Making Better Sense of Animal Disenhancement:

A Reply to Henschke¹

In "The Opposite of Human Enhancement: Nanotechnology and the Blind Chicken problem" Paul Thompson argues that "disenhancing" non-human animals is a conundrum for philosophy [32: 306]. This is because whereas creating blind chickens, or insentient cows, would result in reduced suffering for animals used in industrial agriculture, such interventions are generally—and intuitively—judged as wrong [7]. So the conundrum we face is the tension between our intuitions, on the one hand, and our rational arguments, on the other. In the face of this conundrum, various theorists have attempted to provide rational argument to justify the intuitive wrongness [5, 12, 13, 8].

One potential strategy, deployed most directly by Adam Henschke in "Making Sense of Animal Disenhancement", is to uncover the social institutional context in which proposals to disenhance have been discussed and in which such projects would be carried out [13: 58]. I do agree that contextualizing the proposals is a fruitful endeavor and believe Henschke's framework is valuable to that end. However, in this response, I will argue that Henschke missteps in applying his framework, resulting in a much stronger conclusion than his argument justifies. In diagnosing the misstep, I aim to clarify what the framework for 'making sense of animal disenhancement' can and cannot do for us, and to that end I hope to contribute to the goal of better making sense of animal disenhancement.

¹ I would like to thank Tatiana Gracyk, Scott Simmons, Ben Bryan and Alexander Francis for helpful comments on earlier versions of this paper. I would also like to thank John Basl and Paul Thompson for enlightening conversations that were useful in developing this paper.

My analysis will begin with a general discussion of animal disenhancement: what it is, why it is being proposed, and where the science currently is. From there I will present and motivate Henschke's framework for making sense of, and fully evaluating, animal disenhancement. In the final two sections I will indicate where I believe Henschke missteps in applying his framework and offer a diagnosis of this misstep before discussing some lessons we may learn from Henschke's argument and my criticism of it, in hopes of moving the debate forward.

Industrial Animal Agriculture and Animal Disenhancement

The current dominant method of raising animals for food is a moral catastrophe. Chickens have their beaks chopped off and are stuffed into cages so small that they peck and cannibalize each other [15]. Pigs, cows and other animals face similarly unpleasant conditions. The result is a great deal of suffering, as over 10 billion land animals are raised and slaughtered annually for food in the United States alone [23]. Even for those individuals who believe it is not inherently immoral to raise animals for food, the conditions these animals endure are often seen as morally problematic. And the situation is unlikely to get better: as various countries throughout the world continue to develop they tend to adopt the high meat and animal product consumption habits of the developed nations like the U.S. [10: 45]. As the demand for meat increases, the need for greater productivity does as well, and, at least by industry standards, industrialized meat production is the key to increased productivity [23: 23-25].

In the face of this ongoing moral catastrophe, recent advances in neuroscience and animal welfare science point to an alternative solution to animal suffering. Rather than change the conditions in which the animals are placed, it may be possible to change the animals themselves

so that the very same conditions do not result in as great of, or any, suffering. This method of altering the animal, or the creation of living beings that provide the products of current agricultural animals, is what Thompson has called "disenhancement" [32]. While the proposals are various, and range from those based on current science to those only currently found in the annals of science fiction, they neatly fit into two large categories, as described by Thompson.

One approach is what he calls the 'build up approach' [32: 308]. So-called 'in-vitro meat' [2, 21] is a paradigm of this approach: scientists begin with basic genetic material and cells and use them to create what is, effectively, a replacement for meat. While the created entity may still be in a sense alive, it is unlikely to ever reach the sort of complexity, particularly mental complexity, of an animal. This approach is interesting, and though it does result in some intuitive revulsion, it is not generally considered to pose the same sort of ethical problems as the alternative approach.

The alternative approach, which Thompson calls the 'dumb down' approach [32: 308], begins with a complete animal and through various methods, including genetic engineering, nano-mechanical intervention or even selective breeding, removes or disables a capacity or function. It is these sorts of approaches that seem to truly trouble people, and thus tend to be the focus of analyses of animal disenhancement. Following this general trend, I will restrict my focus to cases of dumbing down. Some examples of this sort of approach range from selectively breeding blind hens, who seem to deal better with the stresses of industrial agriculture [26, 32] to the more speculative creation of "football birds" or "animal microcephalic lumps" (A.M.L.s) – insentient organisms that are able to grow like normal animals but have no higher level brain function [8, 9].

