

For their own good? The unseen harms of disenchanting farmed animals

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Abstract:

In recent years, some ethicists have defended that we should genetically engineer farmed animals to diminish or eliminate their capacity to experience negative affective states, a process known as disenchantment that would, according to these authors, result in a situation that is better than the status quo. While we agree with this overall assessment, we believe that it is a mistake to defend disenchantment as a good solution to farmed animals' plight. This is because disenchantment entails some generally unseen harms that arise from the fact that negative affective states, despite feeling bad, support the access to a number of intrinsic goods, such as individuality, social relationships, meaning, and political participation. Though farmed animals currently have few opportunities to enjoy these goods, we argue that this is a reason to change the environment in which they are kept, not the animals. If we truly care about improving farmed animals' lives, we should aim to enrich their environment, rather than impoverish their mental lives.

1. Introduction: The animal disenchantment debate

In the 1980s, an experiment comparing the welfare of genetically blind chickens to sighted ones found the former to have higher welfare. They moved around less and interacted less with each other. As a result, they were less prone to feather pecking and cannibalism. In addition, they showed higher productivity, producing more and bigger eggs while consuming less feed (Ali and Cheng).ⁱ Inspired by this case, as well as by the emerging technological possibilities of genetic modification, a debate emerged about whether we should genetically alter farmed animals, or

disenhanceⁱⁱ them, in order to give them a better life. In this vein, some ethicists have defended, to various degrees, the view that we should disenhance farmed animals to diminish or eliminate their capacity to experience negative affective states (hereafter 'NASes'), such as pain, fear, or distress (e.g. Fischer; Palmer; Rollin; Sandøe et al.).

One of the leading defenders of this idea has been Adam Shriver (Shriver; Shriver and McConnachie). He acknowledges that the ideal scenario would be a world where everyone were vegan, but he considers this to be a highly unrealistic goal, given that the consumption of animal products is on the rise in many areas of the world (Daniel et al.; Speedy), and humans are unlikely to switch to an entirely plant-based diet in the near future. He argues that genetically altering farmed animals to diminish or eliminate their capacity to experience NASes is a promising solution to the problem of farmed animal suffering; at the very least, it is better than the status quo. That is, a scenario in which animals are still farmed but do not suffer in the process – or experience minimal or reduced suffering – is understood by him to be preferable to the current reality, where animals suffer immensely at the mercy of our food production systems.

The philosophers who have defended animal disenhancement, and especially Shriver, assume that by taking away the capacity to experience NASes we would be *benefitting* the animal. This is because they tend to presuppose a hedonistic framework. Hedonism is a value theory that considers that there is only one thing that is intrinsically good, namely pleasure (broadly understood to encompass all positive affective states, or PASes), and only one thing that is intrinsically bad, namely pain (broadly understood to encompass all NASes). Hedonism is a fairly popular value theory in contemporary animal ethics, a view that can be traced back to Bentham and his famous dictum “the question is not, Can they *reason?* nor, Can they *talk?* but, Can they *suffer?*” (para.6). Following in this Benthamian spirit, the authors who defend farmed animal disenhancement, together with many other animal ethicists, identify the main problem involved in farming animals with the suffering it generates. This is why disenhancing the animals to eliminate their capacity to suffer is thought to be a solution to the problem.ⁱⁱⁱ

We agree with the general claim that disenhancing farmed animals would result in a situation that is better than the status quo. However, we believe that it is a mistake to defend disenhancement as a good solution to farmed animal suffering. Disenhancing the animals entails adopting a defeatist attitude towards the conditions they are kept in. Instead of trying to improve those conditions to fit the psychological needs of the animals, the conditions are taken as a given to which the animals instead should be adapted; indeed, disenhancement entails impoverishing their mental lives to better suit their barren environments. Moreover, Shriver and other proponents of disenhancement have failed to fully consider the importance of NASes for a rich and balanced

mental life. As we will argue in this chapter, NAsEs are important for leading a good hedonistic life, but also crucial for accessing other intrinsic goods besides PASes, such as social relationships, meaning, and political participation. As will be obvious to anyone familiar with the status quo in intensive agriculture, most farmed animals currently have few or no opportunities to enjoy these goods. But we believe that this is a reason to change the environment, not the animals. Disenhancement would not make the animals worse off than they currently are, but it would make them worse off than they could be, by precluding their access to these goods. For this reason, we believe that researchers who aim to improve farmed animals' lives should spend time and money on finding ways of enriching their environments, rather than impoverishing their mental lives.

Naturally, one could argue that animals can never have a truly good life so long as they are being farmed, and thus that we should aim for the complete abolition of this practice. While we acknowledge the appeal of this position, for the purposes of this chapter we will adopt the welfarist logic of the disenhancement debate in order to argue that, if we aim for farmed animals to have as good a life as possible *despite being farmed*, disenhancement cannot be a step along the way. We will make our argument in three steps. Firstly, we will introduce a thought experiment to delineate exactly the kind of disenhancement that we are targeting in this chapter, namely, that which aims to eliminate all capacity to experience NAsEs. Secondly, we will take a hedonistic perspective and show how this type of disenhancement could affect an animal's capacity to live a good life by affecting her capacity to experience pleasure. Lastly, we will look beyond hedonism to other axiologies and show how disenhancement would also affect animals' capacity to access other goods besides pleasure.

2. A thought experiment

Disenhancement for the purpose of improving farmed animal welfare can take various forms. Some interventions can be localized and entirely physical. For example, the Angus are a breed of cattle who were genetically modified so that they do not develop horns. This trait eliminates the need for disbudding, and since disbudding is a painful experience for the animals (Stafford & Mellor), it improves welfare to a certain extent (even though less restrictive environments would get rid of the 'need' for disbudded animals altogether). Disenhancement can also target the mental capacities of the animals more directly. Some current research projects, for instance, have been successful in genetically modifying animals so that they do not experience chronic pain (Moreno et al.). And, in theory, one could disenhance farmed animals to the extent that they no longer

have any mental life at all by, for instance, turning them into so-called 'animal microencephalic lumps' (Gavrell Ortiz), that is, living lumps of meat with no feelings, consciousness, or behaviour. For the purposes of this chapter, we will focus on the second type of interventions, i.e., interventions that target a subset of mental capacities. This is because the first type is less ethically problematic (even though we are aware of ongoing debates on the importance of having horns for cattle^{iv}) and the third type may not be a realistic endeavor given that the disgust factor might prevent it from being economically viable. It is in the second type of interventions that the real ethical dilemma lies (see also Thompson).

