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Longtermism and Animals

Heather Browning
University of Southampton & London School of Economics and Political Science

Walter Veit
University of Bristol & Munich Center for Mathematical Philosophy

Abstract

Work on longtermism has thus far primarily focused on the existence and wellbeing of future humans, without corresponding consideration of animal welfare. This omission shall be remedied here, providing reasons for and methods of extending longtermist thinking to all sentient animals. Given the sheer expected number of future animals, as well as the likelihood of their suffering, we argue that the well-being of future animals should be given serious consideration when thinking about the long-term future, allowing for the possibility that in some cases their interests may even dominate. We finish with a discussion of some potential interventions and areas of research focus that are likely to have the greatest impact, particularly steering individual and institutional value change toward those values, policies and structures toward those most likely to have positive effects for future animals.

Keywords: longtermism, animals, welfare, wellbeing, sentience, moral status

1. Introduction

When deciding how to act in a world of limited resources, we must have methods or guidelines for the prioritization of actions that lead to the best outcomes, or at least avoid the worst. This applies to both individual and public policy decisions. To do this, however, requires both a reasoned framework for prioritising types of value, and empirical data on which actions actually best satisfy these conditions. Roughly speaking, longtermism is the ethical doctrine that the rightness of our actions is primarily determined by their effects in the long-term future. When making ethical decisions, it is not only the present or near future that matter, but all future people and events. Suffering now should not matter more than suffering in the future, however distant that may be. As there is, in expectation, much more value in the long-term future than the present or short-term future, the best actions will thus be those that have the best effects in the long-term future, shifting our focus of attention towards interventions that provide such long-term future benefits (Beckstead 2019, Greaves & Macaskill 2019).

There are highly likely to be far more people in the future than there are in the present, or the past. Not only is human history relatively young, in evolutionary terms, but there is also good reason to think that future technology would allow for a larger number of humans at any one time. The number of potential future humans has been estimated at the low end at one quadrillion (10^{15}), which is 100,000 times more than currently exist – and this is only with taking numbers at-a-time as remaining fairly stable (Greaves & Macaskill 2019). The number only increases when considering future technologies that allow for larger population sizes, particularly those that allow for human migration beyond Earth, thus opening up the possibility of population expansion of many orders of magnitude (Bostrom 2003). Additionally, ongoing scientific and technological developments means that these people are likely to have a higher quality of life than our own (Beckstead 2019).

Because of the overwhelming numbers of future people over current people, we are morally required to focus on ensuring the long-term future goes well for these people. This means, when choosing between actions, we base our calculations on the effects in the long-term future (~1000+ years). Calculating the expected long-term value of present actions is thus the primary activity of those aiming to operate under a longtermist framework. With this it follows that even the smallest probability for catastrophic events - such as climate change or species extinction- plays a much larger role in our ethical calculations, giving them a much greater importance in current decision-making.

There is a growing literature on the strengths and weaknesses of a longtermist viewpoint, particularly regarding its tractability and underlying axiological commitments (Greaves & MacAskill 2019, Thorstad & Mogensen 2020, John & MacAskill forthcoming, Mogensen n.d., Tarsney 2020), and it is not our aim here to assess its merits. Here, we merely wish to point out what has been too often overlooked in many discussions of longtermism – the consideration of nonhuman animals. Almost all the papers on the topic have referenced humans, and the proposed and debated interventions are also those which benefit human populations, such as reduction of existential risk (Bostrom 2003, 2013, Ord 2020) and promotion of technologies that enhance our capacities to expand our population in future, particularly on other planets (Bostrom 2003).

While these are important concerns, also important are those that consider the long-term future of non-human animals. Although almost all moral theories accept that non-human animals are important sources of moral value, the focus in longtermism has so far has been almost exclusively human. Tarsney (2020) recognizes this omission, but comments that: "(1) The sign and magnitude of the effects of paradigmatic longtermist interventions on the welfare of non-human animals (or their far-future counter-parts) are very unclear. (2) Dropping this simplification seems unlikely to change our quantitative results by more than 1–2 orders of magnitude (though this is far from obvious), and so unlikely to affect our qualitative conclusions" (36). Here, we strongly disagree with both of these contentions – both that we cannot know what the long-term future would be like for animals (in a way that differs from our uncertainty for humans), and that the orders of magnitude of our results would be largely unaffected. In this paper, we will argue that the wellbeing of animals is just as important to consider as that of humans, and in our deliberations

over best actions, animals should be given much more consideration than they currently are; but that this is a research area in longtermism that is currently neglected.