It is important to note that while these various proposals may all be categorized as 'dumb down' approaches, the details of the proposal may raise unique issues.² For instance, proposals that involve germ-line genetic engineering, or more generally where the intervention occurs prior to a specific individual coming into existence, raise unique issues relating to the Non-Identity Problem [20]. Additionally, proposals to remove or minimize a capacity, such as sight, with the indirect benefit of reducing suffering may raise very different issues than proposals that directly inhibit pain sensations. This is particularly true given the evolutionary basis and purpose of pain for animals [5, 14]. Given this complexity, it will be helpful to examine some of the recent advances in disenhancement technology, and therefore to understand what may in fact be scientifically possible now, or in the near future.

The strongest ethical support, in print, for animal disenhancement, has come from Adam Shriver in "Knocking Out Pain in Livestock: Can Technology Succeed Where Morality has Stalled?" [27]. In his article, Shriver argues that it is currently possible to genetically engineer (at least some) animals so that they have a diminished capacity to suffer, and that we ought to replace current animals used in industrial agriculture with such beings. His proposal picks up on recent advances in genetic mapping and engineering, which have seemingly isolated particular enzymes and peptides that are directly related to what scientists call the 'affective dimension of pain' – or the "caring about" of the painful sensation [27: 118]. Experiments have already been carried out in mice where the enzyme, peptide or gene is "knocked out" of the genetic code [7, 18], and the result is an organism that will still feel pain, but not find it unpleasant [6, 24]. This

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² I would like to thank an anonymous referee for encouraging me to explore this issue in more detail.

³ In particular, various studies have shown a link between the affective dimension of pain and the AC1 and AC8 enzymes, the peptide P311, and the SCN9A gene [35, 31, 3].

sort of genetic intervention, then, is scientifically possible, although no studies as of yet have been done on mammals other than mice.⁴

Shriver's conclusion that 'we ought to replace current livestock with genetically engineered animals who lack the affective dimension of pain' [27: 119] assumes, of course, that we could do this without any additional cost. ⁵ But it is important to note, again, that since no proof of concept experiment has been done on the type of animals that we are concerned with (i.e., chickens, pigs, cows, etc.) that further ethical issues may arise in the process of getting to a successful experiment. Many animals would be altered without success, with potentially grave results, and that sort of transitional suffering that could result should be a part of the full ethical evaluation. Additionally, a proposal like Shriver's relies on a particular understanding of pain and suffering, and their bases. While he provides the scientific research to support some of what he is assuming, it is certainly possible that pain has more than a genetic basis, that pain behavior has its own genetic basis and/or that preferences and suffering depend on more than mere pain sensations [12, 14]. Whether or not Shriver's assumptions are justified, or whether the additional elements will radically change our analysis, it is still important that we investigate animal disenhancement and attempt to formulate a method, or framework, for evaluating it. This, I take it, is Henschke's goal in arguing for a framework for "making sense" of animal disenhancement. I will now turn to his argument.

⁴ The assumption, noted explicitly by Shriver in reference to a personal communication with one of the scientists working with the 'knockout mice' is that at least some of the genes, peptides or enzymes relevant to the affective dimension of pain in mice will 'play a similar role in all mammals.' [27: 118]

⁵ I would like to thank an anonymous referee for encouraging me to note some of the underlying assumptions at work in these proposals that may be making it easier to reach the conclusion that disenhancement is justified.

Why is *She* Disenhancing *That*?

Henschke's attempt to rid us of the philosophical conundrum comes in the form of contextualizing animal disenhancement, and extracting reasons from that context. Proposals to disenhance did not appear out of thin air; as noted above, they arose due to specific circumstances and the associated moral concerns. Henschke argues that if we place the project of disenhancement within the proper context, we will find out that our intuitions are vindicated – that rational argument does indicate that such disenhancement would be wrong. He arrives at this result by focusing on a specific question: 'Why [is] a particular person in a given role located in [a] social institutional context... engaged in the joint action of animal disenhancement?' [13: 60]. Examining how Henschke answers that question will also reveal why he thinks that is the proper question to ask in order to evaluate disenhancement.

