

Will cognitive enhancement create post-persons? The use(lessness) of induction in determining the likelihood of moral status enhancement

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Abstract: The prospect of cognitive enhancement well beyond current human capacities raises worries that the fundamental equality in moral status of human beings could be undermined. Cognitive enhancement might create beings with moral status higher than persons. Yet, there is an expressibility problem of spelling out what the higher threshold in cognitive capacity would be like. Nicholas Agar has put forward the bold claim that we can show by means of inductive reasoning that indefinite cognitive enhancement will probably mark a difference in moral status. The hope is that induction can determine the plausibility of post-personhood existence in the absence of an account of what the higher status would be like. In this paper we argue that Agar's argument fails and more generally that inductive reasoning has little bearing on assessing the likelihood of post-personhood in the absence of an account of higher status. We conclude that induction cannot bypass the expressibility problem about post-persons.

Keywords: cognitive enhancement, moral status, person, post-person, induction.

INTRODUCTION

The potential of biotechnology to intervene in how the human brain functions opens significant possibilities for improving human capacities. Modafinil enhances performance on tests of digit span, memory, or planning.¹ Administration of methylphenidate has been shown to improve problem solving abilities and memory.² Such biomedical enhancement operates within the existing range of human capacities, though it is unlikely that these drugs will have significant cognitive enhancement effects.³ Most of all, there is the prospect of extreme forms of biomedical enhancement, such as drugs that could dramatically increase intelligence and memory to super-human levels, bionic athletes and soldiers, biotechnological interventions that would extend

¹ D.C. Turner, T.W. Robbins, L. Clark, A.R. Aron, J. Dowson & B.J. Sahakian. Cognitive enhancing effects of modafinil in healthy volunteers. *Psychopharmacology (Berl)*. 2003; 165: 260-269.

² M.A. Mehta, A.M. Owen, B.J. Sahakian, N. Mavaddat, J.D. Pickard & T.W. Robbins (2000). Methylphenidate enhances working memory by modulating discrete frontal and parietal lobe regions in the human brain. *J Neurosci*. 2000; 20(6): RC65; A.M.W. Linssen, E.F.P.M. Vuurman, A. Sambeth, & W.J. Riedel. Methylphenidate produces selective enhancement of declarative memory consolidation in healthy volunteers. *Psychopharmacology (Berl)*. 2012; 221, 611-619.

³ With respect to Modafinil, the evidence is clear for enhanced executive function and memory in sleep-deprived individuals, but for well rested individuals there is a large number of null results and occasionally even cognitive impairment (M.J. Farah, M.E. Smith, I. Ilieva & R. H. Hamilton. Cognitive enhancement. *Wiley Interdisciplinary Reviews: Cognitive Science*. 2014; 5(1): 95-103). For Methylphenidate there is no significant improvements in attention or executive function. (D. Repantis, P. Schlattmann, O. Laisney & I. Heuser. Modafinil and methylphenidate for neuroenhancement in healthy individuals: a systematic review. *Pharmacol Res*. 2010; 62 (3): 187-206)

human life span indefinitely, or uploading ourselves into machines. These have been called supra-normal or radical enhancement.⁴

The focus on radical enhancement raises worries that the fundamental equality in moral status of human beings could be undermined. This thought assumes that a human being has the moral status of person in virtue of the capacity for practical rationality, which is subject to indefinite cognitive enhancement. As moral status is a comparative notion, in that two beings can count morally in their own right, but one could have a higher moral importance⁵, cognitively transformative changes might create beings with a moral status higher than persons. If moral status is a threshold concept, then all beings endowed with the minimal cognitive capacities for practical rationality, enjoy the equality of personhood moral status, but radical enhancement of practical rationality beyond a point could create beings who are more important than human beings.⁶ We would have a world in which persons are no longer at the peak of moral status. Or as Allen Buchanan puts it, we would have “a morally bifurcated world of (mere) persons and post-persons.”⁷ Would human rights lose their moral force, and consequently, would it become more permissible to sacrifice mere persons when the greater good of post-persons is at stake? The idea of post-personhood status induces anxiety, though it might turn out to be unwarranted.⁸

⁴ G. Kahane & J. Savulescu. Normal human variation: refocussing the enhancement debate. *Bioethics*. 2015; 29(2): 133-143; N. Agar. 2010. *Humanity's end: why we should reject radical enhancement*. Massachusetts: MIT Press.