2. Why animals should count

2.1 Numbers

There are vastly more animals on the planet than there are humans. Even if we only count vertebrates (as these may be the only animals we can currently reliably identify as sentient and thus capable of morally relevant states of pleasure and suffering), there are over 100,000 animals for every human (estimated 10^{11} land vertebrates and 10^{15} ocean to 10^{10} humans) (see Bar-On et al. 2018). While many wild populations are shrinking, numbers of domesticated animals, particularly in agriculture, are rising. Every year, somewhere around 90 billion fishes, 70 billion chickens, 300 million cows, 1 billion sheep and goats, and 1.5 billion pigs are raised and killed for food[1], and an additional 1-3 trillion fish taken from the oceans[2]. This is more *annually* than the number of humans that have ever existed. These numbers are hard to even conceptualize, and yet, they would grow even more if we were to consider the human impacts on invertebrates. If current production and consumption habits were to remain unchanged, it is clear that there would continue to be exponentially more animals than there are humans. Thus, if the long-term future matters because of the large number of humans it contains, it should equally matter for the even larger number of animals. Animal welfare concerns will be a high priority simply because there are *just so many of them*.

One way to resist this could be to argue that although there are many animals, they should count for less in our calculations of expected value. We will take it here as uncontroversial that animal welfare should count for something under most conceptions of value. This is not a conclusion that requires postulating equality between the interests of a fish and the experience of a human, though it can unfortunately often be dismissed on such grounds. We can accept that species membership may change the strength of interests, or the total level of pleasure or suffering experienced, such that animals will be weighted differently in calculations to humans. What is often neglected in making this point, however, is that even if it were granted, unless we assigned only an extremely low weighting to animals, the sheer numbers of animals mean that they are still likely to dominate humans by several orders of magnitude. The failure of comprehension that longtermists try to combat regarding the number and importance of future humans, is seemingly still at play when considering the number of current and future animals. Our arguments here emphasize the urgent need for interspecies comparisons of welfare. It is only through performing such comparisons that we can make the necessary calculations to determine in which cases animal or human considerations will dominate. The interspecies comparison problem is a complex one (see Browning forthcoming for some discussion) and research into it should form a priority for any longtermist research program.

[1] Numbers from: https://www.rethinkpriorities.org/blog/2020/2/28/estimates-of-global-captive-vertebrate-numbers
[2] Numbers from: http://fishcount.org.uk/fish-count-estimates-2

One could also counter that although there are undoubtedly currently more animals than humans, that this won't be the case in the future. For example, we might think that the societal shifts we can currently see in the rise of veganism mean that factory farming will be phased out at some point in the medium-term future, so these animals will not exist in the long term. We will address this concern further when we talk about this intervention, but here we will just note that it is not at all obvious that this will actually be the case, without more action than is currently being taken. Or we might think that the number of wild animals will decrease, as we head into another potential mass extinction event. However, even if such an event does occur, it will be a reduction in species diversity, not necessarily a reduction in total numbers – those animal species that do well in human-altered environments (such as urban pests) are likely to continue to thrive. For example, climate change could alter the distributions of species such that insect populations are able to expand further north and south, increasing the numbers of these animals even if some larger animals decline (Sebo 2022).

Lastly, we might think that when humans move out to colonise other planets we will do so without other animal species, and thus our future growth will vastly outstrip theirs. In particular, if we think that it is the small probability of this large explosion in human population size that creates most of the expected value of the far future (e.g. Tarsney 2020), then this will be the most important determination of whether or not animals will also count. There is no simple reply to this. The details will depend a lot on the specific methods used in interstellar expansion, which would currently seem to be an open question, dependent on future technology. However, there are a couple of ways in which animals would remain an important source of value in terms of their numbers. The first is if we continue to use agricultural animals as a means of sourcing easy protein, as may particularly be the case when setting up new settlements. The second is if we colonise by way of terraforming, in creating planetary ecosystems to support human and other forms of life. Even if the number of animals taken to begin such processes is small, creation of any flourishing ecosystem is going to very quickly lead to a large number of animals. In the end, there is a lot of uncertainty here and unless we are quite sure of these alternative outcomes, we still have reason to believe that there will be very high numbers of animals in the future. As longtermists like to point out, even small probabilities ought to have a lot of moral impact, if their outcomes are sufficiently bad (or good for that matter).