For Henschke, a 'substantive ethical appraisal of animal disenhancement requires us to understand what it is', which means uncovering the reason(s) that is/are being used to justify the disenhancement [13: 58]. This is because for Henschke, following Korsgaard, 'reasons make sense of an action' [13: 58-9, 17]. To provide a complete ethical analysis of a proposal requires understanding the proposal, and understanding the proposal requires making sense of it, which in turn involves uncovering the justificatory reason for the proposal. Thus, to evaluate animal disenhancement Henschke argues that we need to understand what reason is being used to justify it. This task appears quite straightforward given the above discussion: the justificatory reason is to minimize or eliminate the suffering of animals used in industrial agriculture. Henschke, however, believes this analysis is too narrow.

⁶ It should be noted, as indicated to me by an anonymous referee, that disenhancement has also been discussed in the context of companion animals, but of course the reasons are likely much different in such cases.

The analysis is too narrow because actions occur within a context, and this context bears on our understanding of the actions. In particular, our understanding depends on whether or not a given reason in fact justifies the action [13: 59]. Borrowing an example from Korsgaard, Henschke notes that in determining why Jack wants to go to Chicago, various contextual factors are relevant to deciding between candidate reasons. While Jack may want to go to Chicago to buy paperclips, he may also want to go to Chicago to visit his mother. Even if, when he visits Chicago he both visits his mother and buys paperclips, if we understand the context of Jack's action – that he had to drive hundreds of kilometers to get to Chicago – we find that only one of the reasons truly 'makes sense' of Jack's action; only visiting his mother truly *makes sense* of why he traveled all that distance to Chicago [13: 59, 17: 12-14].

Returning to disenhancement, then, Henschke argues that the relevant context for making sense of animal disenhancement is that of industrial animal agriculture [13: 60]. This is for two main reasons: because the context of raising animals for food makes possible the current treatment of them; and because the current treatment of them motivates proposals to alleviate their suffering. In the first case, Henschke notes that the use of animals for food production is exempt from animal welfare laws and so the context of food production is relevant to explain why animals are kept in the condition they are [13: 60]. In the second case, it is specifically *industrial* animal agriculture that raises the significant concerns over suffering and makes wide-scale technological proposals like disenhancement seem like viable solutions. The system of

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⁷ Interestingly, the success of this argument depends on it taking quite a bit of time to travel the hundreds of kilometers to Chicago, and an assumption that the paperclips are not worth such a journey. Were there to be a very quick mode of transportation that took Jack to Chicago in, say, five minutes, then it is possible that buying paperclips would make sense of the action. This seems to strengthen Henschke and Korsgaard's claim that context matters, but even the wider context matters – that our modes of transport are such that hundreds of kilometers is a lengthy journey is relevant to determining which reason makes sense of the action.

industrial agriculture, then, works like 'visiting mom' in the previous example - it makes intelligible the action of disenhancement where other contexts would not.

Uncovering the social institutional context in which an action takes place is necessary for making sense of the action, but it is not sufficient. It is agents who have reasons for their actions, and thus it is important to situate the agent within the social institutional context as well. This is especially true for collaborative projects, or what Henschke calls 'joint actions', since understanding why a particular person is doing a particular action will require reference to the larger joint action that she is contributing to. To fully understand the reason Jill killed Jim will require knowing in what capacity the killing occurred. As Henschke notes, it makes a difference whether Jill was a soldier in a just war and Jim was an enemy combatant or Jill was a terrorist and Jim a civilian [13: 59]. Thus, the role an agent is playing in the joint action, as well as information about the joint action itself, is relevant for making sense of the action.