⁵ See A. Buchanan. Moral status and human enhancement. *Philosophy & Public Affairs*. 2009; 37 (4): 346.

⁶ See N. Agar. Why is it possible to enhance moral status and why doing so is wrong? *J Med Ethics*. 2013; 39, 67-74; T. Douglas. Human enhancement and supra-personal moral status. *Philosophical Studies*. 2013; 162: 473-497.

⁷ Buchanan, *op. cit.* note 7, p. 347.

⁸ Even if post-personhood is achievable, it is an open question whether it is a morally bad thing. For instance, it might be the case that beings with a moral status higher than personhood will bear more responsibilities to alleviate

But in the first instance, is it plausible to believe that cognitive enhancement could create beings with higher moral status than personhood? It certainly has to create some new mental capacity, or enhance current human capacities beyond a certain threshold, as incremental improvements that simply push the upper bound do not seem to generate morally bifurcated classes of individuals. Yet, it is not clear what this new mental capacity or threshold should look like and which constitutive features are relevant for post-personhood moral status.⁹ Indeed, our inability to currently imagine post-personhood criteria does not rule out the possibility that one could exist. However, mere logical possibility is not of much help to assess the plausibility of creating beings with higher moral status. Buchanan is right to put the diagnosis that “in the absence of an account of what the higher threshold would be like, the claim that there could be beings at a higher threshold who would have a higher moral status is not convincing”¹⁰. The idea of enhanced moral status can be made conceptually *possible* and philosophical speculations can fruitfully test the limits of our understanding of basic moral concepts we rely on, such as moral equality or status, but the question remains as to whether cognitive enhancement will *likely* create post-persons.

famine than mere persons. Post-persons might actually live up to their responsibilities and solve the moral crises that mere persons have repeatedly failed to address.

⁹ There are several proposals of what could enhance moral status. Jeff McMahan suggests that enhanced beings might acquire novel means of experiencing the mental states of others that would be better for moral agency than empathy. (J. McMahan. Cognitive disability and cognitive enhancement. *Metaphilosophy*. 2009; 40: 582-605) David DeGrazia argues that superior moral dispositions could lead to status enhancement, and Tom Douglas suggests the capacity for constructive participation in some new form of social cooperation. (D. DeGrazia. Genetic enhancement, post-persons and moral status: a reply to Buchanan. *J Med Ethics*. 2012; 38: 145-147; Douglas, *op. cit.* note 8)

¹⁰ Buchanan, *op. cit.* note 7, p. 363.

Interestingly, Nicholas Agar has put forward the bold claim that we can show by means of inductive reasoning that indefinite cognitive enhancement will probably mark a difference in moral status.¹¹ He argues that available evidence of different categories of moral status confirms the hypothesis that there is some degree of cognitive improvement that creates a moral status higher than personhood. “There’s inductive support for the notion that some degree of improvement of traits relevant to status produces a moral status superior to personhood.”¹² Inductive reasoning is useful to move from observed to unobserved phenomena. From the fact that there is intelligent life on Earth we can infer the existence of intelligent life on other planets, even if we do not have access to them. The hope is that inductive reasoning can determine the plausibility of post-personhood existence in the absence of an account of what the higher status would be like.