We are going to take as our case study a hypothetical scenario in which we have the technology to genetically modify farmed animals in order to completely eliminate their capacity to experience NASes. Though this form of disenchantment could in theory also be aimed at just diminishing the intensity or variety of NASes that an animal can experience, we want to focus on this more radical case in order to better target the claim that we aim to defend: that NASes are crucial for farmed animals to live a good life. To construct our thought experiment, we take as our point of departure the core affect model, which was described by Feldman Barrett and Russell in human psychology and later adapted by Mendl et al. for studying affective states in animals. In this model, affective states are placed on two dimensions: valence (the positivity or negativity of an affective state, i.e. ranging from pleasant to unpleasant) and arousal (the intensity of the affective state; Fig. 1A). Our thought experiment presupposes that we can genetically modify farmed animals to eliminate all affective states that fall on the side of negative valence, i.e. unpleasant experiences (Fig. 1B). Assuming that discrete or basic affective states can be integrated into the core affect model (see Mendl et al.),^v this would entail eliminating the experience of pain, together with all other NASes, such as fear, anger, frustration, sadness, depression, boredom, grief, and so on.

Though in our thought experiment this technology could hypothetically be applied to all farmed animals, for ease of exposition we are going to focus on the imaginary case of a single individual, a pig we shall refer to as Wilbur. Due to the disenchantment process, Wilbur is incapable of experiencing any NASes. We are also going to assume that the kind of technology that we are addressing modifies the animal at the embryonic stage, rather than determining which embryo gets conceived, in order to bracket concerns related to the non-identity problem (Palmer; Ferrari). That is, we're assuming that the genetic modification that we put Wilbur through will have *taken away* from him something that he would otherwise have. If it weren't for this disenchantment process, Wilbur would still be capable of experiencing NASes.

Of course, we currently lack the technology to carry out such genetic modification, so for now Wilbur can't be more than an imaginary example. However, we believe that precisely because we do not *yet* have this technology, it is the right moment to have this philosophical discussion, in order to assess the *desirability* of investing research funding into developing such technologies. As we stated in the introduction, we believe that these technologies are the wrong goal for research that is aimed at improving farmed animals' lives. In what follows, we will examine the desirability of this technology by addressing the psychological capabilities and opportunities for thriving that Wilbur would lose if we eliminated his capacity to experience NASes. We will first consider this question from a hedonistic perspective, and later from the perspective of theories that incorporate other intrinsic goods besides pleasure.

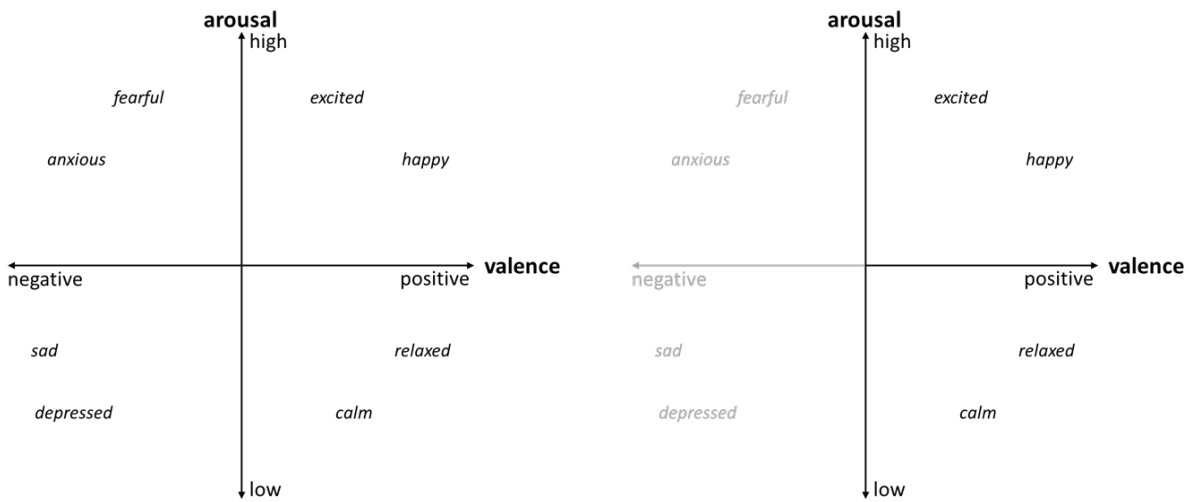


Fig. 1 A and B: Core affect presented on the two dimensions of valence and arousal. Words in italics indicate potential locations of discrete affective states. Adapted from Feldman Barrett and Russell and Mendl et al.

B: Illustration of our thought experiment presupposing that we can genetically modify farmed animals to eliminate all negatively-valenced affective states.

3. What would be lost: Perspectives from hedonism

In this section, we will address our hypothetical disenchantment scenario from a hedonistic perspective, and show how disenchanting Wilbur could impair his capacity to lead a good hedonistic life. For that, we will begin by briefly explaining why we are going to bracket concerns

related to Wilbur's inability to experience pain, and then focus on the main point we want to raise in this section, namely, how this would affect his capacity for pleasure.