Again, returning to animal disenhancement, Henschke conceives of disenhancement itself as the joint action. Many agents would be involved in the project of disenhancement, each playing a particular role within that joint action. So in order to understand why a particular agent is engaged in the project of animal disenhancement, we need to know her role within the context as well as the collective ends of the project itself. We need the latter because it is by way of the collective end of the joint action that we identify the agent's role [13: 59]. Why would a company that makes its money through industrial animal agriculture commission research into disenhancement? Given that the end of a corporation, generally, is to increase productivity and profit, and that a corporation already engaged in industrial animal agriculture is likely not directly concerned with animal welfare, 'to reduce suffering' would not be a reason that makes sense of animal disenhancement. Instead, profit and productivity, as well as avoiding criticism

from animal activists, is the sort of reason that makes intelligible why such a corporation would commission such a project. According to Henschke, then, the collective end to which disenhancement is aiming, given the context of industrial animal agriculture, is not a reduction in suffering but rather 'to make more meat or animal products or to make more money, whilst reducing criticism' [13: 60].

So much for the joint action within the social institutional context; what about the agent? It is here where I begin to depart from Henschke, and thus I will only briefly indicate what he says on the subject, and in the following sections I will explain more fully why I believe his move is mistaken. Henschke's move here — from what guides or justifies the commissioning of the joint action, to what makes sense of why any particular agent is engaged in the project — is to simply identify the reason for any given agent's action with the reason the corporation would commission the project. From his analysis, Henschke takes it that 'the reasons are that the *agents* engaged in roles within the social institutional context of industrial agriculture *want* to increase profits whilst reducing criticism from those concerned about the animal's welfare and/or rights' [13: 60, italics added]. The claim, then, is that the reason any particular agent would engage in the project of disenhancement must be the same reason that those in charge commission the project. It is this claim that I believe is incorrect, and a misapplication of Henschke's own framework. I will turn to that argument now.

Institutional Constraints, Individual Reasons

I will concede, at least for the sake of argument, that the reason an industrial agricultural corporation would commission a project of disenhancement would be to 'increase profits or productivity whilst reducing criticism'. I do not believe, however, that this reason alone can

make sense of why any given agent would be engaged in the project. To put it in the terms Henschke uses, I do not believe that it is clearly the case that every agent involved in the project of disenhancement needs to 'want to increase profits whilst reducing criticism'. More generally, I do not think you 'make sense' of an agent's action by ignoring the agent and only focusing on the context she finds herself in. Recall that the question Henschke set out for us was why a *particular* person in a given role was engaged in animal disenhancement. In answering the question, Henschke lost the particularity of the person. I will argue that what his framework provides us is not a way to make sense of why a particular person is engaged in the action, but rather what sorts of constraints are placed on the particular agents that then limit the means available to them to accomplish their independently given goals. In light of this, I do not believe we can conclude, as Henschke does, that '[a]nimal disenhancement is not justified morally or pragmatically' [13: 62].

Understanding the social institutional context in which an agent acts can be helpful in understanding why the agent is so acting, and even may help elucidate the reason that justifies her action. It does not, however, necessarily fix her reason for action as Henschke appears to assume. More often, I believe, the social institutional context and the collective ends of the joint action an agent may be engaged in provides *constraints* on what she may do and therefore help us to understand why she is choosing from a particular set of actions rather than another set (or a superset). That Jill the soldier is fighting in a just war and Jim is an enemy combatant helps us understand why shooting Jim is among the options Jill is considering, but it does not, in itself make sense of why Jill in fact shot Jim. That a given scientist who works on animal welfare issues is employed by an industrial agriculture corporation helps us understand why

disenhancing animals is among the options she is considering; it does not, however, make sense of why the scientist is in fact engaged in the specific project of disenhancement.

That the work of an animal welfare scientist is sponsored and funded by a corporation that is aiming at profiting from industrial animal agriculture helps us understand why, for instance, she is researching welfare issues in chickens, pigs and cows, rather than dogs and cats. It further makes intelligible why she may be focused on changes to the system and/or the animal that nonetheless leave the industry financially solvent, rather than more radical changes that would bankrupt the corporation. This is something Henschke misses when he judges disenhancement to be morally unjustified. For he claims that 'reducing suffering' is not only not a reason that justifies disenhancement, it cannot even count in favor of disenhancement because there are better ways to reduce suffering, such as by ending industrial agriculture completely or by providing funding to a clean water project [13: 61-2]. It may be true that these alternatives would better reduce suffering; but these are simply not alternatives to disenhancement, from the perspective the agent, given the social institutional context.

