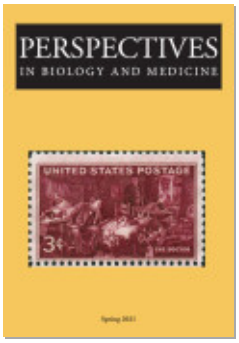
From the Slaughterhouse to the Laboratory Bench: On the Ethics of Using Slaughtered Animals for Biomedical Research



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Michael Nair-Collins

ABSTRACT Is it ethically permissible to acquire biological materials from a slaughterhouse for biomedical research? This essay examines this question, using a recent, high-profile research program as a case study. Using roughly 300 decapitated pig heads acquired from a slaughterhouse, researchers reperfused the animals' brains and observed a variety of cellular and molecular activities. The study was exempted from review and oversight by the Institutional Animal Care and Use Committee (IACUC), on the grounds that the animals were already dead. This essay argues that the IACUC was mistaken in exempting the study from their oversight, and furthermore, that acquiring animals or their parts from a slaughterhouse for research purposes is unethical and should not occur again. Examination of the study within a broader societal context helps to illuminate why each of us has an ethical obligation to do what we can to abolish the vicious and cruel treatment endured by billions of animals every year on factory farms and in slaughterhouses.

Using the severed heads of six- to eight-month-old slaughtered pigs, researchers Zvonimir Vrselja, Nenad Sestan, and colleagues reperfused the animals' brains four hours after slaughter, for a period of six additional hours (Vrselja et al. 2019). They observed cerebral metabolism, intact vascular responses to pharmacological stimulation, spontaneous synaptic activity, and other molecu-

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lar and cellular activities in the pigs' brains. Because they did not observe global, coordinated electrical activity measured with direct cortical electroencephalography, it is unlikely that consciousness was restored. However, the researchers stood at the ready, prepared to administer anesthesia and rapidly cool the brain in case any signs of consciousness were to appear, so as to preclude the possibility of suffering in the pig heads.

By anticipating the chance that the experiment could induce pain or suffering, and being prepared to alleviate such suffering, the researchers did something morally right. I suspect that most readers would agree, and I want to emphasize this point at the outset: assuming the study was to be done at all, then protecting the animals' heads from the possibility of pain or suffering was morally the right thing to do.

In this essay I critically evaluate this research program as a case study to examine the ethics of procuring biological materials from a slaughterhouse for biomedical research. I argue that such procurement is unethical. Furthermore, critical analysis of the research program is instructive more broadly, because it brings into sharp relief the morally arbitrary nature of many of our ways of life as they relate to nonhumans.

THE LIFE OF A PIG DESTINED FOR SLAUGHTER

Certain morally relevant facts must be considered in any ethical analysis of the pig brain study—namely, the life of a pig destined for slaughter.[1]

Pigs are highly intelligent, social creatures, with needs for physical space and exercise as well as intellectual and social stimulation (HSUS 2015). Livestock pigs receive none. Shortly after birth, piglets are prematurely removed from their mothers—a traumatic experience for both the sow and the piglets. They are fed huge amounts of food along with growth hormone, in order to reach "market weight" of about 240 to 270 lbs. by six months of age (HSUS, n.d.). Almost all pigs killed for food in the United States are reared in conditions of extreme confinement and filth, with thousands of other pigs, on slabs of concrete or metal bars, forced to constantly inhale fumes from the feces and urine of thousands of pigs (Rachels 2011). This confinement, as well as boredom and lack of stimulation, creates maladaptive behaviors such as biting other pigs or chewing on metal bars. To curb this, piglets have their teeth pulled out with pliers, their tails cut off, and males are castrated, all without anesthesia or pain management. They also have their ears cut or branded for identification, again without pain management (DeGrazia 2009). Meanwhile, the sow who birthed the piglets will by this point

[1] In the following description of the life of a pig destined for slaughter, I draw from many sources. While providing specific references for individual claims, I recommend to the interested reader the following informative sources: DeGrazia 2009; Gaard 2002; and the websites of Mercy for Animals, Woodstock Farm Sanctuary, and Anonymous for the Voiceless.

be pregnant again: they are kept continuously pregnant until their bodies and minds can no longer bear the exhaustion, at which point they are killed. In their pregnancy, hence roughly their entire life, sows are commonly kept in small cages, either what are called "gestation crates," which are so small the animal cannot even turn around, or in "farrowing crates," which are slightly larger to allow piglets to suckle. These small cages are inhumane and cause both physical and psychological injuries (HSUS, n.d.; Woodstock Farm Sanctuary 2021b).