3.1. Pain

An immediate concern when thinking about our hypothetical scenario is whether Wilbur would be able to survive without the capacity to experience pain, since we know from humans with congenital insensitivity to pain that lacking this capacity can severely affect one's chances of survival (Tye, chap.9). However, for the purposes of this paper, we are going to assume, following Shriver, that pain is made up of two distinct dimensions: the sensory dimension, which informs us of the intensity, quality, and localization of pain, and the affective dimension, which constitutes the unpleasantness of pain. In turn, we will assume, again following Shriver, that these two distinct dimensions correspond to different areas of the brain. We will presuppose a technology that allows us to fully isolate the affective dimension of Wilbur's pain and eliminate this while retaining the sensory dimension. In addition, though Shriver does not defend this, we are going to assume that Wilbur can also retain the capacity to learn to avoid harmful stimuli, due to the fact that he retains the sensory dimension. We believe that this assumption is warranted given the discussions about whether insects can subjectively feel pain, which go on despite the evidence that they are clearly capable of both nociception and learning related to harmful stimuli (Adamo; Khuong et al.). That these discussions are in fact happening demonstrates that at least from a conceptual perspective it is possible that nociception and learning could both happen in the absence of a subjective experience of the unpleasantness of pain. Thus, we're going to assume that we can target solely the affective component of pain while leaving nociception and learning related to harmful stimuli intact.

Naturally, this is an empirical assumption, and it could in fact be wrong. It could turn out to be the case that eliminating the affective component of pain would *necessarily* result in Wilbur losing either nociception or the capacity to learn about harmful stimuli, or both. However, if this were indeed the case, this would only work in our favor, for it would mean that disenchantment would leave Wilbur without these key capacities. Not only would this entail that his very survival would be at risk, it might also curtail the enrichment possibilities that we could make available to him. Shriver seems to implicitly acknowledge this, for he assumes that the affective dimension of pain is necessary for at least some forms of learning, but considers this not to be a problem, arguing that sows and veal calves are usually restricted to small crates or pens where injury possibilities are minimal (p. 119), presumably meaning that they will not need to learn about

harmful stimuli in order to survive. He still believes that disenchantment would be beneficial to these animals, given that their confinement leads to painful conditions such as joint damage.

There are several problems with Shriver's argument. Firstly, Shriver seems to assume that learning about harmful stimuli has the sole function of ensuring the absence of injuries, but in reality it can also determine the quality of life an animal has. For instance, pain can help prevent permanent joint damage, as it ensures that the animal puts less weight on an injured joint, which, as a result, can heal better. Having healthy joints (and bodily integrity in general) is important for animals to be able to move in and engage freely with the environment. Secondly, Shriver's description of farmed animals as individuals restricted to small pens or crates only holds for a few animal species and for specific periods of their lives, whereas the majority of farmed animals are kept in large groups where they are confronted with many challenges, including negative social interactions, e.g. aggressive encounters, especially when group composition is not stable or stocking density is high. Thus, learning about harmful stimuli is important here, too. Lastly, even if we could keep Wilbur in a way that would completely eliminate the risk of injury, this would go against any enrichment efforts, thus curtailing his possibilities for pleasure. Though farmed animals don't currently have many possibilities for pleasure, we should aim to improve their environments so that they do, rather than risk making them so unable to take care of themselves that they have to be even more restricted in their freedom of movement. In what follows, however, we will bracket these concerns and assume that the disenchantment process preserves nociception and learning about harmful stimuli.

3.2. Pleasure

In this section, we want to consider how Wilbur's capacity to experience PAses might be affected by the disenchantment process. Even though it would only directly target NAses, there are some reasons to believe that it might also affect his capacity to experience PAses. Are NAses, for example, necessary for experiencing PAses in their full range? The "Waves of Welfare" framework (Hintze), in which welfare is plotted across time (Fig. 2), puts forward the idea that variation and contrasts matter: in order to experience something as positive, you also need to experience something negative from time to time. This is in line with Solomon's affective contrast, which is based on the argument that every emotion (positive or negative) evokes a second one that is opposite to the initial one, i.e. that a PAS is followed by a NAS and vice versa. If we disenchant animals, we will take away this contrasting counterpart relevant to experiencing PAses, the waves will shrink in their height and thus the full spectrum of positivity cannot be

experienced. However, we are aware that different theories on affective well-being exist and that it has e.g. also been proposed that NASes and PASes are not at opposite sides of a continuum but rather that they are independent constructs (e.g. Diener and Emmons; Rault et al.), which would reduce our concern.

Besides the importance of variation and contrast, there are also certain PASes that Wilbur might no longer be able to experience if we take away his capacity to experience NASes. This, we believe, would be the case of *flow*. The reader will be familiar with the very positive feeling of being completely absorbed in the performance of a skillful activity that one finds intrinsically rewarding, such as playing an instrument, dancing, or bouldering. This experience is called flow, a concept from positive psychology that has only recently been discussed in relation to animals, and has been postulated as especially important for wellbeing (Abbate; Hintze and Yee). Flow is located between the borders of the two NASes of boredom and anxiety (Fig. 3), which are the result of a mismatch between the skills an individual possesses and the challenges she is confronted with: boredom is experienced when your skills are more sophisticated than the challenges you face; anxiety, in contrast, arises when the challenges are too difficult for your skills. Flow is located in the Goldilocks zone where your skills perfectly match the difficulty of the task ahead of you. But not any task will do. A cow's skills at grazing may match the task of eating the grass in front of her, but this activity would not qualify as flow because eating grass is not a challenge in any sense. For flow to arise we need challenges, and tasks only qualify as such if they can evoke NASes, such as frustration, when one is still learning, or fear, when one is unsure whether one's skills are sufficient. Thus, we speculate that one needs to have the capacity to feel NASes in order to achieve flow. Obviously, most farmed animals don't have the possibility of achieving flow due to the conditions they are kept in, but this gives us a reason to change the conditions to make this experience possible for them, rather than tinker with their psychology and make them incapable of ever reaching it.

There are thus some reasons to think that Wilbur's capacity to experience PASes will be affected by the absence of NASes. This is important from a hedonistic perspective because what counts here when it comes to assessing an individual's quality of life is the amount and quality of PASes in her life, as well as their balance over NASes. Even though the balance will be positive (as we take away the capacity to experience NASes), we also affect the amount and quality of PASes that Wilbur can experience, which might mean that the hedonistic quality of life that Wilbur can attain will be limited by the disenchantment process. Disenchantment is only preferable if we assume that the only possible alternative is the status quo. However, by retaining Wilbur's

psychological makeup and instead working towards improving the environment he's kept in, we can enable him to reach a higher hedonistic quality of life.