So we have made sense of why animal disenhancement is on the radar, but we have not yet made sense of why a scientist is specifically engaged in the project of disenhancement, rather than, say, sensory enrichment. Both could be supported by the corporation on the basis of 'increasing profit whilst reducing criticism'. In short, in order to understand why a particular agent is engaged in a particular project, it is often (although not always) necessary to understand the agent herself. This makes sense, of course, for how could we make sense of why a *particular* agent was engaged in a project without knowing something about that *particular* agent?

From this perspective, then, it is not really possible to 'make sense' of why a particular agent in a particular role within a social institutional context is engaged in a joint action, without identifying the particular agent and knowing things about her. But certainly it is conceivable that some agent involved in animal disenhancement could be engaged in such a project without wanting to increase profits whilst reducing criticism. Presumably, a scientist such as Temple Grandin, who has worked with the animal agriculture industry on various reforms, is not guided by increasing profits or even productivity [11]. She may, as she has, note that the various welfare reforms she supports may have that effect, particularly because she is attempting to persuade people who are guided by such concerns, but that doesn't tell us why she is doing the action. A scientist may choose to work for an industrial animal agriculture corporation because she sees it as her best chance to improve conditions for animals and reduce their suffering. Certainly her employment restricts how far she may go, but that doesn't mean 'reducing suffering' isn't a viable reason for her specific involvement in the project.

Given the forgoing argument, I do not believe we can deploy Henschke's framework to conclude as he does. Making sense of animal disenhancement, as he aims to do, is deeply contextual and as such it seems impossible to settle on a general conclusion at all. We can grant that *if* every (or perhaps some large number) of agents engaged in animal disenhancement did want to increase profits while reducing criticism, or even were simply employed as they were because of the money for themselves, then those particular projects of disenhancement may be unjustified. However, I do not think wide scale psychologizing about the reasons people are in the roles they are in, or engaged in the projects they are so engaged, is a particularly useful tool in ethical inquiry. I do, however, believe Henschke's framework provides us some insight that may help us move forward in thinking about disenhancement.

Making Better Sense of Animal Disenhancement

Between Henschke's framework and my criticism of its application, I believe we can locate at least two avenues that are worth exploring in order to move forward on evaluating animal disenhancement. I do not intend to provide a complete account of those avenues here, but rather suggest why they may be fruitful avenues for inquiry.

Ideal/Non-ideal Theory

In my analysis of Henschke's framework, I effectively distinguished evaluating social institutional contexts and the constraints they place on agents from evaluating the agents themselves and their actions within a given context. One way to categorize this distinction is as one between ideal and non-ideal theory. When we work in ideal theory we are theorizing about how to best structure an institution (or even the whole world) if we could bring it into existence by *fiat*. As such, we are not constrained by various human biases, existing injustices, or transition costs. When we work in non-ideal theory, however, we take into account at least some of those various real world issues. How exactly we take into account these real world issues may vary — we may use them to recognize a limit on possible action, and thus to alter our evaluation of agents and their actions; or we may account for them in deciding on how best to transition from our non-ideal world to something closer to the ideal, recognizing that sometimes a small step backward leads to a larger step forward in the future, or that a large step forward in the near future may lead to backslides in the long term [28].

One way to understand what Henschke is gesturing at, then, is that animal disenhancement takes us further away from our ideal – of a world that does not involve industrial

⁸ It is important to note here that there is not a clear settled position on what the ideal/non-ideal distinction is, but rather a family of various ways to deploy the distinction. So I do not intend to claim that this is *the* ideal/non-ideal distinction, but is rather one version of that distinction. For more on the complexities and vagueness of the ideal/nonideal distinction see, e.g., [28].

animal agriculture or at least its attendant moral and pragmatic problems. Henschke's analysis of disenhancement in terms of it not solving any of the grave problems with industrial animal agriculture in general certainly suggests this [13: 60-1]. For his basic claim is that insofar as industrial animal agriculture, in general, is unjustified, and disenhancement maintains the system, then disenhancement, in particular, is unjustified [13: 62]. So the comparison is not between the current system and one that uses disenhanced animals, but rather between a system that uses disenhanced animals and either a non-industrial system of animal agriculture or a system that does not use animals at all. It is by making this comparison, between proposal and ideal, rather than proposal and status quo, that Henschke is able to conclude as strongly as he does.

