altruistically or benevolently motivated is not enough to make us altruistic or benevolent toward people of other races or the other sex. In addition, we need to realize that race and sex are improper grounds for moral discrimination. That is why we think that moral education is also necessary for moral enhancement. But being morally enlightened is not enough to cause us to *act* morally, for example, to *treat* people of another race or sex decently.

Misunderstanding the Method of Moral Bioenhancement

Sparrow claims that “there is a significant *disanalogy* between moral education and the biological manipulation of behaviour and motivation.”²⁰ Whereas “education acknowledges a fundamental moral equality between educator and educated,”²¹ biomedical interventions “are fundamentally structured by a profound inequality.”²² The former claim should astonish anyone who has had any experience of the education of small children, but Sparrow assures us that his claim does not have to do

with anything as mundane as *empirical facts*. He is making a claim about “the *fundamental logic* of each type of intervention rather than a claim about the extent to which each type is effective or is capable of being resisted by those subject to them.”²³ We are happy to leave Sparrow to his enchantment with the “fundamental” and “profound.” For those of us who are content with the empirical knowledge of common sense and science, it is surely evident that when small children are taught language, religion, basic moral rules, or whatever, this education is just as effective, irresistible, and irrevocable as biomedical intervention is likely to be. Sparrow seems to be sporting a prejudice about the difference between education and biomedical intervention that is irrefutable by observation or argument.

Another criticism of Sparrow’s against the methods of moral bioenhancement is the following: “There is, inevitably, a certain amount of elitism implicated in the very idea of moral enhancement . . . the project of moral bioenhancement implies that those people directing it know what being more moral consists in . . . any state that embarked upon moral bioenhancement would thereby be committed to moral perfectionism.”²⁴ However, we do not see why there has to be more “elitism” or “moral perfectionism” in moral enhancement by biomedical techniques than in enhancement by traditional moral education. There is a widespread agreement that people who are more altruistic are in general more moral. Therefore, moral bioenhancement could uncontroversially consist in making those of us who are less altruistic more altruistic. A society could not function unless there was widespread agreement about moral norms to the effect that other citizens must not be killed, raped, or robbed of their property; that they should be helped when in need; that their good deeds should be reciprocated; and so on.

Like Sparrow, Michael Hauskeller seems to assume that effective moral bioenhancement requires knowing what is the morally right thing to do in every situation. So he objects that “it seems that there is hardly any action that is *always* wrong, or *always* right, independent of the context and the individual circumstances in which every concrete action is embedded.”²⁵ However, because we take moral bioenhancement to consist in enhancing the motivation to act on reasons, it is enough that we can identify considerations that are always moral reasons. And we *can* do this: for instance, the fact that an action is causing someone else considerable pain is *always* a moral reason (of beneficence or nonmaleficence) against doing it, or the fact that someone has done you a favor is *always* a moral reason (of justice) to return the favor. Certainly, in particular situations, these reasons can be outweighed by other reasons, so ensuring that people are more motivated by them—and thus more motivated by altruism and a sense of justice—is not to ensure that they act in any specific way in the particular situations. Thus, moral bioenhancement is possible without taking a stand on what is the morally right thing to do in philosophically controversial cases, such as whether it is right to push a fat man off a footbridge to prevent a runaway trolley from killing five people—to reply to another question Hauskeller raises.²⁶

Hauskeller claims that “perhaps it makes as little sense to try to make people more moral as it would make sense to make people more ‘emotional.’”²⁷ But once you have identified certain emotions or motivational dispositions as morally central—as we have done with altruism and a sense of justice—it *does* make sense to speak of making these emotions or dispositions stronger and, thus, more likely to determine behavior. Moreover, although in some situations we do not know *exactly* what morality requires of us, we know that it requires *more* than what most

of us do, for example, that it requires to give more aid to the needy in developing countries than most of us actually do. Strengthening these dispositions would contribute to this end.