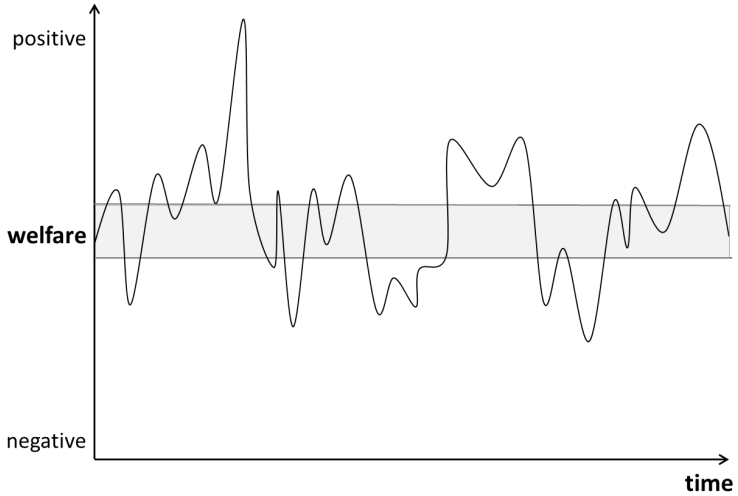


Fig. 2. Waves of Welfare. The line illustrates how an individual's welfare changes over time. The grey area represents a potentially neutral range of welfare.

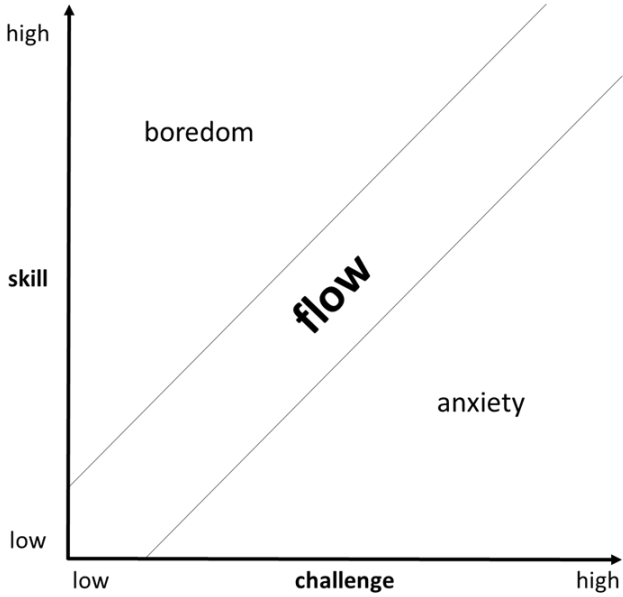


Fig. 3. Flow, the perfect match between challenge and skill, between the poles of boredom and anxiety. Adapted from Csikszentmihalyi.

4. What would be lost: Perspectives beyond hedonism

From a hedonistic perspective, NASes are seen as simply bad, which is why it makes sense to suggest disenchantment as a solution to farmed animal suffering. However, despite undoubtedly *feeling* bad, NASes have important functions, so they are often instrumentally good. We have already mentioned with regards to pain that there are reasons to think that Wilbur might not be able to survive without it, and it's because this NAS has important survival functions that have to do with protecting his bodily integrity. We can generalize this point to many other NASes. For instance, fear has the function of protecting an animal from potentially dangerous stimuli. Disgust protects her from pathogens. Anger protects her from being wronged by others. Boredom keeps her active and engaged with the environment. And we can also attribute functions to affective states that we're not yet sure whether farmed animals possess: jealousy, for instance, might have the function of preserving one's social status, and guilt might help to regulate social relationships.

Taking NASes away will thus preclude Wilbur from having these functions fulfilled, all of which could affect not only the amount of pleasure in his life, but also condition his access to further goods. In what follows, we want to step away from the hedonistic logic that we have been following until now and think about other intrinsic goods the access to which will be precluded if Wilbur lacks the capacity to experience NASes. We will now consider four examples that have been proposed in the literature as intrinsic goods (individuality, social relationships, agency, and political participation) and show how the absence of NASes would affect Wilbur's capacity to have them in his life. As should be clear by now, we acknowledge that Wilbur would not have access to most of these goods (or only to impoverished versions of them) in current intensive husbandry systems, but our aim is to show how, if we want them to be available to farmed animals in the future, disenchantment cannot be a step along the way.

4.1. Individuality

We can define individuality as the quality of being an individual distinct from others, with a unique set of emotional and behavioral dispositions. Individuality is connected to the notion of selfhood, which Donaldson and Kymlicka postulate as that which grounds the inviolability of humans and other animals. Contrary to other authors who ground it in sentience, Donaldson and Kymlicka ground it in selfhood, seemingly to highlight the value of individuality; the fact that "[w]e have our own lives to lead, our own experience of the world, our own sense of how our lives go better or worse" (p. 28). The value of individuality is also highlighted by Nussbaum, for whom part of the

reason why it is wrong to objectify others is because it implies treating subjects who are unique as though they were interchangeable with one another (Nussbaum, “Objectification”). Individuality can be seen as having moral value because it is what grounds the non-replaceability of subjects: the fact that they are unique and no one else can fill their specific space (Monsó). The importance of recognizing individual differences has lately also received some attention in animal welfare science (e.g. Richter and Hintze; Winckler). It thus seems plausible to consider individuality as something intrinsically valuable.

An important factor that determines one’s individuality is one’s personality, and how it distinguishes from that of other beings of one’s kind. Because our personalities are partly constituted by our disposition to feel certain emotions in certain circumstances, one’s individuality is at least partly defined by one’s NAsEs. For instance, Wilbur might be different from other pigs in that he’s scared of humans, grouchy when he’s hungry, or easily bored. While disenchantment will diminish Wilbur’s mental complexity by decreasing the variety of affective states he can experience, whether this affects his individuality will depend on the extent to which his pig companions are also disenchanted. If Wilbur were the only disenchanted pig on his farm, that would add to his individuality (in the same way that people with congenital insensitivity to pain are considered quite unique amongst humans). However, we assume that disenchantment would not be applied just to some isolated individuals but to whole populations of animals. By diminishing their mental complexity, their heterogeneity will also be decreased, and their individuality thwarted.^{vi} This only adds to the existing worry that farmers de-individualize animals by, for instance, assigning them numbers instead of names. One of the ways in which farmed animals could be treated with more respect would be by honoring and accommodating their individuality. This cannot be achieved through disenchantment.