Additionally, the distinction between ideal and non-ideal theory may provide us with an explanation for why animal disenhancement appears to be a 'conundrum'. Recall that Thompson claims it is a conundrum because our rational arguments and our intuitions conflict – although we intuitively view disenhancement as morally wrong, the rational arguments we can level (particularly from within the dominant theories of animal ethics) do not vindicate that intuition and may, in fact, suggest quite the opposite – that we *should* disenhance non-human animals [32, 27]. But perhaps our intuitions are tracking something different from what our theories of personal ethics are tracking. For a consequentialist animal ethic, such as that promoted by Peter Singer [29], our evaluation of actions takes the world, as it is, as given. This means it takes into account, but does not evaluate (at least in the context of evaluating a proposed action) all of the

⁹ This is clear from Shriver's deployment of Singer's argument. Shriver's argument for disenhancement takes the basic principle of reducing unnecessary suffering that Singer uses, but combines it with the empirical claim that meat consumption will continue in order to justify his conclusion. However, Ferrari has offered an alternative reading of Singer's view that she believes avoids this result [5: 71]. I have my doubts about animals having the conceptual capacity to have a preference for a 'Peopled Universe' rather than a 'Nonsentient one', and thus disagree with Ferrari's analysis on this point.

injustices and biases that have led us to where we are. Indeed, a thoroughgoing utilitarian will even take into account the biases – if a racist has a preference that a particular race be kept unequal, then an action that frustrates that preference has at least the frustration of that preference counting against it [25]. ¹⁰

Even a rights-based approach runs into this problem. It asks us to evaluate an action based on whether or not it commits a wrong (or multiple wrongs) [22]. But it is neither forward nor backward looking – committing a small wrong now to prevent greater future wrongs is unacceptable, and committing a 'wrong' now, even if it is due (in part) to historical injustices is no less wrong (although perhaps less blameworthy). And so we are left with the dominant theories of animal ethics being, in effect, *non-ideal theories* – they tell us what to do in the world we live, with all its problems. Thus, they give us guidance on how to regard and treat animals given the prevalence of meat-eating, industrial animal agriculture, etc. In this light, disenhancement does look pretty good – if we assume the only alternative is the current system, then the current system minus at least some of the suffering seems a morally proper move.

But perhaps our intuitions are not comparing a world of disenhancement to the current one so much as to an ideal world, one where there is no industrial animal agriculture, or even use of animals at all. In such a case, our intuitions are working in the realm of ideal theory whereas our 'rational arguments' are working in the realm of non-ideal theory. As such, they are not *really* in conflict – they are working at different levels. I think my claim that we do not 'make

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¹⁰ Of course this does not mean that all-things-considered the racist's preference wins out.

¹¹ Ferrari [5] has rightly noted that Regan does discuss his own 'kingdom of ends' – a regulative ideal of what the world would look like if we interacted with animals appropriately [22]. It looks as though such an ideal could work exactly as I am discussing here, but I am skeptical that Regan's theory provides any resources for us to use that regulative ideal when deciding whether or not an action such as disenhancement is permissible. For Regan, as for most deontologists, it seems we evaluate such an action not based on how close it is to the ideal but rather whether any wrongs are committed in a more narrow sense. This is especially true given the agent focus of most deontological theories.

sense' of an agent's actions by neglecting the agent herself suggests this very point. When evaluating the action of a particular agent, we are often apt to recognize the restrictions placed on the agent by the world she finds herself in; otherwise agents involved in various historical liberation movements would be judged quite harshly. But when we evaluate our social context more generally, the comparison is to some sort of regulative ideal – we compare our unjust world to our conception of a just world. Thus, a utilitarian or rights-based animal ethic, with an emphasis on individual actions, is simply not the proper tool if we want to ask questions about whether or not the action better compares (or gets us closer) to our conception of the ideal world.

As such, I think the conundrum for philosophy can be dissolved by borrowing resources from political philosophy and reflecting on what sort of world we want to create and the role such idealization plays in evaluating our actual world. Indeed, there has already been some work in applying concepts from political philosophy to animal ethics [4, 30], and so its application to the issue of disenhancement would be a continuation of that work.