In this paper we argue that Agar’s inductive argument fails to show that cognitive enhancement is likely to create post-persons, and, more generally, that inductive reasoning has little bearing on assessing the likelihood of post-personhood. He commits a fallacy in assuming that induction simply moves beyond the limits of human experience. As we will clarify, inductive reasoning infers from tokens of a type of phenomenon which are accessible to human experience to tokens of the same type of phenomenon which are beyond human experience. Though promising on the face of it to bypass the issue of spelling out post-personhood criteria, inductive reasoning is useful when there is significant background information or a large evidential basis. In the absence of relevant background information, such as an account of higher

¹¹ Agar, *op. cit.* note 8; N. Agar. 2014. *Truly Human Enhancement: A Philosophical Defense of Limits*. Massachusetts: MIT Press.

¹² Agar, *op. cit.* note 13, p. 179.

moral status, talk about inductive support becomes too speculative and intractable to assess its plausibility. We conclude that induction cannot bypass the issue of theoretical cluelessness about post-persons.

INDUCTIVE SUPPORT FOR POST-PERSONHOOD

Beings endowed with practical reason are considered persons. If the moral status of personhood is based on the threshold of possessing practical rationality, then there could be a point of superior cognitive capacity which marks a threshold for a moral status higher than persons. Before developing his inductive argument for post-personhood, Agar defends two claims that lay the conceptual ground for the idea of higher moral status *in the absence* of an account of what this higher status would look like.

Firstly, there is no mystery that mere persons cannot express post-personhood criteria. According to Agar, “It’s a feature of a criterion determined by a cognitive capacity that those who do not satisfy it are typically unable to properly understand it.”¹³ If the moral status criterion is cognitive in nature, then mere persons will not be able in principle to describe higher moral status, just as individuals with an intermediate status of mathematical knowledge cannot express what is it like to have an advanced status. Thus, we should ask how likely is it that sufficiently superior enhanced beings will recognize the existence of higher moral statuses, instead of whether mere persons can imagine post-personhood criteria.

Secondly, practical reasoning is a type of capacity constitutive of moral status that could always be improved. For Agar logical reasoning, abstraction, memory, or any other abilities, that

¹³ Ibid: 175.

together constitute practical reasoning, are unbounded capacities similar to mathematical skill rather than to language speaking skill. The capacity to speak English is bounded because once we know all the vocabulary items and rules of grammar, this knowledge of the English language “could not be bettered”¹⁴. By contrast, the capacity for mathematical knowledge seems to have no limit on possible improvements as there are truths beyond human understanding. If understanding mathematics is well beyond the limits of human understanding, then there is space for indefinite improvements.¹⁵

Indeed, both claims are compatible with the position that there is *no degree* of improvement of capacities constitutive of status that cognitively superior beings would recognize as creating a moral status higher than personhood. However, they open up the possibility for the hypothesis that there could be *some degree* of improvement that cognitively superior beings would recognize as creating a moral status higher than personhood.

Agar proposes a “moderately strong inductive argument” for the second hypothesis¹⁶. We just have to look at the variety of moral statuses in the range of mental powers of which we have

¹⁴ Ibid: 178.

¹⁵ Note that Agar’s example is problematic. The reason why the use of a language is not good example of a bounded capacity is that you can do a lot of things with natural language. Natural language does not have the sole purpose of transmitting information, but can be used artistically as well as to influence people. Looking at the latter it does seem that one can always improve one’s creative writing or rhetoric. Shakespeare equally masters vocabulary and English grammar with many native speakers, but Shakespeare’s capacity to use English far surpasses theirs. A better example of a bounded capacity is the capacity to play draughts. With the help of computing software, we now know every possible combination of moves and counter-moves. Thus, in principle the capacity to play draughts could not be bettered.

¹⁶ Ibid: 176-179.

direct experience. So far, he contends, there is direct experience to three categories of moral status:

Category 1: The zero moral status of rocks.

Category 2: The moral status of sentient nonpersons.

Category 3: The moral status of persons.