4.2. Social relationships

In a seminal moral philosophy book, Nozick proposed a thought experiment that was meant to illustrate the shortcomings of hedonism. In this experiment, one would be offered the possibility of plugging into an ‘experience machine’ where one could live out the rest of one’s life experiencing a non-stop flow of pleasurable experiences. One of the reasons we would generally be reluctant to plug into this machine is that a life inside it would be missing real connections with others, which we, as the social mammals that we are, highly value and tend to believe that they give meaning to our lives. Indeed, social relationships, in the form of friendship or love, are very often found on lists of objective goods (e.g. Nussbaum, *Frontiers of Justice*; Moore; Rice). Farmed

animals are also social animals (in fact, they were originally selected for domestication due to their social natures, which allows them to be kept in crowded conditions), and thus we can assume that social relationships add value to their lives, provided they are allowed to develop and be sustained adequately, which so often isn't the case in intensive farming.

Social relationships are commonly listed as a separate good from pleasure, due to the fact that they're often regarded as not reducible to the pleasure they give us. We value our connections with others even if sometimes navigating them is difficult and even when, on the whole, they do not give us a greater balance of pleasure over pain. This is because it is the connection itself that we value, and not specifically the pleasure it brings us. In fact, valuing friendships only on the basis of the pleasure they give one is commonly seen as an undesirable trait, and it's understood that a good friend is meant to stick around even when the going gets tough. For this reason, it is often argued that social bonds, such as friendship, are intrinsically valuable, and several authors have argued that social animals are entitled to lives in which they can enjoy them (e.g. Monsó et al.; Nussbaum, *Frontiers of Justice*). The fact that this is not an option in current intensive farming systems is rightly viewed as a tragedy, and one that, we believe, cannot be remedied through disenchantment.

We can imagine that Wilbur would still be able to have social relationships, but the absence of NASEs in him and his companions would entail that these are condemned to superficiality. Being unable to feel anything but PASEs when he's around other pigs, all his relationships become interchangeable with one another. Something fundamental is lost here, for precisely the value that we see in social connections has to do with being bonded with specific individuals who we're not willing to trade for others. Moreover, in the absence of NASEs, certain manifestations of love and friendship can no longer happen. This would be the case, for instance, of loyalty, reconciliation, or grief. Loyalty can only exist against the backdrop of potential grievances. If no pig can feel betrayed or disappointed by Wilbur, he cannot be loyal to them. Reconciliation, in turn, can only take place after there has been a moment of anger or resentment. And in the absence of NASEs that ground the feeling of missing someone, there can be no grief upon their loss. The absence of these manifestations may be welcomed by some hedonists. Shriver (p. 119), for instance, views as positive the possibility that disenchantment might make cows no longer feel distress or call for their young upon separation. However, a motherly love that does not trigger any grief upon separation has lost something crucial, to the extent that it arguably no longer deserves that label. The fact that disenchantment would doom animals to a life without these kinds of bonds is a strong reason not to consider it an adequate solution to their plight.

4.2.1. Care

One particular subset of social relationships that would be affected by disenchantment deserves special mention. This is the case of relationships of care. The value of care has been extensively highlighted by proponents of care ethics (e.g. Gilligan; Noddings). Monsó et al. also argue that the ability to care for others is valuable, both instrumentally, due to the good it brings to the world, and intrinsically, since being a caring individual is a praiseworthy character trait. They defend the claim that animals ought to have this capability respected and that they are wronged when they have it taken away from them or when they are prevented from exercising it. Monsó et al. argue that animals in farms and in labs may often witness the distress of others but be prevented from intervening, and that this constitutes a specific type of harm, given that the animal is not allowed to engage in a behaviour that is intrinsically good. Caring capacities, they argue, may also be thwarted through the disruption of social bonds, which is common in farms and also takes place in other contexts, such as zoos or companion animal breeding (see also Cooke).

Disenchantment for welfare purposes may also lead to an elimination of the caring capacities of farmed animals. We have some indications that farmed animals are capable of emotional contagion, the spontaneous 'catching' of another's emotion, which is widely regarded as a basic form of empathy (e.g. Größbacher et al.; Reimert et al.; Trösch et al.). Though emotional contagion has been fairly well studied, it is much rarer to come across a study that has directly examined caring behaviours in farmed animals, and so thus far we just have some tentative evidence that they are capable of actively caring for others. Ede et al. found that calves will prefer to pay attention to, spend time, and engage in contact with calves who had undergone a negative treatment compared to a control. Cozzi et al. found that horses will often intervene when two conspecifics are engaged in conflict, offering consolation behaviour towards the victim and attempting to appease the aggressor. Though the evidence with respect to farmed animals is still scarce, the last few decades have seen a growing amount of studies documenting consolation, helping, and other care behaviors in many taxa, including primates, canids, rodents, elephants, cetaceans, and corvids (Monsó and Andrews). Given that farmed animals are social animals, and given how prevalent care behaviour is among social animals, it is to be expected that upcoming years will see an increase of evidence of care in these species.

There is some indication that NASEs have an important role to play in care behaviour. We know from studies on rodents that NASEs are involved in motivating helping behaviour. Ben-Ami Bartal et al. showed that rats that had been treated with anxiolytics were far less likely to free a trapped rat, despite the fact that they were still motivated to open a restrainer to access chocolate.