2.2 Suffering

As well as there being lots of animals (both now, and expected in the future), many of these animals will have bad lives. In the words of Beckstead there are: "an astronomical number of expected future beings with lives that are suboptimal, and a future whose trajectory is potentially influenceable" (92). Though he was talking about pessimistic estimates of the lives of future humans, the same applies even more strongly for animals. There is thus a great amount of future suffering that we can potentially prevent.

From the numbers we presented above, we can see that almost 75% of land vertebrates live in agricultural systems, a fact that may surprise anyone who has a different picture of large swaths of

nature untouched by humans. These systems are well-known for the suffering caused to the animals (Gruen 2011, Harrison 1964, Singer 1975). Most broiler chickens spend their lives in windowless sheds with under one square foot per bird; their beaks are trimmed using hot blades to decrease the aggression brought on by the crowded conditions. They frequently suffer leg deformities and lameness from ongoing selective breeding for rapid growth. Sows used for breeding are often kept in tiny stalls in which they are unable even to turn around, with few cognitive or behavioural challenges/opportunities and no access to nesting materials to fulfil their strong drive for nest-building. For many, if not most, of these animals, there are almost certainly ongoing negative experiences and few opportunities for positive experiences and their lives are highly likely to contain more suffering than pleasure. If current agricultural practices were to continue like this into the future, there would be ongoing suffering at a large scale. Again, one may counter that we should not expect high levels of future animal suffering simply based on current circumstances. If factory farming is going to end, or if conditions are going to vastly improve, then we will not have future suffering of food animals. As we will argue in what follows, even if this is true we may still see huge benefit in speeding up the trajectory.

Many wild animals also suffer. Many writers argue that in fact, suffering dominates in nature (Ng 1995, Horta 2010, Tomasik 2015, Iglesias 2018). This is in part attributed to the general causes of suffering, such as injury, disease, starvation and predation. However, it is also considered to be an effect of the life history of many wild animals – the 'r-selected' species that produce a large number of small or 'cheap' offspring, of which only a few live to maturity. The large numbers that instead perish are considered to have lives almost completely composed of suffering (from whatever processes kill them), with few if any opportunities for pleasure. Given the large numbers of such individuals, it is then taken to be the case that there is an overwhelming prevalence of suffering over pleasure.

These claims, even if they do make ecological sense, are still primarily speculative, based on models and biological conjecture rather than empirical study of the overall welfare conditions of wild animals. We can doubt that wild animals have lives dominated by suffering in the ways described; the balances of pleasurable and painful experiences may not tip as strongly in the negative direction as the abovementioned authors claim. One influential paper taken to 'prove' that wild animal suffering outweighs enjoyment (Ng 1995) has since been reworked in light of a calculation mistake to instead conclude that the balance could go either way (Groff & Ng 2019). We think there are good reasons to be sympathetic to the possibility that animal suffering in the wild does not outweigh positive experience (Browning & Veit 2021). However, it is obvious that even if suffering does not dominate in the wild, it is still widespread. Overall, not only are there lots of animals, but they potentially have lives containing a lot of suffering, and that we can change for the better. Animal suffering is a major, if not *the* major source of current disvalue, and plausibly so too in the long-term future. It should thus be accounted accordingly.

3. Potential interventions

We have argued here that it is important to include animals in calculations about which actions we should prioritise for the long-term; which due to the numbers and degree of suffering involved is likely to lead to giving priority to animal-based actions in many cases. We do not rule out that in some (or even most) cases, the calculations will still favour human-centred interventions, for a range of reasons such as tractability, or differential moral weight, but this should not be taken for granted without further investigation. Instead, relevant animal-based actions should also be assessed and compared. How, then, can this be done?

The important categories for action in shaping the far future can be divided into 'proximate benefits', speeding up development, and trajectory changes (Beckstead 2019). Proximate benefits are the more predictable, short-term benefits of action. Speeding up development refers to pushing developments that could improve future quality of life earlier in the timeline, such that their benefits will be felt for longer. Trajectory changes are arguably the most impactful, and involve shifting the direction of the world's development, such that we end up with a different kind of future than we otherwise would have had. In particular, mitigating extinction risk and steering toward a better or worse 'attractor state' are often taken to be high priorities (Greaves & MacAskill 2019). One current example may be the rise of global aquaculture - this is an industry that is still young, and the structures and regulations we set in place now may have long-reaching effects in terms of how the industry develops (Franks et al. 2021).