When it is time to be killed, around six months of age, the animals need to be transported to the slaughterhouse. All 120 million pigs who are killed annually in the US are transported by truck, sometimes for thousands of miles. Indeed, on any given day, there are 1 million pigs on the road (Brodersen 2015). There are no legal regulations regarding transport of livestock: such animals are legally exempt from welfare protection. Because of this, animals are packed into trucks with extreme confinement, often using electric prods to force them in, without food, water, or climate control. Pigs are not given opportunity to rest, as the moving truck itself is a source of stress. Industry estimates claim that about 1% of the animals either die or become non-ambulatory during transport; about 0.5% die (Goihl 2008). Using 120 million pigs as our reference (Brodersen 2015), then roughly 1.2 million are killed or rendered non-ambulatory, and about 600,000 are killed, merely from the conditions of transport, every year.

When they reach the killing floor, the animals are subject to further beatings to get them to the electric stunner, which is supposed to render them unconscious with a shock and blow to the head (DeGrazia 2009). The animals are killed at an extraordinary rate of up to 1,106 pigs per hour in a single slaughterhouse. Proposed regulatory changes by the USDA, which have been pushed by the pig-killing industry for years, remove even that extraordinary maximum rate (Creswell 2019). Furthermore, it is known that the "stun" method is not perfectly effective in rendering the animals unconscious, and thus some animals are conscious and screaming as they are hung upside down, have their throats slit, and are dipped into scalding hot water to remove hair and soften skin (DeGrazia 2009).

In sum, the life of a pig destined for slaughter is one of violence, cruelty, unmet needs, boredom, pain, and unremitting discomfort. If the pig survives the horrid and brutal conditions of extreme confinement and transport, the animal will be hung upside down to die a violent death by throat-slitting, followed by dismemberment along a "disassembly" line (Adams 2015).

It is important to emphasize, and highly germane to the ethical analysis at hand, that the violence and exploitation of the animal-killing industry is not limited to nonhuman animals. In fact, human workers for this industry are among the most exploited, injured, and vulnerable workers in the US (Schlosser 2019). The job is inherently violent and dangerous, but the pressure to produce ever more death creates ever more danger, as fatigue and loss of concentration are inevitable. A recent study found that, on average, amputation injuries happen

twice a week in the US, in addition to other serious injuries such as fractures, second-degree burns, and head trauma. Chronic repetitive motion injuries are common as well. Workers in this industry are three times more likely to suffer serious injury than the average worker, and those who work in the pig-killing industry are seven times more likely to suffer repetitive strain injuries (Wasley, Cook, and Jones 2018).

Furthermore, workers in the animal agriculture industry in the US tend to be among the most vulnerable of all, because they are often undocumented. This is no accident: undocumented workers have long been recruited intentionally, precisely because they are so vulnerable and therefore have less ability to unionize or to report injuries or unsafe working conditions; they are also easily replaceable (Schlosser 2019). This is why agents from Immigration and Customs Enforcement (ICE) often target meat-packing plants (Solis and Amy 2019) for their terroristic, large-scale show-of-force raids: because these locations are precisely where undocumented persons were recruited to perform underpaid, dangerous, and no doubt emotionally traumatizing work. Thus, the industry is not only one of violence and cruelty to nonhuman animals, it is also one of the most dangerous and exploitative for humans as well.

I have a hard time imagining that anyone can truly expose themselves to the reality of modern animal agribusiness, to unflinchingly bear witness to the gore, the violence, and the pain; to listen to the terrified squeals and screams; to understand the profound vulnerability of the human workers—vulnerability to injury, to emotional trauma, to punitive loss of employment, and even to massive deportation raids—yet not find this industry, at best, deeply troubling. In fact, the animal agriculture business apparently agrees: this is why there have been many attempts to criminalize the recording of slaughterhouse practices, via what are known as "ag-gag" laws (ASPCA 2019). Any emotionally and morally sensitive human being witnessing such suffering and exploitation, on such an extraordinary scale, is likely to at least reconsider their own consumption of animal products, ideally by taking steps towards a vegan lifestyle (which I recommend), or at least decreasing consumption of animal products as a start (which I also recommend, being cognizant of how difficult behavior change of any sort is). But that would mean decreasing profits, so the industry attempts to keep its activities hidden.