The authors interpreted this result as meaning that the anxiolytic did not have general sedative effects, but rather, that “affective resonance between helper and victim rats is responsible for motivating pro-social actions” (p. 10). A similar result was obtained by Burkett et al., who found that being injected with an oxytocin antagonist prevented prairie voles from engaging in consolation behaviour towards a conspecific who had received a painful treatment, which was interpreted as supporting the hypothesis that empathic mechanisms are involved in this behaviour. Sato et al. also found that rats who had undergone an unpleasant experience were more likely to help conspecifics in that same situation. Though these results are from rodent studies, when combined with findings about the presence of empathic mechanisms in farmed animals, they suggest that Wilbur would be either incapable or severely diminished in his capacity to care for others. By taking away his capacity to experience NASEs, we risk creating an animal who would not care about the plight of others. Since Wilbur won’t care about it, he also won’t be motivated to do anything about it. He will, in effect, become a more callous, less caring individual.

4.3. Agency and meaning

Agency is a complex notion with many different definitions in human psychology and philosophy of action. We follow here the definition used in animal welfare science by Špinka and Wemelsfelder: “the propensity of an animal to engage actively with the environment with the main purpose of gathering knowledge and enhancing skills for future use” (40). Animal welfare scientists often defend that we should give animals the opportunity to exercise their agency. For instance, they argue that pigs should be allowed to root, a form of feeding behaviour that entails actively engaging with the environment. Another example of something that promotes animal agency are the so-called puzzle boxes often used in zoos where animals need to work in order to get their food. These proposals from animal welfare science track the idea that agency is valuable, and there are indeed different reasons why having scope for agency is important for Wilbur’s capacity to lead a good life. One of them has to do with the instrumental value of agency: having less scope for agency amounts to a blighted capacity to reach other goods that Wilbur might value, such as making friends or finding sources of pleasure. But agency can also be seen as a good in itself. Indeed, related notions such as autonomy and the sense of achievement are very often included in lists of candidates for objective goods (e.g. Moore; Nussbaum, *Frontiers of Justice*; Rice), and one of the reasons why the experience machine is thought to offer only the shadow of a good life has to do with the fact that any goods experienced in it are not the result of one’s own actions (Nozick).

It's not that agency will be completely lost in the absence of NASes. However, this capacity will be diminished for two main reasons. The first one is that agency is sometimes triggered by NASes. For example, boredom is plausibly seen as a driver for action because it leads to a desire to engage with the environment (Danckert and Eastwood). Discomfort, fear, and other NASes also motivate action. In contrast, an animal who was entirely content all the time would have little reason to *do* things. The second reason is that agency is often aimed at increasing one's competences, i.e., one's skills for future challenges in order to face them successfully. However, if Wilbur can't experience any NASes, he would lack the feedback needed to refine his skills, and so would be unmotivated to develop them. Without negative feedback, a challenge is unlikely to be experienced as such, and so will not present any opportunity for improvement.

Relatedly, Wilbur's capacity to have a meaningful life may also be affected by his disenchantment. Following Purves and Delon, we can define meaning as that which emerges when animals generate value with their behaviour, that is, when they contribute to the good by means of their actions. We need agency to be involved here because we do not want to say that dairy cows who generate human gustatory value through their contribution to dairy products or meat have meaningful lives. In order not to have to conclude this, we need an animal's connection to value to come through her agency. But this entails that, if animals have less scope for agency, they will also have less scope for meaning in their lives. Though farmed animals currently have few opportunities for pursuing and generating meaning, we see this as a reason to expand their scope for agency, rather than diminish it.

4.4. Political participation

The last intrinsic good that we want to briefly consider is political participation. We use this term, following authors such as Donaldson and Kymlicka and Meijer, not to refer to farmed animals' participating in our elections, but rather to their capacity to have a say in the sort of treatment that they are owed. As these authors have forcefully argued, the fact that farmed animals lack our language does not mean that they cannot voice their opinions and make their preferences known to us. In fact, they very often do, but we simply do not listen to them. There are plenty of examples of farmed animals refusing to cooperate with humans, attacking them, or escaping farms or slaughterhouses (Hribal), despite having been bred for docility for millennia. When they do this, they are engaging politically in that they are making a statement about the way that they want to be treated.

Out of the different goods that we have considered, political participation is arguably the one that is currently available to a highest degree to farmed animals. However, they are still limited in how much they can engage in it, given that they are bred for docility and severely restricted in their freedom of movement. However, by disenchanting Wilbur, we would make him *completely* docile and utterly complacent to our treatment of him. He would become incapable of protesting against it and of rebelling in any way. We think that this is a highly problematic outcome, because if we want to give farmed animals any chance at a good life, we should enhance their political participation in hopes of achieving a mutual relationship to which all parties can consent. We are skeptical about whether such an outcome is ultimately feasible, but any attempt at it should involve us creating more space and giving them more scope to tell us how they feel, as well as by us listening to what they have to say. Disenchantment would take animals' voices away and thus would go directly against this aim.

5. Conclusion

We agree with authors such as Shriver that disenchantment would improve farmed animals' current situation, and it might even shift some animals from a life not worth living to a life worth living, due to the immense reduction of suffering that would result from it. However, we also think that disenchantment would preclude farmed animals from ever experiencing a good life. We have shown how disenchantment would not only affect their capacity to lead a good hedonistic life, but how it would also eliminate or severely diminish their possibility of ever accessing other intrinsic goods apart from pleasure. Though disenchantment is better than the status quo, it is a defeatist solution and an unacceptable one if we truly care about animals. Rather than improving their lives by making them poorer, we should do so by making them richer. If we ought to farm animals at all (and this is a big if), we should not adapt the animal to the current system, but rather adapt the system to the animal for them to live a life that is as good as possible. While we don't have the space to develop this further here, we have already hinted at what a good life would look like for them: one with ample possibilities for pleasure, individuality, sociality, care, agency, meaning, and political participation. This requires preserving their capacity to experience NASes.

As a final note, in this chapter we have only been concerned with the animal ethics side of the issue. But we shouldn't forget the current environmental situation. Intensive farming is absolutely unsustainable and one of the main drivers behind climate change and the biodiversity crisis. Disenchancing farmed animals would make this practice more palatable to the general

public, and that goes directly against the aim of eliminating it in favor of more extensive and sustainable farming. We have shown that disenchantment does not work from an ethical perspective, because it entails marginally improving the animals' lives while curtailing any possibilities for a good life. But if we add the environmental reasons why intensive farming is problematic, this only adds to the argument that disenchantment is not an adequate solution and no money should be spent on developing it further.