One potential objection is that actions to improve human welfare may be the right priority right *now*, as ensuring the welfare of humans is also the best way to create a future in which animals are taken care of (Sebo 2022). Improving our social, economic and political systems can help empower future generations and create space for developing a capacity and desire to help animals. Not until our own needs are met can we perhaps then turn out to assist others. While we see value in this objection, it is not one that can just be asserted a priori. It may very well turn out to be the case as a result of our calculations, when we place both human and non-human animal wellbeing into the calculus. Importantly though, this decision needs to be made after making an assessment including all these factors, and with comparison to the set of possible alternative actions focussing more directly on animals.

There are of course many different possible actions that could help, but here we will outline a few that are likely to be beneficial and are worthy of further investigation. They can be grouped into two categories – those that change the number of future animals, and those that change the quality of life of future animals (changing the size of the future and changing its sign). That is, we should try to ensure there are lots of future animals if we predict their lives to be good, and few if we predict them to be bad. Additionally, we should work to try and improve expected quality of life such that all the animals that will exist will have lives of the highest positive welfare we can achieve. We take it that in response to observed suffering, it is preferable to act to reduce the sources of suffering rather than the number of bearers of suffering (Višak 2017), wherever the former is possible. But which of these interventions different actors prefer will depend strongly on their ethical and axiological commitments.

3.1 Changing the number of animals

There are two ways in which we can beneficially change the size of the future regarding animals – one is in reducing the number of animals if we expect them to have bad lives, and the other is increasing the number of animals we expect to have good lives. This may be a complex question to answer in practice, as the differences in animal cognitive sophistication, lifestyles, and evolutionary history will influence their overall lifetime welfare balance - for example, prey animals may experience more fear from predator presence, while predators may be more stressed by the demands for successfully finding and hunting prey. However, in thinking about setting up a long-term future that contains few suffering animals and abundant happy animals it is important to think about which animals will have good or bad lives. This differs from changing the quality of animal lives from negative to positive as what we're considering is decisions about whether or not to bring animals into existence rather than how to make their lives better.

For the first - reducing the number of unhappy animals - probably the most important intervention is in ending factory farming. Though the numbers involved are lower than for wild animals, the suffering is arguably higher - with most animals probably having strongly net-negative lives - and this is a more obviously tractable intervention than many of those discussed for wild animals. Thus, ceasing to bring animals into these situations would be the biggest change to overall value. For the long-term future, we would want to see a world in which such practices no longer existed. Animals with lives that are net-negative should no longer be created. In particular, widespread adoption of a vegan diet would lead to fewer animals used, and thus fewer numbers over time. Development of in vitro 'clean meat' products is one possible path to this end (Anomaly et al. 2021), as are general advocacy movements to increase veganism. In general, intensive farming is benefitted through direct subsidies and by externalising the costs of harms to health, environment and animal welfare; simply altering these would make the industry far less economically viable (Sebo 2022). This is an example of where longtermist and short-termist goals align – reducing the number of suffering animals *now* and in preventing far more being created in the future. Additionally if, as John & Sebo (2020) argue, the existence of animal agriculture maintains human attitudes toward animals that hinder moral circle expansion, then elimination of this practice is crucial to ensuring the ongoing wellbeing of animals in the long-term future.

This could be considered a version of 'speeding up progress', if we think that animal agriculture will eventually die off, but that the sooner we reduce it, the more animals will be saved from coming into existence in a life of suffering. Given the large numbers and suffering involved every year intensive farming persists, any action we can take to bring this sooner will still represent a large gain. We can also here include possible additional benefits, such as reducing risks of future pandemics, and slowing down climate change. As will be discussed further on, it might also be considered as a movement toward a better attractor state. If we think that at some point, the dietary preferences of humans will become fairly fixed in one state or the other, then pushing toward the higher-value state would ensure a better future. As we have already mentioned, we may resist this as a longtermist priority if we think that we are already on this path, such that factory farming is likely to end in the short- to medium-term future. Evidence for this could be seen in the increased

adoption of a vegan diet[3], and growing concern for the welfare of farmed animals; but on the other side we can see numbers of intensively farmed animals still continually increasing[4]. While the population share of vegans increases, so too does the total number of humans who aren't. A lot here depends on where we see the current trend heading, and whether or not intervention now is needed to ensure this state in the long-term future. If we are at all uncertain about this trajectory, actions to ensure we bring about the more positive outcome would have a high expected value.