According to Agar, these observations about the existence of three distinct moral statuses offer inductive support “to believe in the existence of moral status category 4 that includes post-persons”¹⁷. Inanimate objects should count among observed moral statuses because moral trade-offs between objects from the category of zero moral status and objects that belong to higher categories are action guiding. We know that persons should be saved ahead of rocks. By contrast, the concept of roundness fails to have a moral status since it is confusing as to what action it recommends. Thus, Agar concludes that rocks are “properly counted as possessing a moral status rather than lacking one”¹⁸. The second category of moral status includes beings capable of feeling pleasure and pain, namely sentient nonpersons. Sentient nonpersons count in their own right, even if to a lesser extent than persons. The third category of moral status is that of persons, defined as beings who possess practical rationality. Because of their higher moral status, it would be a mistake, according to Agar, if persons would not be saved ahead of sentient nonpersons.

Agar acknowledges that his inductive argument has the limitation of a small evidential basis. Nonetheless, he claims that it is much stronger than the plausible inference that scientists make about the existence of intelligent life on other planets.¹⁹ The inductive argument for higher

¹⁷ Ibid: 180.

¹⁸ Ibid: 179.

¹⁹ Ibid: 180.

moral statuses extrapolates beyond human experience from three observed moral statuses, whereas the inductive argument about extra-terrestrial intelligence extrapolates from only one direct evidence for intelligent life, our own planet. If we find it reasonable to accept that it is unlikely that life could not have evolved elsewhere, then we have reason to accept an inductive inference with a comparatively larger evidential basis, such as the argument for higher moral status.²⁰

SORTING OUT THE EVIDENTIAL BASIS

What is striking about Agar's argument is the way in which the inductive support is construed with regards to observed moral statuses. He documents the two well-known moral statuses, that of non-human animals and of human beings. Sentient beings have interests in virtue of the capacity to feel pleasure and pain, making them morally count in their own right. We should not torture dogs or cats, nor should we kill them for trivial purposes. Human beings, on the other side, enjoy the highest moral importance. The moral status of humans requires respect for their freedom and wellbeing even if it would bear costs on others, but also priority when their interests conflict with the interests of beings who populate a lower moral status. Although these

²⁰ This inductive argument assumes the truth of moral realism, that there are moral properties to be discovered about post-persons. See P. Railton. Moral realism. *The Philosophical Review*. 1986; 95: 163-207. If we assume that moral statuses are the result of conventions, then the objection against enhancement loses its force. Moral equality is not threatened by radical enhancement because it is up to us to decide if we grant to the enhanced a post-personhood status. Indeed, wide spread radical enhancement might exert some influence on what conventions people adopt, but the choice is still ours to adopt or refuse moral statuses higher than personhood.

categories have been challenged, especially by utilitarian philosophers, they have some support from moral theorizing and pre-theoretical moral thinking.²¹ The major issue appears when Agar starts to expand the scope of moral standing beyond these categories.

We do not deny that there could be additional categories of moral status alongside sentient nonpersons and persons, but inanimate objects compose a confusing category of possessing a moral status rather than lacking one. We cannot say that inanimate objects have interests or even describe them as behaving. Agar's own description of "zero moral status" points to this. It is puzzling how a category of objects with *zero* moral status should count as possessing rather than lacking a moral status. The description of zero moral status suggests that something is lacking, which fits what we take to be true about rocks, *i.e.* that they lack morally relevant features.

Most importantly, the claim about rocks possessing a moral status is just as confusing as saying that the concept of roundness counts as possessing a moral status. When someone commands that the concept of roundness should be sacrificed ahead of persons it strikes us as completely nonsense because it violates basic semantic rules. However, even when we say that rocks should be sacrificed ahead of persons we are guilty of conceptual confusion based on taking literally a metaphorical usage. Indeed, the command that we should save persons instead of rocks is action guiding, but this is not the mark of conceptual clarity. We know what to do factually, that there are two types of objects, rocks and persons, and we can physically

²¹ See J. Sytsma & E. Machery. The two sources of moral standing. *Review of Philosophy and Psychology*. 2012; 3(3): 303-324. Even utilitarian philosophers, like Peter Singer, admit that death is a greater loss depending on the extent to which a being has meta-cognition. (P. Singer. Speciesism and Moral Status. *Metaphilosophy*. 2009; 40(3-4): 576).

manipulate both, but it is misleading from an evaluative perspective. We may say metaphorically that we have saved a rock from a building engulfed in flames because we are projecting a personification upon the inanimate object. Or we may say that we have saved some jewellery from a flaming building because of its extrinsic value which is determined by the relation to individuals who matter in themselves. In any case, rocks are not the type of entity that has interests, needs, preferences, or desires, to properly describe them as being saved or sacrificed.