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References

- Abbate, C. E. "A Defense of Free-Roaming Cats from a Hedonist Account of Feline Well-Being." *Acta Analytica*, vol. 34, no. 4, 2019.
- Adamo, Shelley. "Do Insects Feel Pain? A Question at the Intersection of Animal Behaviour, Philosophy and Robotics." *Animal Behaviour*, vol. 118, 2016, pp. 75–79.
- Ali, A., and K. Cheng. "Early Egg Production in Genetically Blind (Rc/Rc) Chickens in Comparison with Sighted (Rc+/Rc) Controls." *Poultry Science*, vol. 64, no. 5, 1985, pp. 789–94.
- Ben-Ami Bartal, Inbal, et al. "Anxiolytic Treatment Impairs Helping Behavior in Rats." *Frontiers in Psychology*, vol. 7, 2016.
- Bentham, Jeremy. *An Introduction to the Principles of Morals and Legislation*. Edited by J. H. Burns and H. L. A. Hart, Methuen, [1780/1789]1982.
- Burkett, James, et al. "Oxytocin-Dependent Consolation Behavior in Rodents." *Science*, vol. 351, no. 6271, 2016, pp. 375–78.
- Cooke, Steve. "The Ethics of Touch and the Importance of Nonhuman Relationships in Animal Agriculture." *Journal of Agricultural and Environmental Ethics*, vol. 34, no. 2, 2021.

- Cozzi, Alessandro, et al. "Post-Conflict Friendly Reunion in a Permanent Group of Horses (*Equus Caballus*)." *Behavioural Processes*, vol. 85, no. 2, 2010, pp. 185–90.
- Csikszentmihalyi, Mihaly. *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*. Jossey-Bass, 2000.
- Danckert, James, and John Eastwood. *Out of My Skull: The Psychology of Boredom*. Illustrated edition, Harvard University Press, 2020.
- Daniel, Carrie, et al. "Trends in Meat Consumption in the USA." *Public Health Nutrition*, vol. 14, no. 4, 2011, pp. 575–83. *Cambridge University Press*,
- Diener, E., and R. Emmons. "The Independence of Positive and Negative Affect." *Journal of Personality and Social Psychology*, vol. 47, no. 5, 1984, pp. 1105–17.
- Donaldson, Sue, and Will Kymlicka. *Zoopolis: A Political Theory of Animal Rights*. Oxford University Press, 2011.
- Ede, Thomas, et al. "Social Approach and Place Aversion in Relation to Conspecific Pain in Dairy Calves." *PLOS ONE*, vol. 15, no. 5, 2020, p. e0232897.
- Feldman Barrett, Lisa, and James Russell. "Independence and Bipolarity in the Structure of Current Affect." *Journal of Personality and Social Psychology*, vol. 74, no. 4, 1998, pp. 967–84.
- Ferrari, Arianna. "Animal Disenhancement for Animal Welfare: The Apparent Philosophical Conundrums and the Real Exploitation of Animals. A Response to Thompson and Palmer." *NanoEthics*, vol. 6, no. 1, 2012, pp. 65–76.
- Fischer, Bob. "In Defense of Neural Disenhancement to Promote Animal Welfare." *Neuroethics and Nonhuman Animals*, edited by L. Syd M Johnson et al., Springer International Publishing, 2020, pp. 135–50.
- Gavrell Ortiz, Sara Elizabeth. "Beyond Welfare: Animal Integrity, Animal Dignity, and Genetic Engineering." *Ethics & the Environment*, vol. 9, no. 1, 2004, pp. 94–120.

- Gilligan, Carol. *In a Different Voice: Psychological Theory and Women's Development*. Harvard University Press, 2016.
- Größbacher, Verena, et al. "Negative Play Contagion in Calves." *Scientific Reports*, vol. 10, no. 1, 2020.
- Hintze, Sara, and Jason Yee. *Animals in Flow – Towards the Scientific Study of Intrinsic Reward in Animals*. PsyArXiv, 2021. <https://doi.org/10.31234/osf.io/h6aw3>.
- Hintze, Sara. "Waves of Welfare – the positive, the negative and their interplay." In preparation.
- Hribal, Jason. "Animals, Agency, and Class: Writing the History of Animals from Below." *Human Ecology Review*, vol. 14, no. 1, 2007, pp. 101–12.
- Khuong, Thang, et al. "Nerve Injury Drives a Heightened State of Vigilance and Neuropathic Sensitization in Drosophila." *Science Advances*, vol. 5, no. 7, 2019.
- Knierim, Ute, et al. "To Be or Not to Be Horned – Consequences in Cattle." *Livestock Science*, vol. 179, 2015, pp. 29–37.
- Meijer, Eva. *When Animals Speak*. NYU Press, 2019.
- Mendl, Michael, et al. "An Integrative and Functional Framework for the Study of Animal Emotion and Mood." *Proceedings of the Royal Society of London B: Biological Sciences*, vol. 277, no. 1696, 2010, pp. 2895–904.
- Monsó, Susana, et al. "Animal Morality: What It Means and Why It Matters." *The Journal of Ethics*, vol. 22, no. 3, Dec. 2018, pp. 283–310.
- . "Treating Animals as the Sort of Thing They Are: Commentary on Gary Varner's Personhood, Ethics, and Animal Cognition." *Utility, Progress, and Technology*, edited by C. Schmidt-Petri and M. Schefczyk, KIT Scientific, 2021, pp. 479–85.
- Monsó, Susana, and Kristin Andrews. "Animal Moral Psychologies." *The Oxford Handbook of Moral Psychology*, edited by Manuel Vargas and John M. Doris, New York: Oxford University Press, 2022, pp. 388–420.