Another way in which we could reduce the number of suffering animals could be in reducing the number of wild animals, or at least those of the types we take to have lives predominantly composed of suffering. This seems to be the view taken by some writers (Tomasik 2017), who follow the 'logic of the logger' (John & Sebo 2020) in arguing that reduction of suffering entails habitat destruction, to decrease the number of animals. Ensuring a future with fewer or no suffering animals will increase the expected value of the future. It is an open question as to how much of a current priority this should be, based on which specific actions now are likely to have uniquely strong effects on the numbers of wild animals in the far future. We take this to only be desirable if we are unable to instead intervene and improve the lives of these animals, an option we will discuss in the next section. While the former would reduce the amount of disvalue, the latter would also increase the amount of value which will bring greater overall benefit.

The other way in which we can positively impact the size of the future is in ensuring there are large numbers of animals with positive welfare. The far future will have far greater total value with a large number of happy animals in existence than if suffering animals are simply absent. If it is the case that the existence of more net-positive lives is worthwhile, then we should be looking at ways to maximise the number of happy animals. One version of this would be mitigating extinction risk, at least for species with good lives. Like the mitigation of human extinction risk, this would allow for a future filled with much larger numbers of happy beings. Many of the efforts to mitigate extinction risk will align with those used for humans (e.g. addressing climate change, reducing change of meteor collision), but there will be some unique to animals. For many of these actions there will be complex trade-off calculations necessary, as resource distribution considerations require that increasing numbers of some species will place limits on others.

Prioritising the creation of animals that would have good lives would involve determining which animals may be capable of the most pleasure, and the conditions under which they should be kept to realise it, then investing resources into their creation and management. Understanding the relative sentience of different creatures, as well as allowing us to assess their relative suffering, will also give us guidance on what sorts of creatures we should be creating – which provide the most potential 'welfare per unit', so to speak. If, for example, dogs are capable of as much pleasure as humans, but it is much simpler to provide them with what they need to achieve it, this gives us reason to promote the future numbers of dogs over those of humans. Depending on the empirical facts about relative wellbeing, it may even turn out that it is worth sacrificing potential numbers of humans in order to make this happen. This would also require understanding of the longer term

[3] https://wtvox.com/lifestyle/2019-the-world-of-vegan-but-how-many-vegans-are-in-the-world/
[4] https://www.vox.com/future-perfect/22331708/eggs-cages-chickens-hens-meat-poultry

effects and side-effects - both positive and negative - of population expansions to judge the relative benefit.

3.2 Improving the lives of animals

As well as changing the size of the future we can also aim to change its sign – that is, to reduce suffering and increase pleasure for those animals that will exist. This could be done for agricultural animals and/or wild animals, or for the additional human-created animals described in the previous section. Reduction or elimination of animal agriculture is important where we think that animals in these conditions have net-negative lives, which is highly plausible for most modern practices. There is, however, also the possibility of changing farming practices such that animals have net-positive lives. In this case, the so-called 'logic of the larder' (John & Sebo 2020) would then advocate their creation and consumption, because the creation of positive lives is an overall good and should be encouraged. However, this is unlikely to have the expected benefits. If what we wanted to do was create the greatest number of happy animal lives, agriculture is unlikely to be the most cost-effective way to do so. We could, for example, raise large colonies of happy mice for far less money than the agricultural industry takes to sustain, as well as freeing up cropland currently used to feed these animals, providing habitat for more wild animals (Matheny & Chan 2005). There are additionally the potential negative societal effects of animal consumption, particularly in terms of poor human attitudes toward animals leading to poor welfare outcomes overall (John & Sebo 2020).

With wild animals being probably the second highest source of animal suffering - higher in numbers but with more opportunities for positive welfare experiences to offset their suffering - investigating ways to manage wild animals to remove many of these experiences is another research priority. As mentioned, some advocate for the reduction in wild animal numbers as the best way to reduce suffering (Tomasik 2017), however if it is possible instead to switch net-negative to net-positive lives, this will be a superior intervention than simply removing such lives. Currently, discussions of intervening on wild animal welfare are hampered by the sheer complexity of the task – we are famously terrible at making ecosystem changes without hosts of downstream negative effects. However, the more we know, the more possible it will be to do so, and perhaps aiming for a future in which we have the knowledge and ability to manage all wild animal populations for their maximal welfare would be ideal.