The evidential basis is artificially inflated with the category of zero moral status. Therefore, we should reduce it to those observations around which there is sensible consensus, the observed moral status of sentient nonpersons and persons. However, even this evidential basis is fundamentally different from the way inductive support usually works. Inductive reasoning works from occurrences of a phenomenon which are directly accessible to human experience to occurrences of the same phenomenon which are beyond human experience. From past occurrences that the sun has risen in the morning we can infer that it is likely to rise tomorrow as well. So, the standard form of induction consists in a generalization from past cases to all future cases of the same type.

The inductive argument for extra-terrestrial intelligence has this structure. It moves from one observed occurrence of intelligent life to unobserved occurrence of extra-terrestrial intelligence. By contrast, the inductive argument for post-personhood moral status does not move from observed *token* to unobserved token of the same type, but from an observed *type* to a different unobserved type. It extrapolates from observed sentient nonperson and person moral statuses to unobserved post-person moral status. Yet, an inference from data about one type of phenomenon to another type is not inductive. Inductive reasoning does not infer something about a phenomenon that we have never experienced and which we do not even know how it looks.

This is what makes the inference about extra-terrestrial intelligence much stronger than the inference about post-personhood moral status, and not the other way around.

However, weaker forms of inductive reasoning can move from observed type A and type B to unobserved type C if there is a relation of *homogeneity* between types, in our case in the upward direction of status from improvements in the range of cognitive powers. For example, if there is evidence that the cognitive capacity of homo erectus marks an erectus moral status and the cognitive capacity of homo sapiens marks a (higher) sapiens moral status, we could infer with more confidence that significant improvements in the range of cognitive unbounded capacities could lead to post-sapiens moral status. But there is no such evidence. Instead, there is evidence for the lack of homogeneity and in the opposite direction. On Agar's construal of the evidential basis, the difference between the two currently observed moral statuses is not gradual on the same range of unbounded cognitive powers²². The moral status of non-human animals is conferred by sentience (the non-cognitive capacity to feel pleasure and pain), whereas the moral status of persons is conferred by the existence or potentiality of practical reasoning (logical reasoning, abstraction, memory, or other cognitive abilities). Moreover, there is evidence to support an inclusive tendency to moral status, rather than a hierarchical one. We have observed the moral achievements of civil rights, women's rights, children's rights, and disability rights.²³ There are increasing cases in which chimpanzees are elevated to the status of persons, enjoying the rights of human beings, and many other non-human animals benefiting from an extended moral protection. Improvements in practical knowledge and reasoning may in fact promote an

²² It is worth highlighting that there are deviating views, such as gradualism in which moral status depends on some aspects of cognitive ability applied both to humans and nonhumans. See Singer, *op. cit.* note 24.

²³ See S. Pinker. 2012. *The Better Angels of our Nature: A History of Violence and Humanity*. London: Penguin.

inclusive ethics by equalizing moral status, either granting the same prerogatives of personhood status to all sentient beings or making it much harder to sacrifice the interests of members of lower moral status. Modern and recent history has shown an expansion of the moral circle, not higher hierarchic levels.²⁴

These clarifications show that Agar's inductive argument is not really an inductive one. There is no experience of a token post-person, neither a homogeneity relation between similar types. There are only two types of observed moral statuses which are conferred in virtue of two fundamentally different features. In fact, this talk about higher moral status than personhood starts to resemble speculations about so-called singularity, which it should be acknowledged that it is very controversial. It is famously argued that when technology reaches a level of sophistication comparable to that of biology, the two could merge to create higher forms of life and intelligence.²⁵ In the same vein, the belief that indefinite improvements of cognitive capacities, which indeed are beyond our imagination, will create higher forms of moral status turns out to be a speculation rather than a plausible scenario grounded in inductive support. This type of speculations consists in inferences from data about various types of phenomena to another type, which we did not experienced at all. As we have seen this is not how induction works.