Furthermore, the advertising ploy of labeling certain animal flesh and secretions as produced in a "humane" fashion is just that: a transparent advertising trick. There is no humane way to mass produce death. The extraordinary quantity of animal flesh that is produced can only be done by treating the animals exactly as they are in fact treated: as *things* with no moral status, whose suffering doesn't matter, whose well-being doesn't matter, and whose violent deaths equate to profit for CEOs and shareholders. Meanwhile, the human workers in this industry are also exploited: they are underpaid and seriously injured at rates higher than almost any other industry, and often recruited precisely because they are undocumented.

I conclude that the modern animal slaughter industry is deeply immoral, violent, and cruel, for both the animals and the human workers. It is also worth noting that animal agriculture is a major contributor to climate change, to antibiotic resistance, and to global human disease burden via both antibiotic resistance and zoonotic infectious disease (FAO 2013; Lefrançois and Pineau, 2014; Schiermeier 2019; WHO 2017).

The Ethics of Cooperating with the Animal Slaughter Industry

The modern animal slaughter industry is unethical: because of the animals who are maltreated and slaughtered; because of the human workers who are exploited; and for its outsized contribution to climate change, antibiotic resistance, and global human disease burden. Therefore, it is an ethical duty to refrain from cooperating with or participating in this industry, for example by purchasing its products for food or clothing.

It is worth spelling out this argument a bit further. First, due to the extraordinarily harmful nature of the industry's practices, with respect to both humans and nonhumans, a consequentialist perspective yields the claim that all of us have an obligation to do what we can to abolish these harmful practices. This is a collective obligation: clearly, one person changing their diet will not magically abolish modern factory farming. However, through a mass change in human behavior, it is possible to end or at least significantly decrease these harms and suffering. But collective change only takes place by the combination of many individual changes, one person at a time. Hence, the individual duty not to contribute to unjust suffering remains.

Second, while there is a sense in which a single person's diet change does not have the power to make significant changes to intensive factory farming as a whole, there is another sense, equally important, in which a single person's diet change does have measurable impacts. A recent study examined the impact of different dietary choices, and unsurprisingly found that a vegan diet compared to a meat-eating diet contributes far less to global greenhouse gas emissions, deforestation, water pollution, and other important variables (Poore and Nemecek 2018). According to lead author Joseph Poore, "A vegan diet is probably the single biggest way to reduce your impact on planet Earth, not just greenhouse gases, but global acidification, eutrophication, land use and water use. It is far bigger than cutting down on your flights or buying an electric car" (qtd. in Carrington 2018).

While this data regards environmental impacts, a vegan diet could not possibly have the effects noted above without going through the mediating variable: reduction in the number of animals bred and killed. There are also several estimates available of how many lives are saved by an individual vegan diet, such as 7,000 animals in a vegan person's lifetime, or one animal life every single day (King 2015; Vegan Calculator 2021). I make no claims about the accuracy of these

specific estimates, recognizing this is a complicated social scientific question. But the specific number doesn't really matter: the point is that a single person making dietary changes does in fact impact the number of animals bred and killed by the animal slaughter industry.

To summarize, the obligation not to participate in the cruelty of intensive animal farming is collective, but that does not abrogate any individual's responsibility not to participate, even if others continue to do so. Second, it is empirically false to assert that individual choices make no measurable impact. They do.

The considerations above all address the issue from a consequentialist perspective, focusing on harms done to the animals, to human workers, and collectively to all living creatures on the planet due to environmental impacts. But there is another perspective worth considering as well: nonhuman animals are not objects here for our use, who may be harmed or killed simply because humans gain profit or gustatory pleasures from killing them. They have rights not to be treated this way, because they matter, morally, in and for themselves. They have lives that can go well or ill for them, and therefore have rights not to be killed—and certainly, at minimum, rights not to be tortured (Regan 1983). From this perspective, while decreasing harms is certainly important, it is still wrong to violate their rights. It follows immediately from this that it is wrong to participate in collective practices that are dependent on such rights violations, and therefore the same conclusion is reached: we have an obligation to do what we can to decrease or eliminate participation and cooperation with the animal slaughter industry. Simply decreasing consumption is better than no change at all.