Another method would be to ensure that all the animals that do exist – captive or wild - are capable of increased wellbeing, not just through better life conditions but through use of technologies that make these animals capable of experiencing more pleasure (and/or less suffering). This could include selectively breeding or genetically engineering animals to have a greater capacity for total pleasure, and/or an ability to take more pleasure in the conditions under which they usually find themselves. Some have argued that we have an obligation to only bring children into existence with the best possible welfare (Veit 2018a), an argument that could obviously be extended to animals. Indeed, the case is potentially even stronger for animals as our duties toward the animals we create are arguably different from those for our children. It might be

much more straightforward to maintain that we have a duty to ensure the maximization of wellbeing for animals, rather than - as it is usually framed in the human case - the mere avoidance of severe suffering, disease, and injury. Carefully managed gene-drives to introduce and spread genes that enhance welfare could be one of the better persistent long-term interventions (Liedholm 2019). Use of enhancement drugs that increase pleasure or take away suffering are also possibilities that have received very little discussion despite the attention they have received in the human case (Veit 2018b, Veit et. al 2020). Another open possibility is development of technology for application of stimulation to the pleasure centres in the brain, which does not appear to be subject to diminishing marginal utility as other types of pleasures do (Ng 1997).

Though these sorts of interventions can be opposed on grounds of authenticity or naturalness, these are usually not recognized among longtermists as valid moral reasons; they will not carry much weight unless we are looking to maximise a good other than traditional wellbeing. We know very well that there is nothing intrinsically moral about naturalness (Browning 2020); pain, suffering, and extinction are, after all, perfectly natural phenomena and yet it is precisely these that we would most wish to avoid. More importantly, perhaps, we should ask what the animals themselves care about. Whereas humans might feel terrible about the prospects of being prescribed mood-enhancing drugs on grounds of 'authenticity', 'autonomy', or 'consent' (see Veit 2018b), there is little reason to think that such reasons would apply to animals. As we have argued elsewhere, there is little reason to think that freedom must matter intrinsically to animal welfare (Browning & Veit 2020a, 2021). When thinking about animal ethics, even those usually guided by deontological intuitions seem to be attracted to utilitarian doctrines (Caviola et. al 2020).

Even where there is a plausible conflict of what an animal wants, this does not rule out overriding these concerns for their own benefit. After all, we frequently engage in paternalistic actions such as giving animals medical treatments that they do not enjoy, because it is in their best interest overall. Such objections seem to be particularly weak in the face of the level of intervention required for domestication and selective breeding. Indeed, although most selective breeding has been performed for yield, which can lead to suffering, traits linked to domestication also select against stress, fear, and anxiety of farm animals. Pet dogs have also been bred for positive affect as much as they have been for looks. So many of our actions already affect the developmental trajectories of animals, that it seems better to do so intentionally and with positive ends in mind.

Related to this could also be engineering animals for reduced suffering. There is a small but growing literature regarding use of genetic engineering to create so-called 'diminished' animals, that lack some of the species-typical capacities that currently create frustration and suffering; including the most extreme case 'animal microencephalic lumps' that completely lack sentience (Schultz-Bergin 2017). At the NYU Animal Consciousness conference, Peter Singer suggested that there would be nothing immoral about raising animals as vegetables as if we were able to take their conscious experiences away, they could not be harmed. However, as this method removes the possibility of good lives and positive values, it will not end up creating the highest expected utility except in cases where the suffering would otherwise be inevitable. Where there are

opportunity costs of directing resources away from creating or supporting otherwise happy animals, this would reduce total value.

These types of intervention may also interact with the changing animal numbers. Say, in the future, we are capable of creating very happy animals through use of chemical intervention or genetic engineering – this would then give us a reason to try and create and maintain as many animals as possible that are capable of experiencing this. One suggestion resulting from this is that this then might give us reason to try and maintain factory farms, as these are capable of holding the highest densities of animals, if the suffering currently experienced in such setups would be replaced with the types of pleasure described. However, this would only be true if we took factory farms as the best way of housing and keeping happy animals. This may be the case if we think that the economic incentives of using animal products would offset the costs of animal maintenance, but as we have discussed, it is also likely that there are many other setups and housing types that would, in actuality, be better for keeping large numbers of happy animals.