Proper Valuation

When viewed within the social institutional context of industrial animal agriculture, Henschke tells us, the reason for disenhancement is to increase profit and/or productivity, while reducing criticism from those concerned with animal welfare or rights [13]. Whether or not this is the best way to understand the reason for disenhancement generally, or the reason any given agent would be involved in the project, it does point at another avenue for evaluation that may bear fruit. In an industry where sentient beings (or subjects-of-a-life, etc.) are reduced to numbers in an economic

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¹² To clarify: we often reflect on historical instances of oppressed peoples fighting an unjust system and evaluate their actions (or at least some of them) positively, even if they include violence or other actions that would not be approved of in circumstances that do not involve oppression or injustice. So my point is much like Henschke's regarding a soldier fighting a just war – an action that is generally evaluated negatively may be positively evaluated once certain contextual features are brought to light.

calculation – that is, where profit and productivity are the overriding goals – it may be that our failure is not (just) in our actions, but in our valuations that underlie our actions. Elizabeth Anderson's theory of valuation may be of service in explaining why this overriding 'reason' for action (in Henschke's view) is problematic.

On Anderson's view, there are multiple modes of valuation – multiple ways to value something, rather than just differing degrees of value [1]. On her theory, not everything should be valued as an object of mere use, or as a commodity. There are some things in the world - persons being a paradigm example - that must be valued in a different way, such as via respect. This is why, for instance, we do not think human beings (or persons more specifically) should be bought and sold. Applying this to non-human animals is straightforward for many animal ethicists. A large part of the project of animal ethics is to enliven people to the idea that animals, like humans, should not be valued as mere commodities.

Perhaps the intuitive opposition to animal disenhancement is pointing at our unease in the way the current system values animals – as mere commodities rather than as beings deserving of respect or admiration. Disenhancement makes such improper valuation more salient to us; it takes valuing animals as mere commodities to its logical extreme and, in the process, enlivens us to the failure of the current industrial agricultural system to properly value non-human animals.

Additionally, it may be that if there is systematic mis-valuation of entities within a given social institutional context, then the reason only certain options seem available to an agent is because of that mistake in valuation. As the adage goes, 'when all you have is a hammer, everything looks like a nail' [19]; similarly, when the system is set up in such a way as to value animals as mere commodities, then it may be that the only actions that seem available are those

that maintain that form of valuation, rather than question or attempt to upset it. Indeed, this was my point in indicating that 'increased profit or productivity' functioned as an overriding motive given by the social institutional context – it constrained the actions of an agent, limiting what actions were genuinely open to her. It is important to recognize these constraints in order to make sense of why a particular agent acted in a particular way, but it is also important to recognize that sometimes institutions are set up in such a poor way that they effectively prevent an agent from acting in an acceptable way. To that extent, we should be very concerned with substantially reorganizing the institutions so as to open up avenues for agents to act rightly.

Conclusion

The two avenues for exploration I have sketched above pick up on various insights Henschke has provided in his analysis of animal disenhancement. While I do not think his framework for making sense of disenhancement actually succeeds in proving that disenhancement is wholly unjustified, I do think it helps move us in the right direction for further inquiry. To that end, my goal in this paper has been to indicate both the successes and failures of Henschke's framework and his application of it, as well as contribute to the collective work of exploring and evaluating animal disenhancement generally. In that way, I hope, we can in fact make better sense of animal disenhancement.

References

- Anderson E (1995) Value in Ethics and Economics. Cambridge, MA: Harvard University
 Press
- 2. Bhat Z.F. and Hina Bhat (2011) Animal-free Meat Biofabrication. American Journal of Food Technology 6(6): 441-459
- 3. Cox J.J., et. al (2006) An SCN9A channelopathy causes congenital inability to experience pain. Nature 444: 894-8
- Donaldson, S. and W. Kymlicka (2011) Zoopolis: A Political Theory of Animal Rights.
 New York: Oxford University Press
- Ferrari A (2012) Animal Disenhancement for Animal Welfare: The Apparent
 Philosophical Conundrums and the Real Exploitation of Animals. A Response to
 Thompson and Palmer. NanoEthics 6(1): 65-76
- Foltz, E.L. and L.E. White (1962) Pain relief by frontal cingulotomy. Journal of Neurosurgery 19: 89-100
- 7. Gardner, R.M. and A.M. Goldberg (2007) Pain-free animals: An acceptable refinement?