Finally, in my mind at least, the core of the argument is not based in a philosophical theory, nor careful logical reasoning. The core of the argument is in the description of the practices themselves. As I said above, I find it hard to imagine that anyone could truly expose themselves to the reality of modern agribusiness and not feel some sense of revulsion, sadness, or anger, along with deep moral reprobation, demanding action. If a person were to fully appreciate the cruelty and violence, without any denial or minimization, and truly not care, not finding themselves moved to take some action, then there is no logical argument I can offer that will move them. If one is able to read the above description of the treatment of pigs in modern agribusiness, without seeing immediately that it is wrong, and that one ought not participate in that wrongness to the extent that they can, then I lack the tools to convince that person. A clever argument, tracing out and defusing every possible counterargument, won't do the trick. The deepest moral reason lies in the description of the practices themselves.

FROM THE SLAUGHTERHOUSE TO THE LABORATORY BENCH

For the reasons discussed above, I believe it is an ethical duty to refrain from participating with this industry by purchasing its products for biomedical research.

This argument is simply an extension of the basic pattern of argument for ethical veganism. However, the special circumstances of biomedical research generate additional considerations that are relevant to the ethical analysis. In what follows I will assume that at least some biomedical research using nonhuman animals may be justified. That is, for this analysis I do not assume a sweeping rejection of all animal research.[2]

For the animal research that, we shall assume, is justified, certain characteristics should be met. Most fundamentally, animal researchers bear a qualified fiduciary duty to the animals that they use, a responsibility for their welfare or well-being. I will discuss why I describe this as a "qualified" fiduciary duty momentarily. The latest edition of the *Guide for the Care and Use of Laboratory Animals*—a well-accepted reference published by the National Academies Press—"strongly affirms the principle that all who care for, use, or produce animals for research, testing, or teaching *must assume responsibility for their well-being*" (NRC 2011, 1, emphasis added). Furthermore, "these principles direct the research community to accept responsibility for the care and use of animals *during all phases of the research effort*" (4, emphasis added).

It will be helpful to quickly review some key concepts applicable to animal research in general. Each of them should be understood as more specific aspects of the general, qualified fiduciary duty to animals used in research. Some of these concepts include: (1) as few animals as possible should be used; (2) animals must be kept in sanitary, healthy, temperature-controlled environments with cognitive, emotional, and social enrichment as appropriate for their species; (3) pain or distress to the animal must be minimized, and to the extent that the experiment causes pain or distress, it must be explicitly justified as necessary for the study design and as minimal as possible to achieve the experimental goal; (4) surgery must be done only by qualified, skilled technicians using appropriate anesthetic agents; (5) animals who are in pain that cannot be remitted must be killed painlessly; and (6) for experiments that require killing the animal as part of the study design, those animals must be killed painlessly (NRC 2011).

These are certainly not exhaustive of the many considerations that are relevant to the ethics of animal research, but they do support the basic idea that researchers are responsible for the welfare of the animals that they use—that is, that researchers have a fiduciary duty to the animals. However, this fiduciary duty is not unqualified: when the proposed scientific experiment requires pain, distress, injury, or other elements that are contrary to the welfare of the animal, the science generally takes priority. But even given a qualified duty, the fiduciary

[2] To be clear, I am making the assumption that some animal research may be permitted *for the sake of the argument*. Outside of the sake of this argument, I do not offer a position one way or the other, although I do lean towards near abolition of animal research, with possible, very rare exceptions in extraordinary circumstances. (This does not include such things as observational field research and the like.) The abolitionist view plays no role in the present paper, however.

aspect remains. For example, it may be permissible to cause or allow pain, but not unless it is necessary for the science, and even then, the pain must be minimized and assuaged as soon as possible. Other considerations, such as to save money, to avoid regulatory oversight, or simply carelessness, are not acceptable qualifications of the fiduciary duty.