WHAT CONFERS PLAUSIBILITY TO INDUCTIVE INFERENCES

²⁴ See the chapter "The Expanding Circle" from Pinker, *op. cit.* note 28; S. Stuurman. 2017. *The Invention of Humanity: Equality and Cultural Difference in World History*. Cambridge, Massachusetts: Harvard University Press; J. Waldron. 2012. *Dignity, Rank, and Rights*. New York: Oxford University Press.

²⁵ R. Kurzweil. 2005. *The Singularity is Near: When Humans Transcend Biology*. London: Penguin.

In inductive reasoning we risk error even if our premises are true. This is why deductive reasoning is considered more reliable. In deductive arguments the conclusion is bound to be true on account of the truth of the premises and the general form of the argument, whereas in inductive arguments, although the premises are true, the conclusion is not bound to be true by any logical principle. Because it makes no use of a logical principle to infer a conclusion, the plausibility of inductive reasoning is explained by our background knowledge.²⁶

It is a mistake to believe that inductive reasoning simply infers from observable to unobservable. The inductive move from observed to unobserved phenomena is conditioned by the available background information. Inductive conclusions are based not only on an evidential basis but also on knowledge about the categories involved, in a way that if we did not have such knowledge, the conclusion would have been implausible. Certain information about the categories used in inductive reasoning contributes to the plausibility of the conclusions and our expectations. To illustrate this point, consider Agar's comparison with the argument for the existence of extra-terrestrial life:

(1) There is intelligent life on Planet Earth. (Premise)

(2) It is plausible that there is intelligent life somewhere else in the Universe. (Conclusion)

We accept its extrapolation from just one evidential instance because the inference is also based on our knowledge of physical and biological laws. According to such laws, the conditions that made intelligent life on Earth possible are not restricted in any way to our planet. We have knowledge that the conditions for intelligent life capable of Darwinian evolution can be met by

²⁶ K. Lehrer, 1970. Justification, Explanation, and Induction. In *Induction, Acceptance and Rational Belief*. M. Swain, ed. Dordrecht: Reidel; W.V. Quine & J.S. Ullian. 1978. *The Web of Belief*. New York: McGraw-Hill: 97.

other planets as well. It is unlikely that there could be biological laws preventing its evolution elsewhere. But in the absence of background knowledge about observable planetary properties that indicate the presence of a biosphere, how oxygen-dominated atmospheres develop, or the frequency of Earth-like planets, the above argument could be easily dismissed as inconclusive, and our expectations towards the existence of extra-terrestrial life qualified as unreasonable.

Moreover, what makes an inductive argument stronger or weaker is not necessarily the larger or smaller evidential basis. In the argument for the existence of extra-terrestrial life, the background information balances out the small evidential basis. This is why inductive arguments that lack background knowledge need large inductive bases, and might even be weaker than arguments with a small evidential basis but which are theoretically driven.

The problem of small evidential basis is not that it is a mere limitation of inductive arguments, making their conclusion less probable, but still likely. Small samples are misleading. In the absence of theoretical knowledge, extrapolation from a few cases makes inductive inferences highly unreliable because a small number of past cases precludes us from distinguishing between accidental correlations and stable patterns.