 Japanese Society for Alternatives to Animal Experiments 14: 145-9
- 8. Gavrell Ortiz SE (2004) Beyond Welfare: Animal Integrity, Animal Dignity, and Genetic Engineering. Ethics and the Environment 9(1):94-120
- 9. Gifford F (2002) "Biotechnology". In: Comstock G (ed) Life Science Ethics. Iowa State, Ames, IA, pp. 191-224
- 10. Global Perspectives Study Unit (2006) World agriculture: towards 2030/2050 interim report. Food and Agriculture Organization of the United Nations, Rome

- 11. Grandin T (2013) Making slaughterhouses more humane for cattle, pigs, and sheep.
 Annual review of Animal Biosciences 1: 491-512
- 12. Hadley J (2012) Confining 'Disenhanced' Animals. NanoEthics 6(1):41-46
- 13. Henschke A (2012) Making Sense of Animal Disenhancement. NanoEthics 6(1):55-64
- 14. Hongladarom S (2012) The Disenhancement problem in Agriculture: A Reply to Thompson. NanoEthics 6(1):47-54
- 15. The Humane Society of the United States. Barren, Cramped Cages. 2012; Available from: http://www.humanesociety.org/issues/confinement_farm/facts/battery_cages.html
- 16. Kastenbaum D (2001) "Analysis: debate over genetically altered fish and meat". *Morning Edition* (December 4, 2001). Transcript available online at http://www.npr.org/templates/story/story.php?storyId=1134248 (accessed October 7, 2013)
- 17. Korsgaard C.M. (2009) Self-constitution: agency, identity, and integrity. New York:
 Oxford University Press
- 18. Lein, E.S., et. al (2007) Genome-wide atlas of gene expression in the adult mouse brain.

 Nature 445: 168-76
- 19. Maslow, A. (1966) The Psychology of Science. Joanna Cotler Books
- 20. Palmer C (2011) Animal Disenhancement and the Non-Identity Problem: A Response to Thompson. NanoEthics 5(1): 43-48
- 21. Pluhar EB (2010) Meat and Morality: Alternatives to Factory Farming. Journal of Agricultural and Environmental Ethics 23(5): 455-468
- 22. Regan T (1983) The Case for Animal Rights. Berkeley: The University of California Press

- 23. Roberts P (2008) The end of food: the coming crisis in the world food industry. London: Bloomsbury
- 24. Romanelli P., et. al (2004) Ablative procedures for chronic pain. Neurosurgery clinics of North America 15: 335-42
- 25. Sandler R (201) Ethical theory and the problem of inconsequentialism: Why environmental ethicists should be Virtue-Oriented ethicists. Journal of Agricultural and Environmental Ethics 23: 167-183
- 26. Sandøe PB, Nielsen L, Christen LG, Sørensen P (1999) Staying good while playing God—the ethics of breeding farm animals. Animal Welfare 8:313-328
- 27. Shriver A (2009) Knocking out pain in livestock: can technology succeed where morality has stalled? Neuroethics 2 (3):115-124
- 28. Simmons A.J. (2010) Ideal and Nonideal Theory. Philosophy & Public Affairs 38(1): 5-36
- 29. Singer P (2002) Animal Liberation. New York: HarperCollins
- 30. Smith K.K. (2012) Governing Animals: Animal Welfare and the Liberal State. New York: Oxford University Press
- 31. Sun Y et al (2008) Involvement of P311 in the affective, but not in the sensory component of pain. Molecular Pain 4: 23
- 32. Thompson P (2008) The opposite of human enhancement: nanotechnology and the blind chicken problem. NanoEthics 2(3):305-316
- 33. Thompson PB (2011) The fundamental problem in food ethics, in society for philosophy and technology 2011. Denton, Texas

- 34. Weary DM et al (2006) Identifying and preventing pain in animals. Appl Anim Behav Sci 100(1-2):64-76
- 35. Wei F et al (2002) Genetic elimination of behavioral sensitization in mice lacking calmodulin-stimulated adenylyl cyclases. Neuron 36: 713-26