3.3 Value change

We have described a number of possible actions for improving the long-term future for animals, in terms of changing both the size and the sign of this future. However, we need to consider which are likely to be the most effective actions for future benefit. When thinking about the long-term future, effective interventions will be those that persist for a long time, and are robust in the face of potential changes in future conditions. This can be framed in terms of attractor states – those states of the world that, once entered, are likely to persist for a long period (Greaves & MacAskill 2019). There are many potential attractor states, and some will be of more value than others. If our actions now can affect the probability that we enter a better rather than a worse attractor state, this will have ongoing effects. If we want to take the best possible actions for long-term future value, then focussing on the best attractor states is most likely to have the highest ongoing value. We argue that the action that is most likely to serve as an attractor state for the future of animals is change in human values and attitudes towards animals and their treatment, in terms of both individual and larger-scale institutional values.

Interventions to alter human attitudes and values could form a type of trajectory change from one attractor state to another, such that future policy and behaviour will be different. We can plausibly influence the direction of individual and institutional values toward those most likely to have positive future impacts for animals. It would include any action to ensure that future humans, particularly those with political power, hold attitudes that promote positive treatment of animals. If we take seriously the possibility of future powerful AI (Bostrom 2014), we should also look at building these attitudes into the programs. Such changes will potentially have wide-ranging effects across all the domains we have described, ensuring their implementation and maintenance.

If our current stage in time is a particularly notable time in which we are about to see some form of 'value lock in' (MacAskill 2020), then it is worth channelling resources now to ensure that these values are those that ensure good lives for future animals (and humans). This may be particularly likely if we think we are on the cusp of programming future superintelligent or autonomous AIs.

The values with which we program such AI systems can affect animals as much as they do humans, and the values they receive now may have a strong future influence on the conditions of animal lives. Though some scepticism has been expressed regarding how easily we may accurately represent animal interests (Ziesche 2021), even just ensuring that non-speciesist and 'animal friendly' attitudes are included should help ensure animals are given appropriate consideration.

One form such an attitude change could take would be a moral circle expansion, 'moral circle expansion' through which the circle of beings given moral consideration will widen to include sentient animals (and, potentially other beings, such as sentient AIs) (John & Sebo 2020). Previous moral circle expansions based on shared humanity have provided increased protections for marginalised groups, and further expansion based on sentience would provide protection for animals, including farmed and wild animals (Anthis & Paez 2021). Moral circle expansion is compatible with a range of ethical frameworks; all it requires is that the type of consideration that is currently offered only to humans would also be offered to other sentient animals. We could then in utilitarian manner transform the question of the scope of our moral circle into an empirical one in which we investigate the boundaries and gradations of sentience across the animal branch of life (Veit & Huebner 2020; Browning & Veit 2020b). In practice this should mean that animal suffering counts for much more than it currently does; and many harmful practices could not continue. Depending on whether or not our current trajectory is already leading us to such an expansion, we could aim to either direct or to speed up expansion, both of which can have long-term benefits (Anthis & Paez 2021).

A concern about interventions based in human attitude change is whether or not they would actually work. For instance, some take the historical evidence to speak *against* a correlation between value change and welfare – while we are arguably living in a time in which we hold the most animal-positive views, worldwide animal welfare is at its worst. However, this take misrepresents the current situation, and the relevant comparison class. The worsening state of animal welfare is largely due to increasing numbers being held in factory farms, which is a function of increasing population size and the spread of intensive farming techniques into new populations[5]. If we hold fixed this increase in population size and look at the counterfactual situation regarding values – one in which societal attitudes towards animals had remained largely fixed, or gotten worse – then it is highly likely that the current situation would be even worse than it is now. It seems like we are closer than ever before to ending the practice of intensive farming and human value change has been leading changes in practices, such as increasing adoption of bans on veal crates, sow stalls and battery cages for chickens, that are an overall net benefit for welfare.

What is important is that we examine the causal links between societal values and the conditions of animal housing and husbandry. This will allow us to determine where best to target our interventions to create lasting and relevant value change. For instance, to what degree do individual values lead institutional reform, such as through lobbying or consumer choice? That we should perhaps be targeting legislative rather than consumer change is supported by evidence for the existence of the vote/buy gap – that while many individuals support changes banning practices

[5] https://www.vox.com/future-perfect/22331708/eggs-cages-chickens-hens-meat-poultry

harmful to welfare, they will not necessarily translate these values into their own choices at the supermarket, a likely result of a contextual shift in preferences and values between the role as a political citizen versus the role as a consumer (Paul et al. 2019, Norwood & Lusk 2011). Whether individual changes of attitudes, or wider structural change is more important may depend on what we think are the dominant mechanisms for value change. For instance, whether there is the possibility for rational change as a result of new arguments and evidence, or if it is a more arational process that responds implicitly to dominant societal norms and structures. These should also not be taken as exclusive options, and indeed will often be complementary in that critical mass of individual lobbying or purchasing decisions, as well as research and policy advice, will influence institutional change.