What we want from inductive extrapolation is to reliably guide our expectations with regards to future states of affairs. To do so we report many past cases from which we can confidently infer that a correlation between events did not just happen to occur, but rather that it is something which will continue to occur in the future given similar conditions. We have seen so many boiling lobsters turning red that we can confidently infer that all boiling lobsters will turn red, even if we do not know the underlying process. Induction is useful when we extrapolate from a bulk of cases as it can point out patterns of events which do not seem to result from random interactions. These patterns in turn invite for scientific explanations to uncover the underlying

mechanisms. When only a few cases are accessible to human experience, theoretical knowledge can support inductive generalizations, as in the case of extra-terrestrial life, or as we said earlier theoretically driven inductive arguments which have a small evidential basis can be even stronger than inferences with a comparatively larger basis. Consider the following example.²⁷ We have observed countless cases of small objects being knocked against each other (pencil boxes, piggy banks, or candy jars) without anything interesting happening as a result of the physical interaction. Scientists should have expected the same result in the case of slamming subatomic particles, yet their actual expectation was the opposite. Their inference about atomic explosion was driven by theoretical knowledge. All this points to a feedback loop between inductive extrapolation and theoretical knowledge. As Quine and Ullian put it, “Science advances induction as induction advances science.”²⁸

Although inductive arguments about extra-terrestrial life and post-personhood moral status are supposed to be similar in their transition from observed to unobserved instances, they essentially differ with respect to their reliance on background knowledge. In the case of extra-terrestrial life, we rely on significant astrobiological knowledge about the conditions under which life is possible. There is significant theory about the biology of organic life and considerable evidence about astronomical favourable conditions.

By contrast, the lack of theoretical knowledge and the confusing empirical support makes it particularly difficult to assess whether cognitive enhancement will likely create post-persons. What cognitive functions or cluster of cognitive functions are susceptible to generate status

²⁷ This example is adapted from S. Okasha. What did Hume really show about induction? *Philosophical Quarterly*. 2001; 51: 307-327.

²⁸ Quine & Ullian, *op. cit.* note 31, p. 89.

changing effects, and most importantly why are these particular improvements morally relevant to such an extent that they mark a higher moral status? What is the nature of practical reasoning, and consequently where does it lead us when radically enhanced? Does it work like an escalator, having the internal logic of extending the equality of interests to all sentient beings?²⁹ If the escalator theory of practical reason is right, then cognitive enhancement might actually lead to a moral elevation across the board, not a morally bifurcated world. It becomes clear that without theoretical input on these questions, much needed to support induction, or a large evidential basis, which is lacking as well, it is hard to see how inductive arguments could take off.

CONCLUSION

The prospect of enhancing cognitive capacities well beyond current levels raises worries that the moral equality of human beings might be at risk. More sophisticated and radical cognitive enhancement, which probably would not be available in the near future, could create beings with moral status higher than personhood. Yet, it is not clear what to make of this worry in the absence of the criteria for a moral status superior to that of personhood.

We have argued that Agar's proposal to bypass the lack of post-personhood criteria by using inductive reasoning is based on a conceptual confusion and a misunderstanding of how induction works. Expanding the scope of moral standing from persons and sentient beings to inanimate objects is just as confusing as saying that the concept of roundness counts as possessing a moral status. Inductively deriving the likelihood of post-persons presupposes a

²⁹ For a defence of the escalator theory of practical reason see P. Singer. 2011. *The Expanding Circle*. Princeton: Princeton University Press.

wrong inference from an observed type to an unobserved different type, rather than a valid inference from a token to a different token of the same type. We have also argued more generally that induction is not useful to determine the likelihood of moral status enhancement because there is no significant theoretical knowledge or a large evidential basis. Small samples are misleading as it precludes us from distinguishing between accidental correlations and more stable patterns. When only a few cases are available, theoretical knowledge advances inductive generalizations, and inductive arguments with a small evidential basis can be even stronger than inferences with a comparatively larger basis if they are theoretically driven. We conclude that in the absence of an account of post-personhood threshold or a significant evidential basis the claim that cognitive enhancement could create post-persons is unconvincing. Therefore, Buchanan's diagnosis remains valid. Otherwise, inductive reasoning risks too much error.

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