Given this concept, one might ask: what is the nature, if any, of the qualified fiduciary duty that the researchers had towards the animals in the pig brain study? One might reply: none. The pigs were dead before the study began, and Yale's Institutional Animal Care and Use Committee (IACUC) exempted the study from review and oversight on precisely these grounds (Vrselja et al. 2019). This was a mistake on the part of Yale's IACUC, for the following reasons.

First, the qualified fiduciary duty holds during all phases of the research effort, including housing, transporting, and killing the animals. When the research requires killing the animals, as did the study under consideration, then the manner in which they are killed is a phase of the research effort. In fact, when animals are killed, ensuring that this is done painlessly and humanely is of utmost importance, not something that can be brushed aside merely because someone other than the researchers did the killing. The 300 or so research animals used in the study were intended to be sold for two purposes: human consumption, and biomedical research. But the fact that there is an additional intended use does not deprive the research animals of the fiduciary duty that the researchers owe them. Indeed, some of the most important components of the qualified fiduciary responsibility are to ensure that the animals that they intend to use for their research are housed and killed humanely.

One might reply that the primary intended use of the animals—for human consumption—qualifies the fiduciary duty. That is, because the primary intended use was not for biomedical research, the researchers themselves are not responsible for the welfare of the animals as they are housed, transported, and killed. This is a mistaken interpretation of what qualifies the fiduciary duty: only legitimate experimental, scientific reasons qualify this duty. In the study under consideration, nothing about the scientific experiment necessitated tormenting the pitiful creatures throughout their brief lives, nor did any aspect of the scientific experiment necessitate a sharp blow to the head, nor killing them by throat-slitting, nor dipping them—some while still conscious—head-first into scalding hot water. None of these things were necessary for the scientific research, and therefore they do not qualify the researchers' fiduciary duty to the animals used in their study.

Indeed, imagine a university laboratory that treated its animals in the way that slaughterhouse pigs are treated. Not only would any morally sensitive person be horrified, but the lab would be shut down immediately. Why, then, should the exact same treatment be considered acceptable, so long as it does not happen in a university laboratory? What difference does the location of the torment make, to the fact of torment itself?

The second reason Yale's IACUC was responsible for reviewing and managing continued oversight of the study is that the slaughterhouse itself was already a physical site of university- and National Institutes of Health (NIH)-sponsored research. As Matthew Shaer (2019) described it in the *New York Times Magazine*:

> Every morning for several weeks, the scientists woke up around 4:30 to be at the slaughterhouse as the first pigs were led to the killing floor. While they waited, the animals were stunned, killed, eviscerated and stripped of usable meat; later, Daniele and Vrselja would run carrying a bloody pig head in a bag to the manager's office, where they would use a pump to empty the excess blood from it. Finally, placing the skull on ice, they would drive it back with them to the [Virginia Tech] lab in Blacksburg.

The researchers performed basic surgical procedures onsite at the slaughterhouse, including isolating the major arteries, removing parts of the flesh surrounding the cranium, and flushing the vasculature with a cold, heparinized saline solution in a three-step, 30-minute-long procedure, before packing the heads on ice for transport to Virginia Tech (Vrselja et al. 2019). Therefore, the slaughterhouse itself was a physical site of university- and NIH-sponsored research procedures, so it should have been under the authority of the IACUC, subject to the same regulations, inspections, and oversight. The IACUC failed in its regulatory duty to provide oversight of the physical plant in which biomedical research, under the auspices of Yale University, Virginia Tech, and the NIH, was taking place; and needless to say, if the IACUC had not exempted this study from its oversight, there is no way that a slaughterhouse would be deemed a satisfactory physical plant as a site of university- and NIH-sponsored research, nor would standard slaughtering procedures be deemed an acceptable method of killing research animals.

Furthermore, a more nuanced understanding of the procedures of the study complicates the claim that the animals were dead prior to the research. In one sense this is literally true; but it is misleading. The animals were killed in an ongoing fashion throughout the study—while the researchers were present at the slaughterhouse—for several weeks. Most of the animals used in the study were alive while the research protocol was ongoing: although the researchers used roughly 300 pigs over the period of the study, some 300 heads were not delivered all at once to a university laboratory. In reality, the research animals were alive, then stunned by electric shock and killed by exsanguination while researchers were present. Research procedures were immediately performed on the freshly killed pigs, onsite at the slaughterhouse. The assertion that the animals "were already dead" is in one sense true, but it oversimplifies and distorts the nature of the study, as well as the relationship that the researchers bore both to the site at which the slaughter occurred and to the slaughter itself.