In his eagerness to refute us, Hauskeller flirts with a moral relativism (though he also confesses to being a Kantian!²⁸): “We need to acknowledge the fact that there are different moral frameworks, so that what appears to be right, good or desirable in one framework may appear wrong, bad or undesirable in another.”²⁹ Although the diversity of moral views in contemporary liberal democracies is probably greater than it has been ever before in human history, as we have already pointed out, there are certain motivational dispositions that are essential for the stability and viability of any human society. This is reflected in the moral norms of leading religions, like the Golden Rule of Christianity, which has equivalents in other world religions. We rely on this moral core when we give our children moral education, and we suggest it could be relied on for the purposes of moral bioenhancement. To argue that such moral enhancement is impossible because in *some* situations we can’t tell what is right is like arguing that we can’t teach children to discriminate between blue and green because in some instances we can’t tell whether the shade in question is one or the other—though in a host of other instances this is perfectly clear.

There is an associated type of misunderstanding that rather concerns the relation between moral bioenhancement and freedom. Hauskeller worries that subjecting us to moral bioenhancement “would deprive us of our humanity and turn us into mere puppets hanging from strings that are being moved by” the bioenhancers.³⁰ This worry apparently stems from his erroneous assumption that moral bioenhancement must determine us to perform particular actions, the morally right actions. Consequently, moral bioenhancement would rule out moral deliberation and decision on our part. As we have tried to explain, however, moral bioenhancement conceived as amplifying the motivational power of certain moral reasons doesn’t bypass the agents’ deliberation and decision on the basis of these reasons.

However, although we hold moral bioenhancement to be compatible with freedom in a reasonable sense, we wish to add that we reject Hauskeller’s suggestion of a “*necessary* fiction” about our freedom or autonomy “without which we could no longer regard ourselves as moral agents” but “would be turned into mere means to serve the end of morality, and would cease being an end in ourselves.”³¹ In our view, this is not only an *unnecessary* fiction; it seems downright self-contradictory, because we cannot possibly be mere means to morality when—by his own admission—it requires us to be ends in ourselves. Similarly, we find implausibly exaggerated his “situationism” to the effect that “very often” we can’t know what is the right thing to do in a situation “before the situation arises and we actually find *ourselves* in that situation.”³²

We also find utterly implausible Hauskeller’s sympathy for Harris’s idea that “the freedom to do evil (or wrong) is *in itself* valuable”³³ (see our article “Getting Moral Enhancement Right”³⁴ for our reply to Harris). The idea that, for instance, our freedom to bring about ultimate harm is in itself valuable strikes us as too absurd to need rebuttal.

This brings us to the God machine, an imaginary device that monitors the minds of people and intervenes only when they decide to do something gravely immoral and criminal. It then prevents them from acting on such decisions, but not on any

other decisions. Following Philip Pettit's idea of "freedom as non-domination," Sparrow argues that the mere possibility of interference is enough to remove freedom.³⁵ Consequently, morally decent people would not be free when they make and implement innocent decisions if the God machine has the *power* to intervene even in such cases, though it would definitely not use it.

This idea strikes us as totally implausible. Suppose the police force of a state were so effective that it was capable of catching every criminal in the act. Would such effective intervention be something morally decent citizens should fear because it makes them unfree to perform the many noncriminal actions that they in fact perform? Surely not—they should unequivocally welcome such efficiency because it makes their lives safer. The general point is this: freedom is a matter of degree. In contrast to an almighty agent who can and is free to do anything logically possible, there are many things that we cannot do at all, or that we can do only on pain of being penalized. The God machine would be a restriction on our agency and freedom, but it obviously would not restrict them to zero. For instance, it would not restrict them as much as general paralysis would. Moreover, although the God machine would restrict agency and freedom, it would do so to a lesser extent than does the current penitentiary system, with such measures as imprisonment.

Another confusion in this area is Hauskeller's claim that "objectively, accidental harm is not less blameworthy, nor more blameworthy, than the intention to harm."³⁶ Whatever "objectively" means, accidental harm is simply *not* blameworthy—as long as no negligence or recklessness is involved—though it is still important to prevent it whenever one can. Having an intention to harm is blameworthy—that is why the God machine, which merely blocks the implementation of intention, doesn't constitute moral enhancement; it merely prevents actual harm.