- Moore, Andrew. "Objectivism about Animal and Alien Well-Being." *Analysis*, vol. 77, no. 2, 2017, pp. 328–36.
- Moreno, Ana M., et al. "Long-Lasting Analgesia via Targeted in Situ Repression of NaV1.7 in Mice." *Science Translational Medicine*, vol. 13, no. 584, 2021.
- Murphy, Korinn, and William Kabasenche. "Animal Disenhancement in Moral Context." *NanoEthics*, vol. 12, no. 3, 2018, pp. 225–36.
- Noddings, Nel. *Caring: A Feminine Approach to Ethics and Moral Education, Second Edition, with a New Preface*. University of California Press, 2003.
- Nozick, Robert. *Anarchy, State, and Utopia*. Basic Books, 2013.
- Nussbaum, Martha. *Frontiers of Justice: Disability, Nationality, Species Membership*. Edición: New Ed, Harvard University Press, 2007.
- . "Objectification." *Philosophy & Public Affairs*, vol. 24, no. 4, 1995, pp. 249–91.
- Palmer, Clare. "Animal Disenhancement and the Non-Identity Problem: A Response to Thompson." *NanoEthics*, vol. 5, no. 1, 2011, pp. 43–48.
- Purves, Duncan, and Nicolas Delon. "Meaning in the Lives of Humans and Other Animals." *Philosophical Studies*, vol. 175, no. 2, 2018, pp. 317–38.
- Rault, Jean-Loup, et al. "Positive Welfare and the Like: Distinct Views and a Proposed Framework." *Frontiers in Veterinary Science*, vol. 7, 2020, p. 370.
- Reimert, Inonge, et al. "Emotional States and Emotional Contagion in Pigs after Exposure to a Positive and Negative Treatment." *Applied Animal Behaviour Science*, vol. 193, 2017, pp. 37–42.
- Rice, Christopher M. "Defending the Objective List Theory of Well-Being." *Ratio*, vol. 26, no. 2, 2013, pp. 196–211.
- Richter, Sophie, and Sara Hintze. "From the Individual to the Population – and Back Again? Emphasising the Role of the Individual in Animal Welfare Science." *Applied Animal Behaviour Science*, vol. 212, 2019, pp. 1–8.

- Rohwer, Yasha. "A Duty to Cognitively Enhance Animals." *Environmental Values*, vol. 27, no. 2, 2018, pp. 137–58.
- Rollin, Bernard. *The Frankenstein Syndrome: Ethical and Social Issues in the Genetic Engineering of Animals*. Cambridge University Press, 1995.
- Sandøe, Peter, et al. "The Blind Hens' Challenge: Does It Undermine the View That Only Welfare Matters in Our Dealings with Animals?" *Environmental Values*, vol. 23, no. 6, 2014, pp. 727–42.
- Sato, Nobuya, et al. "Rats Demonstrate Helping Behavior toward a Soaked Conspecific." *Animal Cognition*, vol. 18, no. 5, 2015, pp. 1039–47.
- Shriver, Adam. "Knocking Out Pain in Livestock: Can Technology Succeed Where Morality Has Stalled?" *Neuroethics*, vol. 2, no. 3, 2009, pp. 115–24.
- Shriver, Adam, and Emilie McConnachie. "Genetically Modifying Livestock for Improved Welfare: A Path Forward." *Journal of Agricultural and Environmental Ethics*, vol. 31, no. 2, 2018, pp. 161–80.
- Solomon, R. "The Opponent-Process Theory of Acquired Motivation: The Costs of Pleasure and the Benefits of Pain." *The American Psychologist*, vol. 35, no. 8, 1980, pp. 691–712.
- Speedy, Andrew. "Global Production and Consumption of Animal Source Foods." *The Journal of Nutrition*, vol. 133, no. 11, 2003, pp. 4048S-4053S.
- Špinko, Marek, and Françoise Wemelsfelder. "Environmental Challenge and Animal Agency." *Animal Welfare*, edited by Michael Appleby et al., CABI International, 2011, pp. 27–44.
- Stafford, Kevin, and David Mellor. "Addressing the Pain Associated with Disbudding and Dehorning in Cattle." *Applied Animal Behaviour Science*, vol. 135, no. 3, 2011, pp. 226–31.
- Thompson, Paul. "The Opposite of Human Enhancement: Nanotechnology and the Blind Chicken Problem." *NanoEthics*, vol. 2, no. 3, 2008, pp. 305–16.

Trösch, Miléna, et al. "Horses Feel Emotions When They Watch Positive and Negative Horse–Human Interactions in a Video and Transpose What They Saw to Real Life." *Animal Cognition*, vol. 23, no. 4, 2020, pp. 643–53.

Tye, Michael. *Tense Bees and Shell-Shocked Crabs: Are Animals Conscious?* Oxford University Press, 2016.

Winckler, Christoph. "Assessing Animal Welfare at the Farm Level: Do We Care Sufficiently about the Individual?" *Animal Welfare*, vol. 28, no. 1, 2019, pp. 77–82.

ⁱ Later studies paint a less rosy picture, see Sandøe et al.

ⁱⁱ Some authors consider that the term 'disenhancement' is normatively laden and prefer the term 'enhancement for animal welfare' (e.g. Shriver & McConnachie). However, for the purposes of this paper, we will be using the term 'disenhancement' because we will be solely considering genetic alterations where the animal has some capacity or characteristic taken away from her. We believe the term 'enhancement' should be reserved for interventions where something is added to the animal, in order to make her smarter or stronger (e.g. Rohwer).

ⁱⁱⁱ Not all philosophers would agree with this initial diagnosis of the situation. For some philosophers, the main problem with farming animals is that it constitutes a system of oppression. Viewed this way, disenchanting the animals would not solve the problem, since it would arguably serve to worsen the oppression (e.g. Ferrari; Murphy & Kabasenche). We are sympathetic to this view, but will not develop it further in this chapter.

^{iv} Horns seem to serve several functions, including thermoregulation and the management of social relationships by allowing greater distances between individuals and thus fewer physical interactions (Knierim et al.).

^v Discrete affective states represent a different model of affect than the core affect model, but for the purposes of this chapter we are assuming that discrete affective states, e.g. fear or sadness, can be integrated into the core affect model, following Mendl et al.

^{vi} This concern might generalize to other projects that aim to enhance human populations through genetic engineering.