Third, it is relevant to note that the *Guide for the Care and Use of Laboratory Animals* is explicit in remarking that

> the use of agricultural animals in research is subject to the same ethical considerations as for other animals in research . . . . Regardless of the category of research [viz., *biomedical*, which falls under one regulatory apparatus, or *agricultural*, which falls under another], *institutions are expected to provide oversight of all research animals and ensure that pain and distress are minimized*. (NRC 2011, 32, emphasis added)

I concur with the *Guide* on this point, because it is simply another manifestation of the foundational idea that researchers and IACUCs have a qualified fiduciary duty to the animals they use. Clearly, the Yale IACUC failed to provide oversight of the use of research animals, and failed to ensure that pain and distress were minimized for those research animals. Simply pointing to the fact that the animals were raised as livestock does not abrogate either the IACUC's or the researchers' qualified fiduciary duty owed to the animals that they used in their research. At minimum, this duty owed to the research animals includes a painless death.

"NOTHING IS LOST"

One might respond as follows. The researchers are not responsible for the institution of modern animal agribusiness, nor for the horrid cruelty characterizing this institution. The pigs used in the study were going to be killed one way or another. By performing scientific research using the decapitated heads, at least some good could potentially come from these objectionable practices. And at the least, nothing was lost: the pigs were going to be abused and killed no matter what the researchers did.

This idea parallels a well-known argument made by Gene Outka (2002), in reference to embryonic stem cell research. His point was basically the same as I've explained it above: frozen embryos from fertility clinics were either going to be discarded or remain frozen in perpetuity. Hence, using these embryos for embryonic stem cell research could provide important biomedical advances, and at the least, as he says, "nothing is lost."

Regardless of whether this argument is valid when applied to embryonic stem cells, when applied to the case under consideration, it does not justify the pig brain research. First, nothing about this argument addresses the researchers' and the IACUC's qualified fiduciary duty to ensure that animals used in their research are treated humanely and killed painlessly. Nor does it address the IACUC's responsibility to oversee all animal research, whether "agricultural" or "biomedical." And nothing about this argument addresses the point that biomedical research took place on site at the slaughterhouse, thus rendering the slaughterhouse a physical site of university- and NIH-sponsored research.

Therefore, the "nothing is lost" argument does not justify the pig brain study, because it does not reply to any of the arguments discussed. It also does not respond to the very first argument levied against this research, namely the parallel to ethical veganism, which applies equally to purchasing animal products to eat, wear, and use for biomedical research.

Generalizing from the Case Study

For the reasons above, I conclude that the pig brain study violated important principles of ethics in animal research: most fundamentally, in that the researchers failed to uphold their qualified fiduciary duty to the animals they used in their research; and secondarily, in that the IACUC failed to provide oversight of all animal research occurring under the auspices of the university and the NIH.

It is worth briefly considering what aspects of this analysis might generalize to other potential studies, and which are specific to the study under consideration. Performing research procedures onsite at the slaughterhouse is likely specific to the case study and should not be assumed to generalize to other studies. On the other hand, purchasing body parts from the slaughterhouse probably can be assumed to generalize to most other potential studies which seek to use slaughterhouse materials. The animal agriculture industry is a capitalist institution through-and-through, and any additional profit that can be made will be made; it is highly unlikely that the industry will simply give away potential profit. Anecdotally, Shaer (2019) quotes Vrselja's recollection of his interaction with the slaughterhouse: "I remember we went to the slaughterhouse manager, and he shrugged. He was like, 'Are you going to pay me?' When they said they would, the manager replied, 'Great, you can work out of my office.'" Nonetheless, it is certainly conceivable that the industry could provide researchers with body parts for free, under the guise of "charitable work" or "social responsibility." For the sake of the argument, then, I will assume that researchers may obtain body parts without purchasing them.