Misunderstanding the Need for Moral Enhancement

Sparrow claims further that "many of the 'threats' that exercise us either have not existed, or have been adequately dealt with, within particular societies for extended historical periods without any resort to biomedical manipulations of human psychology."³⁷ Among these "threats"—why the scare quotes, and how much does it take for something to be a threat, according to Sparrow?—he lists those we have discussed in particular, namely anthropogenic climate change and weapons of mass destruction. Undeniably, these threats *do* exist, but have they been adequately dealt with? Nuclear weapons have existed for some 70 years, and, granted, so far they have not been used in war, but gradually the number of nations in possession of them has increased. It is quite possible that this expansion will continue and that some well-organized terrorist group will acquire such weapons. This will certainly increase the risk that they might be put to use, so we definitely believe that it is far too early to claim that this threat has been "adequately dealt with."

Anthropogenic climate change *on a global scale* is a newer threat. So far, international efforts to alleviate it have been manifestly unsuccessful. More local instances of climate change and environmental overexploitation have occurred throughout human history, but in many cases they have *not* been "adequately dealt with." In his book *Collapse*,³⁸ Jared Diamond gives a long list of societies that went down because they failed to come to grips with such problems. Moreover, he provides us

Misunderstanding Moral Bioenhancement

with reasons to think that the global situation is more analogous to the societies that have failed to solve these problems than to those that have succeeded in so doing.³⁹

Sparrow remarks that the idea that these problems “could be solved simply by prescribing everyone a few well-chosen drugs is ludicrous.”⁴⁰ It *is* ludicrous, of course, but, then, it is not an idea that we have ever entertained, let alone affirmed—see the third point on confident versus cautious proposals in the preceding section. We 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. Such actions have not been undertaken because people today are not enough concerned about harmful effects in the remote future. Furthermore, we believe that in order to bring off the needed moral enhancement in the short time at our disposal, we are likely to need not merely traditional moral education but also means that biomedical research might put into our hands, not to mention progress in secular ethical thinking. Sparrow ends by concluding that “it is to politics rather than neuroethics that we should turn.”⁴¹ Our view is that we should turn to both, and that we need intensified moral education alongside biomedical measures to achieve moral enhancement.

Misunderstanding the Risks of Moral Bioenhancement

There is, however, something that Sparrow gets right: the existence of efficient means of moral bioenhancement brings along risks and dangers of their misuse. As the second point on confident versus cautious proposals states, we note a bootstrapping problem: a risk that the techniques of moral bioenhancement will be misused, as every other power that science has equipped us with could be, because it will have to be employed by morally imperfect human beings. Sparrow maintains that we do not “address” this problem.⁴² If he means that we do not provide any *guarantee* that these techniques will only be put to appropriate use, he is correct: no such guarantee can be given. However, we believe that the risk that human beings will cause the downfall of their civilization is so grave that we should look for all means to rectify the mismatch between our moral capacity and the vast powers of action that we possess in virtue of modern scientific technology.

Our response to the current predicament of humanity is that (1) we should try to rectify the mismatch before it is too late by morally enhancing ourselves, but that this may require moral bioenhancement, that is, that we turn the means science puts into our hands to the task of improving our own moral dispositions. Another possible response is that (2) we should try to rectify this mismatch by scrapping scientific technology. This does not seem realistic; few, if any, of the means that science has empowered us with have been left unused, and as point 4 of the summary states, we need sophisticated scientific technology to provide a future human population of perhaps 9–10 billion with a decent standard of living. Pessimism is another possible response: (3) we can’t rectify this mismatch in time; it will bring us down. This does not seem an unlikely possibility, but it is surely not one to which we should prematurely resign ourselves. The most optimistic response is that (4) we can rectify this mismatch in time, with means already at our disposal, such as traditional moral education and various political actions.