Improved institutional decision-making is likely to be the most effective change for better far-future societies, so long as it persists. Our use of animals is built into many of the institutions and structures that frame our current society and so it is change at this level that is most likely to have widespread impact. In essence, we would be looking to create fairer societies, with the hope that this will lead to choices that promote good lives for animals. There are a number of methods of institutional change that will help improve the situation for animals, including improving their legal and political status, and offering political representation (Sebo 2022). By giving animals formal recognition in decision-making processes, their interests can be considered in impact assessments and policy-making. The issue of exactly how to expand our legal and political communities to include animals is a complex one, and we are not here advocating any specific method (but for discussion of some ideas see Donaldson & Kymlicka 2011, Cochrane 2019, Sebo 2022). Focussing research on the best ways to achieve this is also an important action. However, specific corporate and policy change is often the result of a long period of growing public awareness and interest, and so shifting public attitudes are also needed to drive this. There is likely to be a feedback loop between change in consumer knowledge and values leading to advocacy and boycotts, and changes in policy and regulations which themselves will further influence public opinion.

4. Conclusion

The longtermist paradigm holds that the actions expected to produce the most good are those that have their effects in the long-term future. Here, we have argued that for the same reasons this is applied to considerations regarding humans, the well-being of future animals should also be given serious consideration when thinking about the long-term future. We should additionally recognise the possibility that in some cases their aggregate interests may even dominate, due to their greater numbers and greater possible suffering. Even if one wants to resist this and maintain an anthropocentric priority, it is clear we should be giving animals much more consideration than is currently the case. We have not attempted to quantify the size of these effects or look at how the relative calculations of the expected value contained in future animal versus human lives, but we suspect this could support an even stronger conclusion. That is: given the reasons we have

presented, we actually have greater reasons to consider animals than humans; that our *best* actions in future will be those which benefit animals. Given the sheer numbers and level of suffering we see right now, it could even turn out to be the case that many short-term interventions to benefit animals could be more valuable than long-term interventions for human societies: for instance the lower bound estimate of a total of 10^{15} future people (Greaves & MacAskill 2019) is equal to the number of aquatic vertebrates existing *right now*. However, given the uncertainty surrounding the actual future numbers and level of suffering, as well as the comparative moral weight to humans, here we will content ourselves with the weaker claim that animals should at least be brought into deliberations regarding our best actions for the long-term future with a much greater weight than they are currently accorded. This is likely to significantly change the landscape of action prioritisation for the long-term future. We have described a range of potential interventions that change both the expected size and sign of the future, highlighting that actions targeted at changing human and societal attitudes are most likely to have a strong effect.

In some cases, the actions we have described (such as ending factory farming) will align with short-term priorities, but most often they are likely to focus on different initiatives – ending the most animal suffering *now* is not necessarily related to ending it in the long term, as is also true for human cases. Here, we sometimes have to push against our intuitions that we should be doing something now, if we accept the motivations for a longtermist worldview. Indeed, if we do not think we are living in a particularly influential period in time (i.e. one in which our interventions are likely to have unusually strong ongoing effects), then it may in fact be better to invest our resources such that they can be used for future interventions, rather than to take any direct action now (MacAskill 2020). Particularly where we are currently uncertain about the specific changes that may end up being best for animals in the long run, empowering future generations to act on their behalf through shifting values and building up knowledge, will be our current best actions. However, some of the most important interventions discussed - such as institutional change and moral circle expansion, will have immediate as well as long-term effects.

The upshot of this chapter is not to advocate some specific action, but to call for the inclusion of animals in deliberations about the long-term future and which actions we should be prioritising for greatest gain. Importantly, it is a call for further research. While these questions are still uncertain, we should be gathering information such as the impact of attitude change on future behaviour, the net balance of pleasure/suffering in wild animals and the likely future numbers of animals and humans. The mere assertion that we have little knowledge about how to improve the lives of animals is not enough to exclude them from a longtermist view, since it is precisely here that all future knowledge about animal welfare should be included. By bringing animals into our considerations, we can be more sure we will be making decisions that will have the best actual long-term impact.

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