The aspect that does generalize to all potential research using slaughterhouse animals or their parts is that they are obtained from a slaughterhouse; and this is all that is needed to render such research unethical. As discussed above, and emphasized in the *Guide for the Care and Use of Laboratory Animals*, researchers are responsible for the well-being of the animals they use in their research throughout all phases of the research process; this includes housing and, when necessary for the experiment, killing the animals in a humane fashion. Furthermore, the same ethical considerations apply to animals used in agricultural or biomedical research, and both researchers and IACUCs are responsible for minimizing pain and distress to animals used in their research. Generalizing from the analysis presented here, I conclude that procuring animals or their body parts from slaughterhouses for biomedical research is unethical and should not occur again.

THE INVERSION OF MORAL STATUS

In the remainder of this essay, I consider ways in which analysis of this study is useful for examining broader questions about nonhuman animals and humans' relationship to them.

One foundational ethical concept, briefly mentioned above, is *moral status*. This concept identifies the class of entities that matter, from a moral point of view. In other words, identifying the entities that have moral status is to identify who or what morality applies to, at all. Different moral theories will give different answers as to what, specifically, having moral status amounts to (perhaps inviolable rights, or that one's suffering matters equally to any comparable suffering, or something else). But the key, shared idea is that moral status determines who gets to be "part of the club" of morality. Not having moral status means having the status of a thing, with no rights or moral protections whatsoever.

One idea in defense of the study is that the researchers were prepared to protect the animal heads from suffering, should signs of consciousness arise. Additionally, Vrselja and colleagues (2019) note that standard operating procedures should be put in place for future studies as well, to preclude the possibility of "re-activating and maintaining remnant awareness . . . that may result in inadvertent suffering" (342). Similarly, Farahany and colleagues note that anesthesia should be used in any follow-up studies with pigs, "to safeguard against the possibility of inducing any experience similar to pain or distress" (Farahany et al. 2019, 300).

As I emphasized at the outset, assuming the study was to be run, protecting the animals from the possibility of pain and suffering was ethically the right thing to do. I presume that most readers agree. However, acknowledging the moral importance of protecting the animals from suffering is tantamount to acknowledging that the animals' welfare matters. It is morally significant if they suffer, hence, *the decapitated heads have moral status*.

And yet, when those selfsame heads remain attached to bodies, and are clearly conscious and suffering, they are subject to vicious cruelty and torment without redress, until their violent death. Indeed, as mentioned above, if pigs were treated in a university research laboratory the way that pigs are treated when raised for livestock, that laboratory would get shut down immediately, and the hypothetical researchers might even be held criminally accountable for animal abuse. No one should accept that kind of treatment of laboratory animals. Why then should we accept the vicious torment of the animals used in the study under discussion, or any similar studies that procure animals or their parts from slaughterhouses?

In defense of the study, Farahany and colleagues write, "The pigs, having been raised as livestock, were exempt from animal welfare laws . . . the 1966 Animal Welfare Act . . . explicitly excludes animals raised for food" (2019, 300). It is hard to know what to make of this legalistic kind of claim in discussions of ethics. I am not interested in whether the researchers followed laws which are themselves unethical. My focus here is on ethics and whether it is morally permissible

to obtain body parts from slaughterhouses for biomedical research. From that perspective, Farahany, Greely, and Giattino's (2019) listing of several additional nations' unethical laws regarding livestock, all of which treat animals as things without regard for their welfare, is just as irrelevant as pointing to the unethical Animal Welfare Act of 1966. These laws are all unethical precisely because they exempt livestock animals from adequate welfare protections, thereby permitting the horrifying treatment described above.

However, it is instructive to compare the different ways that regulatory bodies do in fact treat research animals and livestock animals, because this demonstrates, from a broader, societal perspective, the absurdity of many of our ways of life with regard to nonhuman animals. Specifically, the very same animal heads that are treated as of important moral concern, whose welfare matters when severed from the body, are also treated as "exempt" from concern for their well-being while the conscious, living animal is actually suffering. This comparison reveals a bizarre inversion of moral status, where a decapitated head whose capacity for sentience is merely theoretical is treated as having moral status, while the sentient, living creature—whose anguish is palpable and certain—is treated as a thing with no regard for its well-being. This cannot be correct.