Point 4 seems to be the response Sparrow favors. Now, we have not refuted this response; it is, for instance, not clear what can be achieved by intensified moral

education of a traditional sort. Proponents of this response may hold that moral bioenhancement is not only unnecessary but even impossible. We have argued against the latter view. Sparrow's view is that the availability of effective means of moral bioenhancement would be *too dangerous*: "The most pressing danger associated with moral bioenhancement, though, is the potential for a *bogus* science to serve as the fig leaf for the pursuit of power and the interests of those already convinced of their own merit."⁴³ It should be clear that we agree that there are dangers with a technology of moral bioenhancement, but in view of the fact that Sparrow is so optimistic about our capacity to handle other sorts of scientific technology—for instance, devastating nuclear weapons—why is he so pessimistic about our capacity to handle the technology of moral bioenhancement? Or, put the other way around, why isn't he afraid that these weapons will be employed in "the pursuit of power and the interests of those already convinced of their own merit"? Surely, moral bioenhancement is not more dangerous than devastating nuclear weapons, possibly in the hands of psychopaths, ideologues, or fanatics.

Notes

1. Persson I, Savulescu J. *Unfit for the Future: The Need for Moral Enhancement*. Oxford: Oxford University Press; 2012.
2. Persson I, Savulescu J. The perils of cognitive enhancement and the urgent imperative to enhance the moral character of humanity. *Journal of Applied Philosophy* 2008;25:162–76.
3. Savulescu J, Persson I. Moral enhancement, freedom and the god machine. *The Monist* 2012; 95:399–421.
4. Persson I, Savulescu J. The turn for ultimate harm: A reply to Fenton. *Journal of Medical Ethics* 2011;37:441–4.
5. Persson I, Savulescu J. Getting moral enhancement right: The desirability of moral bioenhancement. *Bioethics* 2013;27:124–31.
6. Persson I, Savulescu J. Should moral bioenhancement be compulsory? Reply to Vojin Rakic. *Journal of Medical Ethics* 2013. doi:10.1136/medethics-2013-101423.
7. Persson I, Savulescu J. Reply to commentators on *Unfit for the Future*. *Journal of Medical Ethics* 2014. doi:10.1136/medethics-2013-101796.
8. See note 5, Persson, Savulescu 2013.
9. See note 1, Persson, Savulescu 2012, at 124.
10. See note 1, Persson, Savulescu 2012, at 11.
11. See note 1, Persson, Savulescu 2012, at 108.
12. See note 3, Savulescu, Persson 2012, at 408.
13. Sparrow R. Better living through chemistry? A reply to Savulescu and Persson on "moral enhancement." *Journal of Applied Philosophy* 2014;31:23–32.
14. See note 13, Sparrow 2014, at 24.
15. See note 3, Savulescu, Persson 2012, at 415.
16. See note 13, Sparrow 2014, at 24.
17. See note 13, Sparrow 2014, at 25.
18. See note 13, Sparrow 2014, at 25, cf. 30.
19. See note 13, Sparrow 2014, at 25.
20. See note 13, Sparrow 2014, at 26.
21. See note 13, Sparrow 2014, at 26.
22. See note 13, Sparrow 2014, at 26.
23. See note 13, Sparrow 2014, at 31–2.
24. See note 13, Sparrow 2014, at 29.
25. Hauskeller M. *Better Humans?* Durham, NC: Acumen; 2013, at 49.
26. See note 25, Hauskeller 2013, at 47–8.
27. See note 25, Hauskeller 2013, at 46.
28. See note 25, Hauskeller 2013, at 51–2.
29. See note 25, Hauskeller 2013, at 53.

Misunderstanding Moral Bioenhancement

30. See note 25, Hauskeller 2013, at 51.
31. See note 25, Hauskeller 2013, at 51–2.
32. See note 25, Hauskeller 2013, at 50.
33. See note 25, Hauskeller 2013, at 50.
34. See note 5, Persson, Savulescu 2013.
35. See note 13, Sparrow 2014, at 27.
36. See note 25, Hauskeller 2013, at 47.
37. See note 13, Sparrow 2014, at 29.
38. Diamond J. *Collapse*. London: Penguin Books; 2006.
39. See note 1, Persson, Savulescu 2012, at 100.
40. See note 13, Sparrow 2014, at 29.
41. See note 13, Sparrow 2014, at 30.
42. See note 13, Sparrow 2014, at 28.
43. See note 13, Sparrow 2014, at 30.