The Absent Referent

In her groundbreaking work, *The Sexual Politics of Eating Meat*, Carol Adams (2015) introduced the concept of the *absent referent*. The idea is that the animal, *as animal*, must become absent in order for meat to exist. By the time the original animal has been killed, dismembered, and packaged for sale, the animal it once was has become physically absent, but that animal must also be rendered metaphorically absent through language. The original referent, the pig, is absent, to be replaced with object or mass terms like *pork*. Thus the animal is physically dismembered, fragmented, and consumed while our linguistic practices metaphorically render the animal absent as well, converted from subject to object.

In a similar way, Brian Dominick (1997) argues that alienation is key to our practices of consuming dead animal flesh and secretions. For one thing, some might consider it impolite, even over-the-top rhetoric, to describe the very common practice of eating meat and dairy as I just did: "consuming dead animal flesh and secretions." But that is precisely the point. Through euphemistic language we distance and alienate ourselves from the animal as subject; by closing our minds to the reality of how a living creature is tormented, killed, and dismembered for our pleasure, we alienate ourselves from the original pig, from the absent referent. That distance is what allows us to pretend that the piece of dead flesh on our plate was never a subject at all. It is just a pork chop.

Returning to the study under consideration, recall that the decapitated head is treated as having moral status, while the very same head, when attached to its

body and suffering, has no moral status. The above concepts applied to this study offer important insights: the process of killing and dismembering the animal is accompanied by the usual linguistic process of metaphorically rendering the referent absent. By the time it is dead and decapitated, the rest of the animal's body will continue down the "disassembly line," to be fragmented and packaged for sale, while the pig, the animal who is a subject, has become linguistically absent. But in the unusual setting of the study under consideration, where researchers attempt to reperfuse the pig's brain, *the absent referent reappears*, bringing with it moral status, and thus eroding the alienation that facilitates our morally bankrupt lack of concern for the living animal that the head was once a part of.

This return of the absent referent hopefully teaches us something important, allowing us to identify and reject the alienation that facilitates our unthinking, distant cruelty in participating in or supporting the animal slaughter industry. Consider just how similar the two heads are: the one that matters and the one that doesn't; the one that has moral status and the one that doesn't; the one we alienate ourselves from, who becomes an absent referent; and the one who is a subject, a referent who is present, an animal whose pain we are empathically connected to, whose pain we take seriously as a matter of morality. In showing us just how similar the two heads are—or rather, that the two heads are the same—this study may reveal just how absurd our relationships with nonhuman animals are. Furthermore, it may show us how deeply unethical some of our ways of life are, particularly those that support the cruelty, violence, and exploitation of modern animal agribusiness.

Perhaps most important of all, I believe that the study has the power to show each of us that we do in fact care and bear moral responsibility for the billions of animals who are tormented and violently killed every year. Most readers, I suspect, agreed with my opening comment that the researchers did something morally right in protecting the heads. By acknowledging that point, hopefully we can refuse to allow ourselves the false balm of alienation from those very same animals while they were being tormented, and move towards (re)awakening our consciousness, broadening our compassion, and exercising our very natural capacity for empathy, for anyone who hurts.

CONCLUSION

All researchers who engage in animal research, as well as the IACUCs that oversee them, have a qualified fiduciary duty to the animals they use in their research. The researchers and colleagues who participated in the study under discussion, or as authors on the paper (Vrselja et al. 2019), as well as the Yale IACUC, failed to uphold this fiduciary duty. The fact that tormenting livestock animals is not legally prohibited by the Animal Welfare Act of 1966 is morally irrelevant.

Moving forward, I would hope that all researchers and all IACUCs understand that it is effectively impossible to ethically procure research animals, or their parts,

from slaughterhouses. Researchers have ethical responsibilities that cannot be set aside just because certain laws exempt livestock animals from welfare protection. Those laws are themselves unethical; but furthermore, those laws cannot *ethically* exempt animal researchers or IACUCs from their ethical and professional responsibilities.

Finally, examination of this research is illuminating from a broader perspective. It was right to protect the animals' heads from suffering. But recognizing *why* it is important not to cause unnecessary suffering in research animals must lead to the recognition *that* it is unethical to allow livestock animals (and the vulnerable, exploited human beings who are precariously employed by modern agribusiness corporations) to be treated the way that they are—namely, because they *all* matter, morally. It follows that each of us has an ethical obligation to do what we can to abolish the vicious and cruel treatment endured by billions of animals every year on factory farms and in slaughterhouses.

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